

The Tenth Annual Fordham College at Rose Hill Undergraduate Research Symposium

April 26, 2017 | McGinley Center | Rose Hill Campus

Dear Attendees,

Welcome to the 10th Annual Fordham College at Rose Hill Undergraduate Research Symposium! Today we celebrate the accomplishments of 327 dynamic and talented undergraduate students and the generous and committed faculty who have mentored them in their research. The work of our students and faculty reflects a deep commitment to academic excellence and a desire to grow knowledge and share it with others.

Today we also celebrate the tenth year of the undergraduate research program in the college. Ten years ago, the dean's office began to support undergraduate research with a handful of grants for summer research. Now, with generous contributions from the donors listed below, this program has grown to support undergraduate research during the fall, spring and summer, with additional funds dedicated for students who are presenting their work at national and international conferences. Participation in the Undergraduate Research Symposium has also grown. At the first FCRH Undergraduate Research Symposium, 34 students presented posters describing their research in science and mathematics. We are proud that today's symposium features 40 oral presentations and 128 posters summarizing results of research projects from across the disciplines, including urban studies, music, history, anthropology, computer science, biology, and integrative neuroscience. In addition, the seventh volume of the student-run *Fordham Undergraduate Research Journal*, showcasing the research accomplishments of Fordham students, will be released today – we invite you to pick up a copy or read it online.

We are grateful to all who contributed to the success of this event: presenters, co-authors, faculty mentors, as well as faculty and staff, friends, family, alumni, and guests. We encourage you to attend the conference sessions, view the posters, and ask these outstanding young scholars questions about their work.

Finally, we would like to extend a special thanks to the following persons and groups for their exceptional generosity of time and immeasurable contributions to this day: the staff members and student workers of the FCRH Dean's Office; the FCRH Undergraduate Research Grant Reviewers; Logan West of Fordham's Office of Marketing and Communications; and Carol McNamara of Students Affairs.

Dr. Maura B. Mast
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Fordham College at Rose Hill

Dr. Rachel Annunziato
Associate Dean for Strategic Initiatives
Fordham College at Rose Hill

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Undergraduate Research Symposium**
April 26, 2017 | McGinley Center | Rose Hill Campus

Schedule of Events

- 11:00am **Registration Opens for Symposium Participants**
- 12pm-3pm **Oral Presentations**
Lunch Served in Conference Rooms
- 3:00pm **Celebratory Remarks**
Maura Mast, Ph.D.
Dean, Fordham College at Rose Hill
- Rev. Joseph M. McShane, S.J.
President, Fordham University
- Dennis J. Drasco, Esq., FCRH '70
Supporter of Undergraduate Research
- 3:15pm **Presentation of Fordham Undergraduate
Research Faculty Mentor Awards**
Rachel Annunziato, Ph.D.
*Associate Dean for Strategic Initiatives
Fordham College at Rose Hill*
- 3:30pm-5pm **Poster Presentations**
McGinley Ballroom and McGinley Lounge

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Oral Presentation Session Summary

Time	McGinley 234	McGinley 235	McGinley 236	McGinley 237
12-1	Environmental & Urban Studies	From Past to Present: Key Findings on Gender & Racial Identity	The Sound of Music	Cancer Research at FCRH
1-2	Historical Discovery	<i>Breaking Bad:</i> Chemistry in Action	Controversial Topics in Undergraduate Life	American Pluralism
2-3	Applications of Big Data	Latin American and Latino Studies	Contemporary Issues in Political Science	Interdisciplinary Perspectives on Distress

**ORAL PRESENTATIONS:
NOON-1PM**

**Environmental and Urban Studies
McGinley 234 12-1pm**

- Oral-1: Planting Seeds for the Future: Urban Environmental Education in the Bronx, *Ariana Cipriani*
- Oral-14: The Ecosystem Services of Urban Greenways and their Neighborhood Benefits, *Bryan Kiel*
- Oral-19: Economic and Demographic Impacts of Refugee Resettlement on Upstate New York Cities with Declining Populations, *Chiara Moslow*
- Oral-26: A Good Kiwi Isn't Acidic: How Ocean Acidification Is Affecting the New Zealand Economy, *Lily Hurley*
-

