

## **Social and Emotional Loneliness as Correlates of Procrastination**

Rachel Anderson – Psychology  
Faculty Supervisor: Dr. Nancy Dorr

Although the phenomenon of college procrastination has been highly researched, one possible reason for this habit that has received little attention is loneliness. To investigate the hypothesis that social and emotional loneliness cause procrastination in college students, the researcher administered questionnaires about procrastination and both types of loneliness to participants at a four-year college in northeastern New York State. The results showed a statistically significant, positive correlation between emotional loneliness and procrastination. The link indicates that students may procrastinate for reasons besides task aversion, and that deeper understanding of these reasons could lead to lower procrastination levels among college students.

## **Endosome Distance Analysis in Breast Cancer Cells**

Samantha Atchinson – Mathematics  
Faculty Supervisors: Dr. Amina Eladdadi,  
Kate Tubbesing and Dr. Margarida Barroso

More than 1,500 people die from cancer a day in the United States. Most of the research to try to find a cure for this disease is done on a microscopic level. In this study, we analyzed three different cells lines and hypothesized that, compared to the control cell, the breast cancer cells will have a different organization of endocytic structures within the cells, with less endocytic structures located on the periphery of the cell. We used mathematical modeling to identify differences in the proximity to the nucleus of these endocytic structures in each cell line.

## **Euler Phi Function**

Samantha Atchinson – Mathematics

Faculty Supervisor: Dr. Mary Ann McLoughlin

The Euler phi function is an arithmetic function which is representative of the number of positive integers not exceeding  $n$ , but are relatively prime to  $n$ . It was formally denoted by Carl Friedrich Gauss as  $\Phi(n)$  in 1801, but the function itself was introduced by a Swiss mathematician, Leonhard Euler. Ever since the function was introduced by Euler in 1763, new properties and theorems have been developed off of his work, all of which have applications in many different branches of mathematics.

## **Utilizing Positive Media Images of Police to Elicit Favorable Attitudes toward Police**

Margaret M. Baker – Psychology

Faculty Supervisor: Dr. Nancy Dorr

The current study examined which type of positive police news article would elicit positive attitudes toward police. Participants were randomly assigned to read one of three news stories depicting police in a positive manner and then completed a scale measuring public attitudes toward police. Results showed participants who read an article depicting somewhat typical police work had a tendency for more positive attitudes towards police officers than did those who read an article depicting the police in an atypical positive manner. Future research should focus on solutions to the growing distrust and discontent toward police from the public.

## **Sensory Overload: Sensory and Alcohol Analysis of Craft Beer Brewed with Different Yeast**

Michael Balla and Joe Buono – Biology  
Faculty Supervisor: Dr. Kari L. Murad

Growth of new microbreweries in the United States has rapidly increased over the last decade. This growth in number has caused increased competition and a desire to differentiate product within the crowded market. The current approach to overcoming this problem is to create new recipes, many of which just focus on using different grains, malt extracts, and hops. What our lab is doing is concentrating on the yeast during the brewing process, specifically, a comparison of wild yeast vs. commercially available yeast. Side-by-side sensory analysis and alcohol yields were performed using both commercial and wild yeast strains and four different brewing recipes.

## **Michelangelo's Madonna: Maternal Deprivation in *Madonna della Scala***

Autumn Ballard – Art  
Faculty Supervisor: Dr. Theresa Flanigan

The *Madonna della Scala* is the first of Michelangelo Buonarroti's completed sculptures. At the young age of fourteen, Michelangelo completed this piece in the sculpture gardens of Lorenzo de' Medici, a renowned Florentine cultural and artistic workshop. Michelangelo's mother died when the artist was six, and, for the few years he shared with her, Michelangelo was boarded with a stonemason's family, to which Michelangelo attributed his proclivity for sculpture. With the support of my own visual analysis from visiting the work of art in Florence, Italy, modern scholarship, including psychoanalytic sources, and first-hand accounts of Michelangelo's life, I demonstrate how Michelangelo's depiction of Mary in *Madonna della Scala* reflects his maternal deprivation.

**Juvenile Arrest in the Tri-City Area**  
Neil Bednar and Ryan Kasala – Criminal Justice  
Faculty Supervisor: Dr. Christina Lane

Juvenile delinquency has become a battle ground within the criminal justice system and there are many questions surrounding the cause and effect of delinquency. This study will attempt to determine whether or not illicit drug use, high school dropout rates, and domestic violence could possibly have a direct relationship to juvenile crime in the tri-city area (Albany, Schenectady, and Troy). The study was significant in the findings that one of our variables proved to be true yet the other variables paths proved to be less significant.

**Examining Digit Ratio and the Androgen Receptor Gene  
in Yogis and Non-Yogis**

Ann-Marie Berdar – Biology  
Faculty Supervisor: Dr. Ann Zeeh

The androgen receptor (AR) gene is a specific genetic locus that contributes to physical traits, personality traits, and is responsible for psychological and developmental changes in early stages of life. The significance of studying this gene is to understand the relationship between DNA sequence elements within the AR gene, yogic ability and attaining the ultimate self. Through DNA isolation and amplification and digit length analysis, the skills needed to collect data for a comprehensive study were developed. Future research will be conducted to examine the relationship between the AR gene and attaining the ultimate self.

## **Illegal Immigration and Crime Rate**

Nicole Bini – Criminal Justice

Kelsey Glanzman – Forensic Psychology

Faculty Supervisor: Dr. Christina Lane

In the United States, specifically in California, there has been a high inflow of illegal Mexican immigrants coming to America in search of a better life. It is likely that in California when the rates of illegal Hispanic immigrants that enter these states increase, the crime rate in this state will also increase. The research will consist of looking at different variables such as the victimization of these immigrants, their vulnerability, violent crime, and prostitution. These statistics will be obtained from the Department of Homeland Security database and from the U.S. Department of Justice's Uniform Crime Reporting Statistics database. In this study, the aim is to show the immigration rate and the crime rate in California for the same year over the course of ten years and compare both rates to determine if the hypothesis is correct.

## **The Squarefree and Squareful Numbers**

Aikea Branche – Mathematics

Faculty Supervisor: Dr. Mary Ann McLoughlin

This project involves discovering and counting Squarefree and Squareful numbers. A Squarefree number is a positive integer which is not a multiple of the square of any integer other than 1. Squareful numbers are numbers for which at least one prime factor exponent is 2 (Weisstein, Eric W.). I used Wolfram to discover the guidelines to squarefree and squareful number, and then I used it to test many numbers. Through trials and research I learned that all numbers less than  $2.5 \times 10^{15}$  in Sylvester's sequence are squarefree, every Carmichael number is squarefree, and no squareful Fibonacci numbers are known with  $p$  prime.

## **Victim to Survivor: The Recovery Process of Child Sexual Abuse**

Shannon Byrne – Criminal Justice  
Faculty Supervisor: Dr. Christina Lane

One in four women and one in six men are survivors of child sexual abuse. This research examines how adult survivors of child sexual abuse were and are affected by the abuse and how they recovered from the abuse. Several stories of CSA survivors were analyzed for individual effects of the abuse and treatments used in the road to recovery. This information was then used to explain how victims of child sexual abuse become survivors of child sexual abuse.

## **Prevalence of the CCR5-delta 32 Gene Mutation in People of Guyanese Descent**

Erin Calder – Biology  
Faculty Supervisor: Dr. Ann Zeeh

T cells are white blood cells which are responsible for cell-mediated immune responses. T cells are also the main target of the human immunodeficiency virus (HIV), which enters immune cells at the CCR5 co-receptor and its partner receptor on the outside of a cell. Mutations in the gene for the CCR5 receptor have shown to reduce the risk of HIV infection. One such mutation is the CCR5-delta 32 deletion. This study examined the occurrence of this deletion in people of Guyanese descent.