**From Past to Present: Key Findings on Gender & Racial Identity
McGinley 235 12-1pm**

- Oral-3: In My Next Life, Do Not Let Me Come Back a Daughter: Sexual Propriety, Colonialism, and Nationalism in *Umrao Jan Ada* and her Reincarnations, *Monica Sobrin*
- Oral-38: Political Efficacy Among African-American Women, *Niara Walden*
- Oral-39: Social Media and Adolescent Perceptions of Racial Identity, *Tiffany McKay*
-

**The Sound of Music
McGinley 236 12-1pm**

- Oral-7: "Of the Secret Interpretation of Numbers": How Social Class Determines the Epistemology and Ontology of Musical Secrets, *Melani Shahin*
- Oral-8: Playing Into Time: Dasein as the Ecstatic Musician, *Melani Shahin*
- Oral-11: Project Muse: The Pandora of Emotions, *Nicholas DiBari*
-

**ORAL PRESENTATIONS:
NOON-1PM**

Cancer Research at FCRH
McGinley 237 12-1pm

- Oral-9: Structural Studies of Mutant Adenoviral E4ORF1 and Angiogenic Implications, *Carolyn Allain*
- Oral-29: Spatially Resolved Raman Spectroscopy of Head and Neck Squamous Cell Carcinoma, *Bernadette Haig*
- Oral-33: Are There Ethnic Differences in Psychological Distress in Cancer Patients?, *Cassandra Jensen*
-

**ORAL PRESENTATIONS:
1PM-2PM**

**Historical Discovery
McGinley 234 1-2pm**

- Oral-5: The Maciste Films of Italian Silent Cinema, *Cristina Iannarino*
- Oral-12: Ideological Warfare: Kennedy, Nixon, and Divergent Strategies for Combatting Communism, 1946-1947, *Melanie Sheehan*
- Oral-15: Exploding Mines: The Rank-and-File, the Left, and the Success of Vietnam-Era Militancy in the United Mineworkers of America, *Melanie Sheehan*
- Oral-32: Geochemical Analysis at Cottonwood Creek Village in Southcentral Alaska, *Kelly Walsh*
-

**Breaking Bad: Chemistry in Action
McGinley 235 1-2pm**

- Oral-22: Development of Self-Assembled Nanoconstructs from Purine and Pyrimidine Derivatives for Use as Antioxidants and Biosensors, *Sarah Lundell*
- Oral-27: Incorporation of Metal Oxide Coated Transition Metal Nanowires into Dye-Sensitized Photoelectrochemical Cells, *Josephine Jacob-Dolan*
- Oral-30: Fabrication of Core-Shell Platinum Coated Nickel Nanowires as Electrochemical Catalysts for Glucose Sensors, *Ian Colliard*
- Oral-40: Using Novel Linear Block Copolymer, block-poly(lactide)-block-poly(caprolactone)-block-poly(lactide), to Remove Organic Pollutants from Water, *Katrina Bernhardt*
-

**Controversial Topics in Undergraduate Life
McGinley 236 1-2pm**

- Oral-13: Transition Into the Real World: College Students' Future Worries and Implications for Mental Health, *Margaret Senft*
- Oral-17: Sources of Political Knowledge among Undergraduate Students, *Catherine Oliver*
- Oral-36: Undergraduate Medical Voluntourism: Uniting Ethical Dilemmas and Inefficient Cultural Immersion, *Leah Ibrahim Puri*
-

**ORAL PRESENTATIONS:
1PM-2PM**

**American Pluralism
McGinley 237 1-2pm**

- Oral-16: Controversies in Sharia: Analyzing Muslim and Non-Muslim American Attitudes, *Naira Hassan*
- Oral-21: Shifting Identities: Middle-Eastern Gay Muslims in New York City, *Julius Bowditch*
- Oral-24: Gender in the Public Bathroom Context, *Cameron Rockelein*
-

**ORAL PRESENTATIONS:
2PM-3PM**

**Applications of Big Data
McGinley 234 2-3pm**

- Oral-4: Using Unsupervised Learning Techniques to Highlight Midlevel Representations in Convolutional Neural Networks, *Shane Hyde*
- Oral-23: Data Visualization: Global Migration, *Nina Heyden*
- Oral-25: Unequal Opportunities: Measuring and Predicting Social Mobility, *Connor Redpath*
- Oral-28: Causes of Legislative Gridlock in the United States: The Cases of the 104th and 113th Congress, *Jamie Hashem*
-

**Latin American and Latino Studies
McGinley 235 2-3pm**

- Oral-20: The Phenomenon of Populism in Argentina and the United States, *Zachary Erickson*
- Oral-31: Fair Trade in Guatemala and Brazil: Banana and Coffee Industries, *Kathryn M. Madigan*
- Oral-37: The Impact of the Trans-Pacific Partnership Trade Deal on Emerging Markets: Mexico, Chile, and Peru, *Paul Ingrassia*
-

**Contemporary Issues in Political Science
McGinley 236 2-3pm**

- Oral-10: Should the European Union Become a Federal Union?, *Oana Carla Oaida*
- Oral-34: Adjusting Strategy in Africa: U.S. Policy Toward Africa in the "War on Terror" Era, *Elizabeth Wetzler*
- Oral-35: Drone Warfare without War: An Analysis of the United States' Restraint in Expanding its Drone Program to Counter Boko Haram, *Elizabeth Wetzler*
-

**ORAL PRESENTATIONS:
2PM-3PM**

Interdisciplinary Perspectives on Distress
McGinley 237 2-3pm

- Oral-2: Testing the convergence of biological indices of chronic stress: hair and diurnal cortisol, *Michael Tynes*
- Oral-6: Understanding the Presence of Combat-Related Post-Traumatic Stress Disorder in Kurt Vonnegut's Slaughterhouse Five, *Connor Smith*
- Oral-18: The effect of estrous cycle on anxiety-like behavior, *Devin Rocks*
-

Oral-1

Planting Seeds for the Future: Urban Environmental Education in the Bronx

Ariana Cipriani, Urban Studies and Environmental Studies, Fordham College at Rose Hill & Mark Naison*, African and African American Studies, Fordham College at Rose Hill

My thesis explores the impacts of urban environmental education programs in the Bronx on college and career readiness, health and food justice, and community development. By partnering with key organizations in the borough at schools, after school programs, and detention centers, I provide an in depth look at how these programs are implemented and supported, and how they affect participants and their communities. My research will serve as a model for how urban environmental education can be used as a tool for neighborhood development and community empowerment by showcasing the tools, lessons, and experiences had by educators, students, and families in the Bronx.

Oral-2

Testing the convergence of biological indices of chronic stress: hair and diurnal cortisol

Michael Tynes, Psychology, Fordham College at Rose Hill & Lindsay Hoyt*, Psychology, Fordham College at Rose Hill

Chronic stress has been associated with adverse health outcomes including increased cardiac and cancer mortality. Researchers have utilized two measures of HPA axis activity in chronic stress research: hair cortisol content (HCC), which measures overall cortisol output over a period of months, and diurnal cortisol, which measures regular daily cortisol fluctuations (often measured in saliva). Abnormalities in these diurnal rhythms, particularly increased cortisol awakening response and decreased diurnal slope, have been associated with long-term stress exposure (reviewed in Hoyt et al., 2016), and generally speaking, increased HCC is associated with increased chronic stress exposure (reviewed in Staufenbiel et al., 2013). While abnormal levels of both measures are associated with chronic stress, these measures index distinct facets of the HPA, leading to difficulties in directly comparing research using only one of these methodologies. This study is the first to test the relationship between these measures in a relatively large sample (n = 143; average n of previous studies = 26). Participants were undergraduates at a medium-sized urban research university. Three daily saliva samples were collected across 5 consecutive days, and hair samples were taken. Saliva samples have been analyzed and hair analyses are nearing completion. Hypotheses include a positive relationship between HCC and cortisol awakening response, and a negative relationship between HCC and diurnal slope.