## **Framing the Black Lives Matter Movement: A Textual Analysis of CNN.com Articles**

Esa Cano - Communications  
Faculty Supervisor: Dr. Jin Kim

This study analyzes the most shared articles from CNN.com relating to the Black Lives Matter movement, police brutality, and the Baltimore protests using the theory of framing in order to examine how this social movement has been presented on news websites and how this relates to the tone of the article. This movement seeks to end racial injustice and systematic racism in America, and framing could have a detrimental effect on social support of the movement. It was found that all articles contained frames that conveyed a negative tone, proving that CNN.com uses frames unsupportive of the movement.

## **Real World Applications of the Modular System**

Andrew Charsky – Mathematics  
Faculty Supervisor: Dr. Mary Ann McLoughlin

This presentation will cover the basis of the modular system and three to five examples of how it is seen in our world around us. Such examples will include product bar codes, US mail tracking system numbers, routing numbers, and ISBN numbers. The methods at which the modular systems are produced and their applications to our society will be covered in detail, as well as the relation of the modular systems to Number Theory and Abstract Algebra.

## **Investigation of Synthetic Blood Models for Crime Scene Reconstruction**

Taylor M. Cianciotto – Forensic Science

Faculty Supervisor: Dr. Sara Alvaro

Blood Spatter Analysis is the study of the patterns made by blood droplets at a crime scene. However, for crime scene reconstruction, there is no standard synthetic recipe. In this experiment, four blood recipes were tested to see how they compared to real blood. The viscosity for each sample was measured and calculated, and the samples were tested drop-wise at 10° increments from 10° to 90° from 10cm to 2m heights. The angle of impact was calculated and compared to the true angle to determine which sample behaved most ideally.

## **Deindustrialization of Schenectady, New York**

Edward Clairmont and Chike Mbamali – Criminal Justice

Faculty Supervisor: Dr. Christina Lane

Throughout the United States many cities over the centuries have been plagued by the process and presence of deindustrialization. Deindustrialization is the process of social and economic change which is caused by the removal and reduction of industrial activity in a certain country, region or city; this is usually connected with heavy industry and manufacturing. The topic which will be researched is the presence of deindustrialization within the city of Schenectady, NY, how the vacating of the major industrial company General Electric caused the economic decline and turmoil of this once wealthy and prosperous area.

**The Decay of Detroit**  
Eric Conde – Criminal Justice  
Faculty Supervisor: Dr. Christina Lane

This research project is trying to prove that there is a correlation between when the decay of Detroit started to happen and when the de-industrialization of Detroit occurred. In order to prove the correlation between the two we must compare the unemployment rates, crime rates, average median income, number of housing units, and number of people living in Detroit before and after 1950. 1950 was the starting point of the deindustrialization of Detroit, measuring these variables between 1950 and early 2000's will determine if there are any changes.

**A Direct Effect of Casinos on Crime Variables in Atlantic City, New Jersey**  
Bryan R. Cossart – Criminal Justice  
Faculty Supervisor: Dr. Christina Lane

Literature contends that casino gambling contributes to an increased rate of violent and property crimes. Specifically, the surrounding impoverished communities are among the most common area impacted. Furthermore, routine activities theory suggests casino gambling attracts undesirable revenue, and tourism thereby contributing to increased opportunity for crime. This study will explore the impact of nine casinos in Atlantic City over the last three decades upon crime and the surrounding communities.

## **Determining the Impact of Maternal Alcohol Exposure on the Specification and Migration of Precerebellar Neurons**

Patience Cournoo and Travis Townsend – Biology

Faculty Supervisor: Dr. Rebecca Landsberg

Gestational exposure to alcohol, results in Fetal Alcohol Syndrome (FAS) a disease characterized by neurological damage affecting learning and motor control. FAS coordination abnormalities have been linked to defects in the cerebellum and (more recently) the precerebellar system that arise following continuous embryonic alcohol exposure. This experiment will help determine the window in development when embryonic alcohol exposure elicits the most dramatic effects on precerebellar development. Alcohol was administered to pregnant female mice during particular gestational days and embryonic brains were collected. Currently we are in the beginning of conducting an *in situ* hybridization which will allow visualization of particular mRNAs.

## **Permutation Groups and Isomorphism**

Ylexice Davis – Mathematics

Faculty Supervisor: Dr. Mary Ann Mcloughlin

This project presents the concept of permutation groups and isomorphisms and how the two relate to one another in abstract algebra. The study will show how a group is composed of elements that are permutations of a given set and proving how two permutation groups are isomorphic. Also, the study will show several people in history that took part in discovering both permutations and isomorphism as well as other theorems.

## **Microbial Survey and Cleaning Protocol Evaluation of an Athletic Training Facility**

Zoe DuBois – Biochemistry  
Faculty Supervisor: Dr. Kari L. Murad

Microbial infections, including Methicillin-resistant *Staphylococcus aureus* (MRSA) and Group A *Streptococcus* (GAS), are a frequent concern in athletic facilities. This experiment set out to examine the cleanliness of the training room and to identify any potential pathogens in this area that is heavily populated by the student body of Saint Rose. Over this academic year, bacterial samples from the Saint Rose athletic training room were isolated and identified using differential testing. It was concluded that the majority of the isolated bacteria were non-pathogenic to humans and that the facility poses little to no threat to the faculty or students that visit the training room. The results of this survey also provided a way of assessing the cleaning protocols and allows for changes to be made that are specific to the bacteria that were isolated.

## **An Examination of Parental Bonding and How it Relates to Negative Personality Factors**

Kyle E. Duclos – Psychology  
Faculty Supervisor: Dr. Nancy Dorr

Examined how levels of parental bonding could be related to delinquency and self-harm. Also examined how perfectionism could mediate parental bonding and self-harm. One hundred twenty-one college students completed self-report measures on parental bonding, previous delinquency, perfectionism, and self-harm behaviors. Results suggested that low care and high overprotection correlate with specific types of delinquency and self harm. High care was also shown to correlate with delinquency, giving evidence of how higher levels of parental bonding is connected with higher levels of delinquency. Future research is discussed.

## **Family and Sibling Relationships as Predictors of Parental Caregiving Plans**

Joanna J. Dykeman – Psychology  
Faculty Supervisor: Dr. Nancy Dorr

Examined the relationships between parental attachment style, sibling relationships, perceived quality of care received from parents, and plans for caring for aging parents. Sixty-six college students completed self-report measures of these constructs. Results showed that children who perceived a higher quality of parental care and closer sibling relationships were more likely to report intentions to care for aging parents. However, maternal attachment did not significantly predict caregiving intentions once accounting for the shared variability among variables.

## **Geographical Profiling of Serial Killers**

Ashley L. Eaton – Criminal Justice  
Faculty Supervisor: Dr. Christina Lane

Based on routine activities theory and rational choice theory, geographical profiling can be a useful tool to assist in locating serial killers. It takes information from where the victims were last seen or abducted from and where the body was disposed of. This information is then used to give a probable location where the killer might live. In order to determine the effectiveness of geographical profiling, this research will apply this method to serial killers who were convicted and see if there is a relationship between the killers' lifestyle and killings.

## **Applications of Group Theory**

Scott Eisner – Mathematics

Faculty Supervisor: Dr. Mary Ann McLoughlin

My poster is on the applications of group theory in our everyday lives. I delve into physics, chemistry, music theory and a Rubik's Cube. Group theory is all over the world because to be a group, there must be symmetry between two groups of some kind. Symmetry is a part of our daily lives, whether we see in on a logo to a car manufacturer or looking at a clock. Throughout Abstract Algebra we use groups abundantly.

## **Fibonacci**

Scott Eisner – Mathematics

Faculty Supervisor: Dr. Mary Ann McLoughlin

My poster is on Leonardo of Pisa otherwise known as Fibonacci. Fibonacci was born in 1170 and lived in Italy for his entire life. I delve into Fibonacci's sequence as a basis for my presentation. Elaborating more into Fibonacci numbers, sequence as a whole as well as the integer spiral that is so famous from his time. Lastly I go into Liber Abacci as his book written throughout his life and has many mathematical techniques using the Hindu-Arabic number system.

## **Analyzing the Stress and Depression Levels of LGBT Versus non-LGBT Students at The College of Saint Rose**

Lauren Ennis – Sociology

Faculty Supervisor: Dr. Paul Knudson

Stress and depression levels amongst college students across the United States have already been deemed as a growing epidemic. However, the correlation with those levels and LGBT affiliation has yet to be widely researched. Twenty LGBT students attending The College of Saint Rose along with twenty non-LGBT students were asked a series of questions via distributed surveys gaging their reported rates of stress and depression. Seven significant points were found during the process of analyzing the collected data. These points included “previous history of depression,” “severity of depression,” and “feeling increasingly isolated from their peers.”

## **Coerced Confessions**

Samantha Femia – Criminal Justice

Faculty Supervisor: Dr. Christina Lane

Coerced confessions show a terrible flaw in our justice system. Our system has many flaws but coerced confessions particularly, takes away the lives of many innocent individuals each and every year. This study will explore some of the factors that bring about coerced confessions. Some of these factors specifically are false eye witness identification and testimony, interrogation tactics, and memory distortion. All of these factors will be identified amongst various cases identified by the Innocence Project. The four main cases of focus in this study will be The Norfolk Four, Shawl Whirl, David McCallum, and Johnny Hincapie.

**Michelangelo's Depiction of Judaism in the Imagery of Jesus Christ's Ancestors on the Sistine Chapel Ceiling**

Kayla Fincken – Art  
Faculty Supervisor: Dr. Theresa Flanigan

My research shows that Michelangelo expressed the Judaism of Jesus Christ's ancestors on the Sistine Chapel Ceiling through the usage of dress codes and stereotypical symbolism associated with Jews in Renaissance Rome. Through reading of historical texts, peer reviewed articles, and a close examination of visual details apparent in the Sistine chapel Ceiling, one can conclude that Christian sentiments regarding Jews in Rome during the early 16th century are reflected in Michelangelo's painting.

**2D:4D Digit Ratio and Division II Soccer Players: The Link between Finger Length and Soccer Achievement**

Jessica N. Gabala - Biology  
Faculty Supervisor: Dr. Ann Zeeh

Studies have linked the 2D:4D digit ratio and physical fitness of athletes to DNA sequence features of the androgen receptor gene on the X chromosome. Research has shown a smaller 2D:4D ratio is linked to a higher number of CAG repeats in the receptor gene. This project examined these features in Division II soccer players. DNA was isolated from epithelial cells obtained by oral rinse. PCR analysis of the androgen receptor gene sequence was compared to 2D:4D ratios and competitiveness ratings.

**Exploring Gender and Sexuality**  
Danyel Gordon – Sociology  
Faculty Supervisor: Dr. Paul Knudson

The purpose of this study was to discover if gender has an effect on sexuality. My independent variable was gender and my dependent variable was sexuality. Sexuality was measured through sexual experience and sexual desires. Survey questionnaires were administered to young adult students that attend the College of Saint Rose. There was a total of 69 participants, 36 females and 33 males. According to the data, gender does have an effect on sexuality. Young adult females were just as sexual as young adult males. This research can help break social stigmas and the sexual double standards attached to sexual scripts.

**How PTSD Can Develop in Indirect Victims of Traumatic Events**  
Jordan Gregg – Forensic Psychology  
Faculty Supervisor: Dr. Christina Lane

It has been estimated that up to 24 million Americans are suffering from Post-Traumatic Stress Disorder (PTSD). While many develop PTSD after experiencing a traumatic event, current studies have shown that witnessing a traumatic event can have the same effect. According to the Diagnostic and Statistical Manual of Mental Disorders, indirect exposure to a traumatic effect can cause secondary stress in need of treatment. This can be seen in mental health professionals as well as victims of terrorist attacks. This study will research indirect victims in an attempt to gain a better understanding of how and why they develop mental deficits.

## **Pura Vida's Effect on Ecotourism in Costa Rica**

Briana Gualtieri – World Languages and Cultures

Faculty Supervisor: Silvia Mejia

Pura vida is a phrase used heavily in Costa Ricans' vocabulary, with its meaning deeply rooted within those who use the phrase. Costa Ricans, also known as Ticos, have brought life and meaning to this phrase which has allowed them to adopt a positive attitude towards life. The Costa Rican mindset of living at one with nature has intrigued eco-conscious tourists who are interested in giving back to the environment. Ecotourism gives tourists the opportunity to see undisturbed natural areas, as well as educates travelers on sustainability. Research and interviews display the effect of the pura vida mindset on the popularity of ecotourism in Costa Rica.

## **The Increase of Mass Murder in America**

Erica D. Hagen – Criminal Justice

Faculty Supervisor: Dr. Christina Lane

Over time, the incidents of mass murder have increased dramatically in the United States. Mass murder is defined by the FBI as murdering four or more persons during a single event with no "cooling off period" between murders. The study of mass murder and potential risk factors can assist in future profiling of mass murderers and prevent them from occurring. It is proposed that particular patterns such as psychopathic tendencies, the presence or history of mental illness, negative emotions including anger, depression and vengeance can contribute to the future profiling of mass murder.

## **Music Theory: Connections From One Abstract Language To Another**

Dan Haggerty – Mathematics

Faculty Supervisor: Dr. Mary Ann McLoughlin

This work presents many of the concepts of abstract algebra, and makes connections of how they could be applied to music theory in loose, but mind opening ways. While this is not a proof based work, the explanations make clear the ways in which topics such as chords & key signatures relate to subgroups & permutations, or how thinking about modes as groups of the same order may simplify understanding them. These examples are coupled with diagrams and detailed descriptions of both fields to allow those familiar with one field but not the other to benefit.

## **Evaluating the Effects of Retinoic Acid on the Differentiation of SH-SY5Y Neuroblastoma Cell Line**

Aishwarya Hanspal – Biology

Faculty Supervisor: Dr. Ann Zeeh

Neuroblastoma (NB) is one of the most prevalent extracranial solid pediatric tumors, liable for approximately fifteen percent of cancer mortalities that occur in children. Our study examined the effects of retinoic acid (RA) on the differentiation of SH-SY5Y neuroblastoma cell line. The SH-SY5Y cells were grown on collagen-coated plates to establish cultures and were subsequently treated with different concentrations (0mM, 1mM, and 10mM) of RA. The results showed that the cells in the experimental groups were comparatively elongated and had more extended dendritic processes than the control group.