Oral-3

In My Next Life, Do Not Let Me Come Back a Daughter: Sexual Propriety, Colonialism, and Nationalism in *Umrao Jan Ada* and her Reincarnations

Monica Sobrin, Women, Gender, and Sexuality Studies, Fordham College at Rose Hill & Dubra Mitra*, History, Fordham College at Rose Hill

Prior to British colonialism in the nineteenth century, courtesan culture and Urdu arts made Lucknow the center of high culture in India during Mughal rule. Though the court patronized several communities of female hereditary performers – each with distinct repertoires, roles, and social ranking – the elite community of tawaifs, or courtesans, enjoyed particular prominence by not only entertaining, but also educating aristocratic men in manners and social etiquette. With the onset of British colonialism, India saw the decline of Mughal traditions and courtesan culture. While Mughal lords valued courtesans as a cultural and political asset, the British stripped the women of their aristocratic power and saw them as mere prostitutes. The Anti-Nautch Movement of the late nineteenth century painted courtesans as the symbol for all vice in India, and by the twentieth century, the tawaif represented the decline of Mughal courtly culture and aristocratic tradition. In this context, Urdu poet Mirza Hadi Ruswa published *Umrao Jan Ada*, a novel exploring the life of tawaif Umrao Jan during the mid-1800s. Umrao's legacy continues beyond colonialism and the Independence movement; her tale is revived a Bollywood film first in 1981, then again

in 2006. This paper situates Umrao Jan Ada in the Anti-Nautch and infant Independence Movements as a work of nationalist literature, then examines its legacy as carried out in its cinematic representations. Though a legend harkening to the high culture of the 1800s, Umrao's – and the tawaif's – legend demonstrates telling aspects of Indian culture today.

Oral-4

Using Unsupervised Learning Techniques to Highlight Mid-Level Representations in Convolutional Neural Networks

Shane Hyde, Integrative Neuroscience, Fordham College at Rose Hill & Daniel Leeds*, Computer and Information Science, Fordham College at Rose Hill

Despite immense study of the human visual system, the representation of intermediate features in the visual stream is not yet fully understood. Computational models however have proven to be quite effective in modeling human vision (Yamins 2014) and have performed with great accuracy on image classification tasks (Krishevsky, 2012). This study utilizes an unsupervised clustering technique to model the behavior of a convolutional network in its intermediate layers, applied to visual object and visual scene data sets. Image patches fed into the CNN are grouped based on the corresponding responses of intermediate model units in the neural network. Groupings of image patches reflected semantic and visual similarity across the dataset. The representation of these similar features was compared across datasets, using proximity in hyperspace as a pairwise comparison. These findings can elucidate the computational expression of mid-level visual information within the neural network, which could direct newly refined models of the human visual system.

Oral-5

The Maciste Films of Italian Silent Cinema

Cristina Iannarino, History and Italian Studies, Fordham College at Rose Hill & Jacqueline Reich*, Communications & Media Studies, Fordham College at Rose Hill

In 1998, the late Umberto Eco (1932-2016) gave a series of lectures on the art of translation at the University of Toronto. Perhaps best known for his international bestseller, *The Name of the Rose*, the Italian medievalist, novelist, and semiotician later expanded his lectures into a volume of essays titled *Experiences in Translation*. Eco argues that an effective translation is rooted in connotation rather than denotation; it can and must express the true sense of a text even when it violates both lexical and referential faithfulness. Eco's interpretive exercises were applied to translate Dr. Jacqueline Reich's publication with Indiana University Press, *The Maciste Films of Italian Silent Cinema* (2015) from English to Italian alongside Dr. Fabio Pezzetti Tonion from the Museo Nazionale del Cinema in Turin. This research addresses how to preserve the integrity of Dr. Reich's originality and expression as a scholar, as well as that of the original Italian archival material to present Maciste to an audience and culture well-acquainted with him. Dr. Reich's celebrated contribution to film scholarship examines the incarnations of the beloved "Maciste" character portrayed by Italy's silent film star Bartolomeo Pagano during World War I and after. The racial, class, and national transformations Pagano's character underwent, from his first appearance as an African slave in *Cabiria* (1914) to his final appearance as a noble Alpine guide in *Il gigante delle Dolomiti* (1926), illustrate the nuances within the national discourses between identity and stardom. Dr. Reich's research presents the Herculean figure as the epitome of heroic masculinity and the ideal Italian citizen—the powerful image that Benito Mussolini appropriated for his political persona and regime.