## **The Long Term Effects of Short Term Volunteer Projects: A Case Study in Costa Rica**

Maria Hartz – World Languages and Cultures  
Faculty Supervisor: Silvia Mejia

When thinking of a way to give back to the world that we live in, a lot of people choose short term volunteer projects, most often in the form of mission trips or volunteer projects in urban cities, developing nations, and poverty ridden countries. In Costa Rica, there are many opportunities available for people to feel as though they are doing good for the community. This research takes a look at short term missions and volunteer projects, to determine whether more harm than good is being done in these communities.

## **Household Contamination with *Salmonella enterica***

Michael Hitt and Michaela Phillips – Biology  
Faculty Supervisor: Dr. Kari L. Murad

Non-typhoid Salmonellosis is an important concern in public health because it is the cause of many human infections. Although most cases are caused by foodborne illness, a significant number of incidents appear to be acquired from household contamination. Sources and sites of contamination can include occupational exposure and subsequent carry-over of contaminated items into household environments. The overarching goal of this study is to compare and contrast occupational exposure and household contamination by *Salmonella enterica* (the infectious agent of non-typhoid Salmonellosis) through microbiological testing and genetic screening. Presented here is the initial microbiological isolation and identification of *Salmonella enterica* from vacuum bag contents and survey development for the larger study.

## **Sources and Properties of Geothermal Energy Sources in Iceland**

James Hodge – Geology

Faculty Supervisors: Dr. Jacqueline Smith and Dr. Stephanie Maes

Iceland is a world leader in geothermal energy with over 50% of current national primary energy provided by renewable heat sources. This national resource is due to the island's location over the Mid-Atlantic Ridge, an active oceanic rift where magma rises from the mantle. This volcanic zone features high-temperature steam fields reaching up to 250°C within 1,000m of the surface. 2.5km deep wells are used by Iceland's five geothermal power plants including the Hellisheidi power station, the third largest geothermal plant in the world. Iceland's Deep Drilling Project looks to drill twice as deep, potentially providing 10 times the energy.

## **Analyzing Athleticism, 2D:4D Digit Ratio and the Androgen Receptor Gene in Saint Rose Female Varsity Basketball Players and Non-Athletes**

Jamie Hutcheson – Biology and Erica Ziskin – Biochemistry

Faculty Advisor: Dr. Ann Zeeh

Collegiate athletes have reached the next level of intensity in training and play; help from a genetic predisposition could contribute to their success. Athleticism has been linked to early testosterone exposure, while testosterone sensitivity is related to the number of CAG repeats in the androgen receptor gene. DNA samples isolated from female varsity athletes on the Saint Rose basketball team and female non-athletes were examined for CAG repeat number. The 2D:4D digit ratio for each subject was also measured, as this value has been similarly linked to athleticism. The relationship between CAG repeats and digit ratio was analyzed.

## **Effects of Mouth Rinses on the Oral Microbiome**

Adil Inayatullah – Biochemistry

Danielle Vogel – Biology

Faculty Supervisor: Dr. Kari L. Murad

The oral microbiome is comprised of hundreds of bacterial species, some of which are potential causative agents for numerous oral diseases. Several experiments were conducted to test the effectiveness of mouthrinses commonly used in dental hygiene practices. Healthy mouth biofilm samples were cultured to compare the bacterial growth before and after the use of each rinse. Additionally, these rinses were further assessed using the Kirby-Bauer assay under both aerobic and anaerobic conditions. The quantitative data from both the biofilm test and Kirby-Bauer assay indicates that the top three most effective mouth rinses were Listerine Total Care Fresh Mint, Cépacol, and hydrogen peroxide. Interestingly enough, all three had different active ingredients but similar effectiveness.

## **Pascal's Triangle**

John W. Jakovic – Mathematics

Faculty Supervisor: Dr. Mary Ann McLoughlin

For my project, I have been researching Pascal's Triangle, a mathematical structure that has intrigued me for quite some time. I plan to start my project with a brief explanation of Blaise Pascal and Pascal's Triangle, and then I will move into a more in-depth summary about other interesting facts about Pascal's triangle, where I hope to introduce a few fun facts about it that not many people may know at first glance, such as its connections to Algebra itself, as well as an interesting connection to the number 11.

## **Societal Fear of Sexual Assault and Self Protective Behaviors**

Samantha Johnson – Psychology  
Faculty Supervisor: Dr. Ann Zak

The present study examines the fear that society has of sexual assault, and the self-protective behaviors individuals exhibit to lower their risk of victimization. The data for this research were collected using Survey Monkey, inviting individuals to participate using social media platforms such as Facebook, Instagram, and email. Participants were asked to answer questions regarding their fear of being sexually assaulted, the threat of assault they perceive in various situations, and the self-protective measures they take to lower their risk of being assaulted. Analyses revealed significant results. Age was negatively correlated with perceived social danger and home security precautions, while fear of rape was positively correlated with perceived social danger and constrained behaviors. Implications for further research are discussed.

### **Recipient of a 2015 Undergraduate Research Grant**

**How Much Tourism is too Much Tourism**  
Haley Kaliher – World Languages and Cultures  
Faculty Supervisor: Silvia Mejia

Costa Rica's economy relies heavily on ecotourism. The eco-friendly country brings in more and more tourists every year. The question is can there be too much tourism? Will the amount of tourists eventually start harming the environment? According to local interviews and a number of different scholarly articles, this is not the case. As long as the government keeps up with legislation regulating tourist impact on the environment, there shouldn't be a problem.

## **Job and Relationship Conflicts and Personality as Predictors of Satisfaction Levels**

Katelyn Kasmier – Psychology  
Faculty Supervisor: Dr. Nancy Dorr

Examined the relationship between personality and work-family conflict and how they relate to relationship and job satisfaction. Fifty-six adults completed self-report measures assessing satisfaction, personality, and work-family conflict. Results suggest that an individual's relationship plays a role in satisfaction and that job satisfaction can be achieved when an individual experiences support. The association between conflicts and satisfaction suggests that in order to increase satisfaction levels, conflicts should be refrained. The findings of this study show implications for employees and individuals experiencing conflicts.

## **Job and Relationship Pressures and Feedback as Predictors of Satisfaction Levels**

Katelyn Kasmier – Psychology  
Faculty Supervisor: Dr. Nancy Dorr

Examined the relationship between feedback and work-family conflict and how they relate to relationship and job satisfaction. Forty-eight adults completed self-report measures assessing satisfaction, feedback, and work-family conflict. Results suggest that many of the correlations appeared as predicted. For example, people who perceived more supervisor support and lower conflict and pressure at work reported higher job satisfaction. Feedback at work has more potential ramifications for difference components about how people feel about their work. The findings of this study show implications for working adults who deal with job and relationship conflicts and pressures.

## **Jökulhlaups in Iceland: Characteristics, Prediction and Impact**

Rachel Kazda – Geology

Faculty Supervisors: Dr. Stephanie Maes and Dr. Jacqueline Smith

Jökulhlaups, a type of glacial outburst flood, are among the largest and most destructive floods. Most jökulhlaups occur when glacial meltwater, which has been melting for long periods of time, is released from an ice dam. These events can also be triggered by the presence of volcanic activity underneath an ice sheet, causing rapid melting and catastrophic flooding. Jökulhlaups are most common in Iceland because of the interaction between volcanoes and glaciers. Several warning systems have been implemented in Iceland to help prevent public hazard. Predictions indicate that Katla volcano, which partially underlies Mýrdalsjökull glacier, may be next to erupt.

## **Egyptian Fractions**

Brady King – Mathematics

Faculty Supervisor: Dr. Mary Ann McLoughlin

Most of the knowledge that we know of Ancient Egyptian fractions comes from the Rhind Papyrus. Mathematicians have discovered that the Ancient Egyptians named some of their fractions unit fractions. Using these unit fractions mathematicians have created formulas to generate how the Ancient Egyptians generated their unit fractions. Due to their unit fractions the Ancient Egyptians have also been credited with creating an algorithm as well that is used in a similar form today.

## **The Representation of Gay Men in TV Dramas**

Aaron Krein – Communications

Faculty Supervisor: Dr. Karen McGrath

This poster is designed to reflect the transition that television, specifically drama programming, has had over the past two decades with the inclusion of homosexual men. The treatment of gay male characters in terms of length of appearances, stereotypes, and how they compare to their straight counterparts on screen will be discussed. TV Shows such as "Melrose Place," "Dawson's Creek," "How to Get Away with Murder," and "Empire" are highlighted.

## **Environmental Tradeoffs of Smelting Aluminum in Iceland**

Bradley Kurtz – Environmental Science

Faculty Supervisors: Dr. Jacqueline Smith and Dr. Stephanie Maes

Iceland is an island country located on the Mid-Atlantic Ridge, the rifting boundary between the North American and Eurasian plates. Despite the youthful land's scarcity of mineral deposits, they do have the ability to produce an abundance of geothermal energy. Because energy is so inexpensive, millions of tons of aluminum ore are imported annually to the island to be refined. However, soil testing near such processing factories has revealed unsafe levels of fluoride and heavy metals. Various methods for remediation are being explored as this industry remains an integral component of Iceland's economy.

## **Hotels in Costa Rica: Are they Hurting or Helping the Environment?**

Rachel Leombruno – World Languages and Cultures

Faculty Supervisor: Dr. Silvia Mejía

Costa Rica is a diverse country known for its unique animals, adventures and use of natural resources. Through recent years, Costa Rica has transformed into an eco-friendly country and because of this, there has been an increase in the number of tourists who visit. In order to accommodate this increase, many eco-friendly hotels have been built. However, some are not as eco-friendly and environmentally safe as they claim to be. In hopes of conserving the environment, the Costa Rican government has implemented specific laws to help eliminate the hotels that are doing more harm than good to the natural environment.

## **Emotional Stages of Death Row Inmates When Making Last Statements**

Alexis Matherly – Criminal Justice

Faculty Supervisor: Dr. Christina Lane

As recent as March 22, 2016 (DPIC, 2016), 536 executions have occurred from 1982 to 2016 in Texas. Capital punishment has faced opposition for claims of it being cruel in nature; therefore, it is important to understand its effects on the offender. Using Kubler- Ross's and Buckman's theories on death and dying, the last statements of those who were executed will be analyzed to understand the effect of the death penalty. It is believed that those who have been sentenced to death will show mostly fear or acceptance of their death.

## **Optimism and Its Influence on Academic Achievement and Social Relations**

Marcy McCarthy – Psychology  
Faculty Supervisor: Dr. Ross Krawczyk

Past research has shown that optimism may be a predictor of success in the social, academic, and professional worlds. The objective of the current study was to examine this relationship among college students. A sample of 70 students, mostly psychology majors, was evaluated on optimism, quality of social relationships, and academic achievement. Consistent with previous studies, optimism was found to be a predictor of academic success and positive relationships, both overall and specifically with friends, family, and mothers. Future studies should examine potential gender differences, specific family dynamics, and other variables that may be related to optimism.

## **Michelangelo's David: Disproving the Myth of Divinity**

Heather Megyesi – Art  
Faculty Supervisor: Dr. Theresa Flanigan

The famous *David* (1501-04) is one of Michelangelo's earliest and few completed works. The perfection of this sculpture lends support to the myth of Michelangelo as a divinely inspired genius, which is a myth he cultivated himself. However, this obscures the fact that he did indeed have early training as well as connection to the Medici, both of which contributed to the success of this sculpture. Using evidence in biographical writings and early drawings, I aim to disprove the *David* as being a divine creation, but rather a result of both talent and formal training.

## **The Negative Effects of Ecotourism and Technology on Wildlife**

Laura J. Meyer – World Languages and Cultures

Faculty Supervisor: Dr. Silvia Mejia

Ecotourism, or tourism focused specifically on conservation and maintenance of the environment and wildlife, is a popular basis for exploration of new territories. A major belief is that ecotourism is entirely beneficial. However, during a faculty led program to Costa Rica, different results were discovered. Oftentimes tourists bring cameras or phones on their trips. Technology, though necessary for communication, is not necessary for life, especially wildlife. In fact, technology use in close proximity to nature can actually be extremely detrimental to the health of its inhabitants. This study uncovers that technology and ecotourism are not as beneficial as they seem.

## **Analysis of Antibiotic Resistant Bacteria Inside the Oral Cavity Using the Kirby-Bauer Procedure**

Jakub A. Mierzwa – Biology

Faculty Supervisor: Dr. Ann Zeeh

Antibiotic resistance is a significant problem in medicine, with some infections remaining virtually untreatable by traditional means. As many doctors search for alternative forms of medicine against resistant microbes, we explored the antibiotic resistant bacteria inside of the oral cavity of fifteen willing participants on the College of Saint Rose campus. We tested five different antibiotics from five different families against fifty-two bacterial isolates from the volunteers to determine resistance or susceptibility to these antibiotics.

## **Exploring the Effect of Ethanol on Precerebellar Development Using In Situ Hybridization**

Jakub A. Mierzwa – Biology

Faculty Supervisor: Dr. Rebecca Landsberg

Ethanol is a commonly abused substance that can be found in alcoholic beverages that can have drastic effects during gestation. During pregnancy, it is known that ethanol has negative effects for the developing embryo and fetus, resulting in malformed limbs and physical deformities to mental problems due to abnormalities in the development of the central nervous system, particularly the brain. Many studies have explored its effect on the development of the cerebrum and cerebellum, but very few individuals have studied the precerebellar system which is vital in cerebellar and cerebral communication. In this experiment, we investigated abnormalities in precerebellar progenitors due to maternal exposure to ethanol.

## **The Influence of Ion Size on Interfacial Properties of Aqueous Salt Solutions**

Erin Milsom – Chemistry

Faculty Supervisor: Dr. Brad A. Bauer

Previous research suggests that the surface presence of anions in aqueous salt solutions increases with anion size. In this study, we utilize molecular dynamics simulations of model ions in SPC/E water to examine the influence of cation size on surface properties. Graphical analysis of density profiles indicates that larger cations enhance anion presence at the surface. The three sets, which contained identically varying anions, showed distinct surface behavior, suggesting that cation size influences surface properties as well as anion size.

## **Visualizing Group Generation: Cayley Digraphs and Hamiltonian Circuits**

Jeffrey Montague – Mathematics

Faculty Supervisor: Dr. Mary Ann McLoughlin

Cayley digraphs, named after English mathematician Arthur Cayley, are a visual way to represent the formation of an algebraic structure called a group using a series of generators and relations. They use a series of points and lines to show how groups are generated from a set of elements. Hamiltonian circuits are a path through the digraph such that each vertex is visited only once along the path. Irish mathematician William Hamilton made this concept famous with his “Around the World” puzzle in 1859. These concepts have applications in real-world problems in addition to helping to visualize an abstract concept.