Oral-6

Understanding the Presence of Combat Related Posttraumatic Stress Disorder in Kurt Vonnegut's Slaughterhouse Five

Connor Smith, English, Fordham College at Rose Hill & Corey McEleney*, English, Fordham College at Rose Hill

This research project seeks to understand the presence of Combat Related Posttraumatic Stress Disorder (PTSD) in historical fiction, specifically Kurt Vonnegut's *Slaughterhouse Five* in which the main character, Billy Pilgrim, survives the bombings of Dresden during World War II. The novel recounts his time in combat as well as at home, both crucial environments for understanding the presence of PTSD in this reading. Innately, this research must also address the progression of the clinical diagnosis of PTSD which has changed substantially throughout time. Initially, it was disguised behind less precise terms – nostalgia, shell shock, and combat exhaustion, but in 1980, the explicit term, Posttraumatic Stress Disorder, was included in the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM) (Friedman). This was an incredibly important step in acknowledging and developing treatment for the unfortunately all too common occurrence of Combat Related PTSD in veterans. The clinical diagnosis of PTSD has developed more precisely through the several ensuing editions of DSM culminating in the most recent, fifth edition which provides the most accurate symptoms and treatments for PTSD thus far (Friedman). This research included an in-depth analysis of the novel as a whole, but it focused on the main character's interactions with several external characters. My presentation will address both the progression of the clinical diagnosis of Combat Related PTSD in the relevant editions of DSM and its presence in *Slaughterhouse Five* through several illustrating scenes of dialogue and narrative.

Oral-7

“Of the Secret Interpretation of Numbers”: How Social Class Determines the Epistemology and Ontology of Musical Secrets

Melani Shahin, Music and Philosophy, Fordham College at Rose Hill & Eric Bianchi*, Music, Fordham College at Rose Hill

Although Andreas Werckmeister (1645-1706) was a small-town organist, he contemplated big musical secrets. But Werckmeister's study of secret musical knowledge as an occult phenomenon categorically differed from the rationalist inquiries of his contemporaries. In the *Musicalische-Paradoxal Discourse* (1707), Werckmeister used numerical analyses of music to help musicians interpret, and ultimately “harmonize” their relationship with God – the originator of all harmony. His numerological analyses of music, however, were not mathematical in the contemporary sense, but rather were determined through qualitative theological and biblical descriptions of numbers. Werckmeister's approach thus differed radically from the “enlightened” method of the early-modern scientist, which favored rational, quantitative experiments to understand the secrets embedded in music and number. Why did Werckmeister favor theological interpretation instead of quantitative experimentation? Were numbers merely analogies to describe musical secrets for Werckmeister – or did the being of the number actually contain such secrets? And why did Werckmeister share his secret musical knowledge publicly, while the early-modern scientists kept their discoveries secret? Class differences, I argue, determined these distinct epistemological and ontological conceptions of secret musical knowledge and numbers. For organists and scientists, music had different professional and social meanings, which could only be negotiated through categorically distinct philosophical frameworks.