## **The Negative Effects of Ecotourism in the Costa Rican Economy**

Elvis Morales –World Languages and Cultures

Faculty Supervisor: Dr. Silvia Mejia

The problem being noticed is with the Costa Rican economy being too dependent on its ecotourism industry. Which in turn can cause several problems for Costa Rica if at any point the incoming number of tourists dramatically decreases due to an economic recession. Since the ecotourism industry is currently booming and becoming more popular. If Costa Rica can find balance within its industries and economies they won't lose as much money in their economy if the ecotourism industry declines.

## **Diophantine Equations**

Rebecca Moyer – Mathematics

Faculty Supervisor: Dr. Mary Ann McLoughlin

This is a compilation of research about Diophantine equations, which are equations that contain two variables, however the variables can only equal whole numbers. This research presentation explains the relationship with Fermat's Last Theorem, Pell's equation, and other forms of Diophantine equations. There are many types of Diophantine equations, and the work of Diophantus holds a basis for many of the equations that we know today. Diophantus deals with problems from the theory of numbers and is considered the father of algebra. This presentation discusses the history of Diophantus, his work, and related mathematicians.

## **Mythical Creatures' Influence on the Environmental Issues of Iceland**

Audrey Moylan – Environmental Science

Faculty Supervisors: Dr. Jacqueline Smith and Dr. Stephanie Maes

Iceland's unique geology has given rise to a culture rich in folklore in which mythical creatures help explain the unique topography. The Huldufólk (elves) are supernatural protectors of the land, and recently they have transcended the stuff of legends to make their "voices heard" when it comes to environmental issues. After the 2009 construction of Kárahnjúkar hydroelectric power plant, environmental activism in Iceland increased, and preservation of the Huldufólk has become a valid reason why the land must be protected. Construction companies consult seers and projects have been delayed, altered, or even canceled because they would disturb these mythical creatures and their natural habitats.

## **Cryptography**

Sarah Murin – Mathematics

Faculty Supervisor: Dr. Mary Ann McLoughlin

Cryptography is a method of mathematics where you can encrypt words and messages. This is done so that the intended party is the only one that can read and understand the message. It was usually confined to diplomatic and military practice. However, with the rise in technology Cryptography is being used more and more in electronic processing systems. There are different formulas and Ciphers that help to encrypt the data, such as the Caesar Cipher. Today we use a more complex system that is harder to decipher, and is used in many different facets of communication.

## **Solitary Confinement: Who Are We Truly Protecting Our Inmates From?**

Tamara Myrick – Criminal Justice

Faculty Supervisor: Dr. David Clark

This project goes into detail about the effects of solitary confinement. This practice creates a higher incidence rate of self-harm and further exacerbates a person's already existing mental illness. There have also been issues raised on its constitutionality as being a cruel and unusual punishment as it is likely to cause volatile behavior. Information obtained from academic journals, documentary videos, and newspaper articles was able to give me a deeper understanding of the detrimental effects of solitary confinement on a person's psyche, physical well-being, and their life chances once released from prison; making it an ineffective means of punishment.

## **Cayley Tables**

Caleb Nason – Mathematics

Faculty Supervisor: Dr. Mary Ann McLoughlin

Cayley tables are a useful tool in visualizing operations and determining properties of operations. Since their introduction by Arthur Cayley in 1854, many theorems and problems involving Cayley tables have been made. Some of these involve the fact that the Cayley table of a group is a latin square. Others involve removing elements from the table or looking at the properties of portions of a Cayley table. These tables are an important tool in abstract algebra, and they have many different properties.

## **How Does Legal Non-compliance from Civilians in Response to Police Officer Requests Catalyst Volatility of the Situation?**

Peter New and Alex Waldron – Criminal Justice

Faculty Supervisor: Dr. Christina Lane

This study intends to find that when a civilian does not comply with a request from a police officer that has no legal standing, then exercises legal knowledge is subjected to a more volatile situation as well as more force than those who do comply with the police officer's request. Encompassing public videos from YouTube to focus on stops made by law enforcement in which a request for identification came about from the officer will allow an enticing look on whether or not the request was done through proper procedure.

## **Neck of the Woods**

Nick Paquin, Noelle Herceg, Timothy James, and Melody Oliver – Art  
Faculty Supervisor: Gina Occhiogrosso

This research poster is a design for a public artwork for the empty space between the Massry Center for the Arts and School of Arts and Humanities on Madison Avenue on the Campus of Saint Rose. In this proposal we have created a plan for a public art space that includes an area for public talks, space to display artwork, and a community space to meet, that would benefit the Pine Hills Community. This poster was created as a semester long group research project for the Fall Foundation Art Seminar course.

## **Analysis of Price, Processing and Product Placement in Grocery Store Circulars**

Lauren Peters – Medical Technology  
Amirreza Samarbakhsh – Biochemistry  
Faculty Supervisor: Dr. Kari L. Murad

People tend to choose food based on their taste preferences and their financial situation. Previous studies have shown links between socioeconomic factors and healthy diet. Lower income families may have a harder time eating healthier, less processed foods, due to food access and affordability. Although this issue is very complicated, encompassing many social factors, this experiment looked to study the relationship between the price and types of foods that were advertised on the front page of grocery store circulars over an eight-week period. Weekly circulars were obtained through the Internet from four grocery stores in Boston, MA and five grocery stores in Albany, NY. After analyzing the circulars a correlation was found between inexpensive foods, extent of processing and product placement.

## **American Businesses vs. Eco-Tourism in Costa Rica**

Kassandra Petrone – World Languages and Cultures

Faculty Supervisor: Dr. Silvia Mejia

With a very strong focus on eco-tourism, it is no surprise that Costa Rica is currently on its way to becoming the first carbon neutral country in the world. Tourism is a big part of Costa Rica, and it seems that American brands are making their way in as well, many of which are not environmentally friendly. The question then comes to: Are tourists the reason that these polluting companies are entering an eco-conscious country? The results are unexpected, and some locals had suggestions of how things could change for the better.

## **Ecotourism in Costa Rica**

Danielle Phillips – World Languages and Cultures

Faculty Supervisor: Dr. Silvia Mejía

Tourism is now the world's largest industry. In response to this increasing appreciation of nature experiences, a new travel ethic has developed called ecotourism. Ecotourism is about uniting conservation, communities, and sustainable travel. There are numerous government and non-governmental organizations that support ecotourism as a component of their sustainable development and environmental conservation strategies. In Costa Rica, ecotourism has its advantages to the environment and to local communities. However, the majority of Costa Rica's residents seem to disagree.

## **Fiber Analysis for Art Conservation Using Attenuated Total Reflectance-Fourier Transform Infrared Spectroscopy (ATR-FTIR)**

Vincen Pierce – Chemistry

Faculty Supervisor: Dr. Sara Alvaro

In this study, Attenuated Total Reflectance Fourier Transform Infrared Spectroscopy (ATR-FTIR) was used to analyze various fiber samples. Fiber analysis is used to determine the different types of fibers used in old works of art which provides conservation scientists with information about how to preserve the piece of art. IR spectroscopy is a fingerprint technique which provides a unique spectrum for each unique sample that is analyzed. Three different fiber types (wool, silk, linen) were analyzed. In addition, dyed wool fibers were analyzed to determine if IR spectroscopy could differentiate between and among dyed and undyed fibers.

## **Michelangelo's Doni Tondo and the Significance of Christ's Genitalia**

Christina Plummer – Art

Faculty Supervisor: Dr. Theresa Flanigan

In the Doni Tondo painted by Michelangelo Buonarroti in 1506, Mary gestures towards Christ's genitalia. Scholars have argued that the highlighting of Christ's genitalia was meant to emphasize Christ's humanity, however, it also can be interpreted relative to Renaissance family values. The Renaissance tondo was a domestic object believed capable of imprinting its imagery on a pregnant woman to make her have a male child. As a wealthy Florentine family, the Doni would have believed that having a male heir was vital to continuing the family. Mary's gesture emphasizes the desire to have a male child of the Doni family.