Oral-8

Playing Into Time: Dasein as the Ecstatic Musician

Melani Shahin, Music and Philosophy, Fordham College at Rose Hill & Crina Gschwandtner*, Philosophy, Fordham College at Rose Hill

I argue that playing orchestral music can give us a corporeal account of Heideggerian ecstatic temporality. In Part II of *Being and Time*, Heidegger challenges the everyday conception of time as linear and present. Instead, he demonstrates how Dasein's Being is at once past, present, and future. Although Heidegger claims that Dasein has an ecstatic relationship with time -- that is, Dasein stands out into time – he does not explicitly consider how Dasein's body stands out into time. Dasein's playing of orchestral music, however, mirrors the ecstatic interaction of Dasein's care structures (understanding, affectivity, fallenness, and discourse). Therefore, I demonstrate how Dasein, through her understanding of the musical work's larger context, physically projects each note she plays in the present moment toward future possibilities contained within the phrase (or piece). Two other major issues are considered: first, Dasein's relationship to her instrument as a manifestation of Being-in-the-World; second, how playing music

reveals rather than covers over ecstatic temporality in historical entities. Overall, this presentation clarifies and extends Heidegger's notion of ecstatic temporality by explicitly considering how the body also stands out into time.

Oral-9

Structural Studies of Mutant Adenoviral E4ORF1 and Angiogenic Implications

Carolyn Allain, Chemistry, Fordham College at Rose Hill & Paul Smith*, Chemistry, Fordham College at Rose Hill

In order for tumors to survive in the body, they must have a source of nutrients to maintain cellular function. To achieve this goal, tumors develop dedicated blood vessels to scavenge nutrients in a process known as angiogenesis. Angiogenesis has been identified as a potential therapy target for cancer formation, but studies of this process have proven difficult. Primary endothelial cells utilized in angiogenic studies have very short lifespans and often do not exhibit angiogenesis as needed. Incorporation of the adenoviral gene E4ORF1 into primary endothelial cells has shown increased cell longevity in addition to stimulation of budding in cells, indicative of angiogenic behavior. The mechanism by which the E4ORF1 gene product carries out these effects has not been well-characterized and structural studies of this protein indicates a role during Akt phosphorylation and cell replication. The wild type crystal structure of E4ORF1 indicates a homotrimer of three species bound together; however, studies of mutant forms of E4ORF1 challenge this discovery, as single amino acid mutations instead exhibit a degradation of the trimer into separate E4ORF1 monomers. Computational modeling of the proteins seeks to further characterize potential functional differences between the wild type and mutant as well as cellular implications of these forms. In addition, interaction studies with partner species such as IQGAP and Dlg1 seek to elucidate the differences between trimeric and monomeric E4ORF1 and its mechanistic role during cell replication and angiogenesis.

Oral-10

Should the European Union become a federal union?

Oana Carla Oaida, International Political Economy, Fordham College at Rose Hill & Nicholas Tampio*, Political Science, Fordham College at Rose Hill

The last monetary crisis, the recent terrorist attacks in Paris, Cologne, Brussels and Nice, Great Britain voting to leave the union and Vladimir Putin's constant desire to build up power in the Eastern European block, may represent the beginning of the end for the European Union. Therefore, is the creation of a real federal union, with stronger European institutions and common fiscal and economic policies, the only solution for the survival of the European Union? In this essay, I will look at various contemporary supporters of Immanuel Kant and his concept of "cosmopolitanism" and contrast their ideas with those of the philosophers who side with Johann Gottfried von Herder, a firm believer in "nationalism". After analyzing the issue from both sides, I will side with Kant and his supporters in order to prove that forming a federal union is, indeed, the only way the European Union may continue to exist.

Oral-11

Project Muse: The Pandora of Emotions

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Many people believe that a particular song can have a certain emotional description, such as depicting a song as a "happy" song or a "sad" song. This project seeks to prove that not only do songs have an emotional identity, but that the act of listening to a particular song can make the listener resonate with that particular emotion conveyed through the song. By exposing users to songs that match a desired emotion (determined by numeric emotional classifiers

retrieved from the Spotify and Microsoft Text Analytics APIs) and surveying their responses after listening to the songs, we will generate data that can be mined for songs that users agree matches the emotion they were looking for. Using this information, we will build a website that uses a novel algorithm to generate songs to match a user's desired emotion not by numeric values, but by the opinions of people. This project will examine the impact of songs on a given user's emotions and explore how people understand emotions through music.

Oral-12

Ideological Warfare: Kennedy, Nixon, and Divergent Strategies for Combatting Communism, 1946-1947

Melanie Sheehan, History and American Studies, Fordham College at Rose Hill & Christopher Dietrich*, History, Fordham College at Rose Hill

In 1946, a new era dawned in American history, as relations with the Soviet Union deteriorated and both John F. Kennedy and Richard Nixon began their political careers, each winning elections to the House of Representatives. This paper will examine the rhetoric and policy positions taken by Kennedy and Nixon regarding the Taft-Hartley Act's labor restrictions and legislation regarding foreign aid. Studying these two issues together allows for a clearer understanding of how domestic and foreign policymaking reinforced each other. Further, a focus on Kennedy and Nixon points to key distinctions within the anticommunist coalition, which would become increasingly critical in the coming decades. This paper argues that a symbiotic relationship between the personal experiences of Kennedy and Nixon and local conditions in their respective districts gave rise to two distinct anticommunist philosophies. On the one hand, the confluence of an elite New Deal tradition, the Truman administration's foreign policy aims, and concerns of immigrant and labor constituencies gave rise to Kennedy's understanding of communism as an unsavory byproduct of gross disparities in wealth. He thus suggested that the United States could defeat communism by addressing poverty at home and abroad, to offer all people a stake in the capitalist system. On the other hand, concerns about a radical labor movement combined with Nixon's experiences in Europe and revelations of Soviet spying in the United States to fuel a populist conservatism focused on suppressing covert Soviet action, which Nixon considered the main factor responsible for communism's spread.

Oral-13

Transition into the "real world": College students' future worries and implications for mental health

Margaret Senft, Psychology, Fordham College at Rose Hill & Lindsay Hoyt*, Psychology, Fordham College at Rose Hill

There is a lot of attention focused on youths' emotional experiences across the transition into college, but much less is known about young adults' feelings related to the transition out of college, and the implications for mental health. The purpose of this study was to examine the unique social, economic, and psychological stressors related to life after college. A "future worry stress" questionnaire was developed to analyze how positive or negative feelings about the future are related to students' year in college (i.e., freshmen-seniors) and mental health, (i.e., depressive symptoms, anxiety, and self-esteem). It was predicted that the uncertainty, increased responsibility, and demands on self-direction that college students face would predict poor mental health. The sample included survey data from 286 students from two universities (56 freshmen, 67 sophomores, 73 juniors, and 91 seniors). Preliminary results at the first time point suggest positive correlations between the future-worry stress measures with poor mental health. Additional analyses will examine longitudinal associations between future-worry and mental health three months later. Implications for how colleges can address these issues are discussed in order to provide resources to help ease the transition of college seniors.

Oral-14

The Ecosystem Services of Urban Greenways and their Neighborhood Benefits

Bryan Kiel, Environmental Studies, Fordham College at Rose Hill & John Van Buren*, Environmental Studies, Fordham College at Rose Hill

This senior thesis consists primarily of an ethnography of successful American greenways, highlighting the greenways' general ecosystem services, including their provisioning, regulating, and supporting ecological services. A greenway is defined as an urban trailway with some sort of inherent, defined, or named utility beyond recreation. I first detail the environmental and urban histories of greenways in America, and then discuss the ecological, economic and social benefits the greenways provide. Four case study cities and five other supplementary cities were visited, and various methods of research were conducted in person, including on-trail assessment, interviews, and a survey on usage. Using this primary, as well as secondary, data, I defend a little-researched hypothesis of the greenway as a tool for neighborhood cohesion. Finally, I add an "upshot" section about greenways in New York City, and the potential lessons from the successes of greenways in other North American cities.