**The Unification of Time, Memory, and Spirituality Through the Tombs in Michelangelo's New Sacristy of San Lorenzo**

Alyssa Powell – Art

Faculty Supervisor: Dr. Theresa Flanigan

This poster addresses the unification of Time, Memory and Spirituality in Michelangelo's Tombs at the New Sacristy of San Lorenzo. Commissioned in 1519, the architecture was completed in 1523, but the sculptural elements are incomplete. Only the tombs of Dukes Giuliano and Lorenzo de Medici were finalized. These idealized tombs both feature reclining allegorical figures on each side of a sarcophagus. Giuliano's tomb contains figures of Dusk and Dawn, while Lorenzo's tomb depicts Night and Day. These figural sculptures through their relative location, iconographic attributes, body language, and physical appearance, combine the three themes of time, memory and spirituality.

**“In Thy Light”**

Emily Prosper, Michaela O'Keefe, Fanta'Sha Gibbs, Hailey D'Amico  
and Alex Lawson – Art

Faculty Supervisor: Gina Occhiogrosso

Our research poster is a public art proposal for an artwork between Esther Massry Gallery and the School of Arts & Humanities. It is the result of a semester long group project where we researched other public works of art, analyzed the campus, neighborhood and mission of the college, and spoke with people in the community. Our proposal is important to the future of the campus and the community because it engages not only college students, but the entirety of Albany to try and create a solution to mend the rift in the community and our differences.

## **Educating Prisoners**

Juliette Prueitt –Art

Faculty Supervisor: Dr. David Clark

The topic of this research project is college education in prison. Information was collected from newspaper articles and academic journals. Providing college education to inmates while they serve their sentence forces one to decide if the purpose of prison is to punish, or to rehabilitate. In addition, there is the issue of whether taxpayer funding of a college program for convicted felons is fair when law-abiding citizens have to pay for their own college education. After researching the topic, statistics show that college education for inmates significantly reduced the chance of recidivism or repeated arrest.

## **Icelandic Waterfalls and How They Formed**

Scott Pulver – Computer Science

Faculty Supervisors: Dr. Jacqueline A. Smith and Dr. Stephanie Maes

Geologically, Iceland is a paradise that sits atop the Mid-Atlantic Ridge. Iceland has a mix of glaciers and volcanos that interact with each other to form the landscape. Volcanos produce the basaltic bedrock and also melt the glaciers above them to produce water that erodes the bedrock. Columnar jointing, a feature that is common in basaltic lava flows, encourages the formation of waterfalls, including Goðafoss, Svartifoss, Þjófafoss, and Dettifoss, which is the most powerful waterfall in Europe, falling 45m. Dettifoss is believed to have formed during catastrophic flooding that resulted from volcanic activity beneath the glacial ice of Vatnajökull.

## **Association of Levels of Extraversion and Dependency with Preferred Method of Communication**

Amanda Quintana – Psychology  
Faculty Supervisor: Dr. Nancy Dorr

Media and its relation to human communication and interactions were examined using survey research. Participants (N=57) were Psychology students of a moderately small, private college. It was hypothesized that students scoring (a) high on extraversion scales would score low on preferred method of communication (PMC), (b) high on dependency scales would score high on PMC, and (c) low on the extraversion scale would score high on both the dependency and PMC scales. Statistically significant results suggest a strong, negative correlation between extraversion and PMC. Future research should examine the methodology and number of channels chosen.

## **Vector Groups Application to Real Life**

Blake M. Rafferty – Mathematics  
Faculty Supervisor: Dr. Mary Ann McLoughlin

My poster is on the applications of vector groups to real life and how vector groups can relate to marketing and stocks. Vector groups have to do with how you invest your money into stocks. In addition vector spaces help with physics applications in respect to polarity. When looking at the voltage of a coil, each coil will be similar with the respect of 180 degrees.

***Non-Finito* in Michelangelo's *Accademia Slaves* as Expression of the Artist's  
Constructed Persona**

Matthew Ramirez – Art

Faculty Supervisor: Dr. Theresa Flanigan

Michelangelo Buonarroti (1475-1564) is a famous Renaissance artist – a reputation he intentionally cultivated during his own lifetime. *Non-finito* (or incompleteness) is most apparent in Michelangelo's *Accademia Slaves* intended for the Tomb of Pope Julius II (1505-1545), which underwent many alterations and I argue that Michelangelo's *non-finito* work from the tomb perfectly reflects the image or persona of divine artistic genius that Michelangelo attempted to construct for himself. According to my research, Michelangelo ultimately halted production when he felt incapable of achieving the quality expected from the persona he had created.

**Iceland: A Look into Hell on Earth**

Molly M Ryf – Geology

Faculty Supervisors: Dr. Jacqueline Smith and Dr. Stephanie Maes

Iceland is an island of extremes of nature; from active volcanoes to ice caps. Three Icelandic volcanoes, Katla, Eyjafjallajökull, and Bardarbunga, pose a threat beyond Iceland. Hazards associated with these volcanoes include interference with aviation, climate change, extreme flooding, and poisoning by volcanic gases. Various types of monitoring are done on these volcanoes by the Icelandic Meteorological Office. During Bardarbunga's lengthy 2015 eruption, the immediate concern was poisonous gas emission – historically the deadliest aspect of Icelandic eruptions. The second concern was Bardarbunga exploding violently. On 4/3/16, a 3.4-magnitude earthquake shook the volcano, suggesting that the magma chamber is currently filling.

## **Michelangelo's Plans for Dome of the Basilica of St. Peter's and Its Foundation in the Florentine Dome**

Paige Saksinsky – Art

Faculty Supervisor: Dr. Theresa Flanigan

My research demonstrates how Michelangelo's design for the dome of St. Peter's Basilica (1564–1590) emulates Brunelleschi's dome of the Florence Cathedral (c.1296–1436) more than other domes proposed by St. Peter's previous architects. Evidence of earlier designs for St. Peter's dome can be found in the coin that pictures the original design of Bramante's dome (c.1506) and in the wooden model made by Antonio da Sangallo (c.1520). Using this visual evidence, I will prove that Michelangelo had no intention of using the previous architects' dome designs, but instead looked to Brunelleschi's dome of the Florence Cathedral.

## **Mistrust In The Use of Force**

Anthony Sanabria – Criminal Justice

Faculty Supervisor: Dr. Christina Lane

In the media today, police interactions within inner city neighborhoods have predominantly been reported as volatile and concluding with the use of excessive force. Further it has been found that the majority of these encounters are with minorities. Besides the commonality of minorities being victimized, what other elements contribute to the use of excessive force by police? Based on current research, it is proposed that the commonalities of age, race, prior convictions, environment and subculture lead to the use of excessive force by police officers who in turn heighten the mistrust in inner city neighborhoods.

## **23 Enigma**

Sophia Santiago – Mathematics

Faculty Supervisor: Dr. Mary Ann McLoughlin

This research involves the human tendency to link certain dates and events together in order to prove an enigma occurs. Such superstitious views are developed when people gather random data together and find connections between each set of data. The 23 enigma began with the story of Captain Clark told by William S. Burroughs. Such events had been witnessed by Burroughs which led to his creation of the 23 Enigma. Furthermore, this phenomenon continues to appear in books, short stories, and movies. Using other connections and data, we can discover more about the 23 enigma and how deep it really goes.

## **Domestic Violence**

Taylor Snyder – Criminal Justice

Faculty Supervisor: Dr. Christina Lane

Domestic Violence against women is an issue reaching every boundary of socio-economic, cultural, racial, and class status. It is difficult for women to leave an abusive relationship because it is a time where they are at a high risk of being killed. Some women find that killing their abuser is the only way to get away from the danger. This study proposes that women who will kill their abuser do not have a strong support system, have low self-esteem, have children, and are financially dependent on their abuser. Content analysis will be used for research on heterosexual relationships where the male is the abuser and the female is the abused. Content analysis will be used on publicly available case studies, YouTube videos, books, and documentaries.

## **Social Networking Sites and Postmortem Rituals: Using Facebook to Help with Coping and Death Anxiety**

Jessica Steinbach – Psychology  
Faculty Supervisor: Dr. Sara Powers

The current study aimed to discover the relationship between Facebook usage as a means of coping with the death of a loved one and how, if at all, this coping method impacts death anxiety. Participants were both acquaintances of the researchers, as well as students enrolled in psychology courses ( $M_{age} = 27.44$ ;  $SD_{age} = 11.78$ ). Participants indicated that using Facebook to cope helped them reevaluate their life's priorities. Results also showed evidence suggesting that as individuals use Facebook to cope with the death of a loved one, their fear of death and dying increases for both the death of another person or their own personal death and dying.

## **Assessment of the Antimicrobial Activities of Natural Parts and Commercial Products of *Moringa oliefera***

Zain-ul Sulehri – Biochemistry  
Faculty Supervisor: Dr. Ann Zeeh

*Moringa oliefera* is a native plant of several African and south Asian countries. The plant has demonstrated medicinal and pharmaceutical properties. This study examined the antimicrobial activities of different parts of the *Moringa oliefera* plant (leaves, seeds, petioles) as well as commercial products made from the plant (capsule supplements, and tea bags). A soxhlet apparatus was used for the extraction method, and the extracts were further concentrated in a rotary evaporator. The Kirby Bauer disk assay was performed to screen for antimicrobial properties. The results of this study suggest that some forms of *Moringa oliefera* show antimicrobial activity.

## **Physician-Assisted Suicide**

Dara Tanzman – Forensic Psychology

Faculty Supervisor: Christina Lane

My hypothesis is why people chose to undergo physician-assisted suicide in the states that have legalized it; Washington and Oregon. My variables are physician-assisted suicide, the act of ending your life via lethal doses of prescription drugs, the people who are undergoing PAS such as people with cancer, terminal illnesses, or prognoses from these diagnoses of six months or less, and whether or not they went through with the PAS. Physician-assisted suicide has ended around 2,000 lives in Oregon and Washington. The databases that I have used for my statistical data came from Oregon and Washington's health report sites.

## **Michelangelo's Use of Body to Express Vice in *The Last Judgment***

Josh Terry – Art

Faculty Supervisor: Dr. Theresa Flanigan

In 1536, Michelangelo was commissioned by Pope Clement VII to paint the altar wall of the Sistine Chapel. Finished under Pope Paul III in 1541, the *Last Judgment* now stands from floor to ceiling in the Chapel. Using the methodical and fast paced process of fresco, Michelangelo stood on scaffolding to paint this 539.3 inch by 472.4 inch masterpiece. In this poster I will demonstrate how Michelangelo used pose, gesture, and facial expression to express vice through the painted human body. Looking closely, we can identify the seven deadly sins portrayed through the body in the lower right end of the piece.

## **The Effects of Various Sweeteners and Insulin on the Growth of Gut Microbe *Escherichia coli***

Morgan Thorne – Medical Technology  
Faculty Supervisor: Dr. Kari L. Murad

Type One Diabetes is an autoimmune disease that targets beta cells in the pancreas. This results in the inability to produce the hormone insulin, which is responsible for delivering glucose to the cells to create energy. In order to reduce the glucose burden, foods with non-caloric artificial sweeteners (NAS) are frequently recommended. Recent studies have indicated that the consumption of NAS cause significant changes to gut microbiology. Through the use of spectrophotometry, serial dilutions, and standard plate counts the growth of *Escherichia coli*, a common gut microbe, was studied in the absence or presence of glucose, NAS, and insulin. The effect these sweeteners had on the growth rate of *Escherichia coli* varied. These results, while *in vitro*, suggest that growth rates of these bacteria may also differ *in vivo*.

## **Bromance: Male Friendships in Comedy Film**

Anne Vaeth – Communications  
Faculty Supervisor: Dr. Karen McGrath

Male homosocial friendships, commonly referred to as “bromances,” have been portrayed in the media for a long time. While Bromances in media show the positive effects of male friendship, there are many negative effects, including homophobia, misogyny, and sexism. This inquiry examined various academic articles in order to synthesize the information and understand how these effects are related to Bromances and how the media are portraying them. The scholarly articles analyzed focused around male-male social friendships within comedy films including *I Love You Man* (2009) and *The Hangover* (2009).

## **How Costa Rican Locals View Tourists and Tourism**

Amanda M. Varno – World Languages and Cultures

Faculty Supervisor: Dr. Silvia Mejía

Tourism is the source of many different changes in a concentrated area, some detrimental and others beneficial. Ecotourism is a form of volunteerism that emerged in the in the late 80s/early 90s. Costa Rica has been the front runner of the ecotourism movement and a majority of the country's economy depends on the revenue of such tourism. This research explores the mixed attitudes of the locals towards the tourists and tourism in general using interviews and scholarly articles as sources.

## **Wrongful Criminal Convictions in Illinois from 1977-2003**

Taylor White – Criminal Justice

Faculty Supervisor: Dr. Christina Lane

Wrongful convictions occur when an innocent defendant is found guilty in a criminal trial. This is a major epidemic in the United States and all around the world. The main focus of my research and the research that has been conducted is eyewitness misidentification. Current research conducted from the Innocence Project examines 25 cases of individuals from Illinois area that were exonerated years later after being misidentified as the perpetrator. Certain patterns and new themes were identified when studying the underlying causes of misidentification, and found that the wrongful convictions laid heavily on police procedure along with other variables.

## **Molecular Dynamics Investigation of Amino Acid Solvation in Sodium Chloride Solutions**

Kliment Ziko – Biochemistry  
Faculty Supervisor: Dr. Brad A. Bauer

Solvation of amino acids (alanine, glycine, and phenylalanine) in pure water and sodium chloride (NaCl) solutions was modeled under constant temperature and pressure conditions using CHARMM. Eleven concentrations of NaCl (0-3.5 molal) were considered for each amino acid. Radial distribution and integrated distribution functions were utilized to assess how water molecules and ions are distributed around the C-terminus, N-terminus, and center of mass of the amino acids. Increasing ion concentration resulted in a decreased number of water molecules within the first and second solvation shells. Future studies to examine the impact of salt concentration on solubility are proposed.

### **Recipient of a 2015 Undergraduate Research Grant**

### **Summer 2016 Undergraduate Research Grant Awardees**

**Maureen Elliott** - Investigating the Differences Between Novice and Experienced Teachers

**Katelyn Kasmier** - The Relationship between Job Demands, Job Resources, and Overall Health Satisfaction

**Rosie Lenz** - The Effects of Malnourishment

**Zackary Petker** - Students' Performance Affected by Anticipation Guides and School Setting

**Arika Prevost** - Study of Color & Configurations in Painting