Oral-15

Exploding Mines: The Rank-and-File, the Left, and the Success of Vietnam-Era Militancy in the United Mineworkers of America

Melanie Sheehan, History and American Studies, Fordham College at Rose Hill & Michelle McGee*,
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While much of the history of the Vietnam era focuses on the divide between working-class and elite Democrats, this paper presents a glimpse into a moment of solidarity among these groups. To do this, it shifts attention from the streets of New York to the mountains of Appalachia, where rank-and-file miners terming themselves the Miners for Democracy (MFD) joined forces with liberal reformers between 1969 and 1972 to replace corrupt United Mineworkers of America (UMWA) president Tony Boyle. In the first union election monitored by the federal government under the Landrum-Griffin Act, rank-and-file leaders Arnold Miller, Mike Trbovitch, and Harry Patrick won the support of working miners by emphasizing health and safety concerns and vowing to restore authority to the miners themselves. Meanwhile, wealthy crusaders from outside of Appalachia advocated on the reform slate's behalf because, in the context of the Vietnam era, they regarded the UMWA and other long-standing unions as part of a corrupted Establishment that suppressed civil liberties. They sought to inspire a broader movement against what they considered a system of interrelated government, business, and labor institutions that failed to represent Americans' interests. This paper suggests that the movement's success depended on the efforts of both miners and elite liberal outsiders, as each group contributed to the movement in ways that the other could not. While the alliance between the non-miners and the MFD was by no means without controversy, it nevertheless demonstrated the potential for unified efforts within the Left during the Vietnam era.

Oral-16

Controversies in Sharia: Analyzing Muslim and Non-Muslim American Attitudes

Naira Hassan, General Science and Sociology, Fordham College at Rose Hill & Evelyn Bush*, Sociology,
Fordham College at Rose Hill

The main objective of this honors thesis in sociology was to analyze the thoughts and attitudes of Muslim and non-Muslim Americans towards Sharia law. This was done in an effort to understand whether there is indeed support for Sharia law in America or if this is perhaps a misconception. The primary research consisted of fifty in-person interviews. These interviews were conducted at Fordham University and the Pelham Parkway neighborhood in the Bronx. Participants were selected through convenience and snowball sampling. The participants interviewed were diverse in regards to age, gender, ethnicity and faith. SPSS software was used to find correlations between responses. Additionally, the essential teachings of Sharia law were researched so that there could be a basis of comparison between American perception of Sharia and what it actually consists of. The topics of Islamophobia, terrorism and media influence were also addressed in the thesis in regards to participant responses.

Oral-17

Sources of Political Knowledge among Undergraduate Students

Catherine Oliver, Political Science, Fordham College at Rose Hill & Olena Nikolayenko*, Political Science, Fordham College at Rose Hill

Political knowledge is vital to political engagement, which in turn influences the quality of governance. This study examines the impact of social media, traditional news media, and civic education on the level of political knowledge among Fordham University's undergraduate students. This project explores whether increased exposure to political information through social media, news networks, and civic education increases the level of political knowledge. The data comes from in-depth interviews with twelve students. The respondents answered a series of open-ended questions and took a political knowledge quiz designed by the Pew Research Center. One of the main findings that emerge from this study is that if the social media content viewed is political, the level of political knowledge increases. The results indicate the amount of time spent on social media does not lead to an increase in political knowledge. The impact of traditional news media is found to be ambiguous. Furthermore, the level of civic education does not greatly boost the level of students' political knowledge. This study seeks to contribute to existing literature on determinants of political knowledge. These findings also have policy implications and can inform the development of a more effective curriculum to advance the level of political knowledge among university students.

Oral-18

The effect of estrous cycle on anxiety-like behavior

Devin Rocks, Integrative Neuroscience, Fordham College at Rose Hill, Ivana Jaric*, Biological Sciences, Fordham College at Rose Hill, & Marija Kundakovic*, Biological Sciences, Fordham College at Rose Hill

Although it is well documented that women have higher prevalence rates of anxiety disorders than men, an underlying mechanism for this phenomenon has not been established. We hypothesized that hormone fluctuation during the menstrual cycle contributes to the sensitivity of the female brain to stress and could provide an explanation for the higher prevalence of mood disorders in women during reproductive age. Given that female mice have similar hormonal fluctuation patterns as women, we used a mouse model to determine whether fluctuating estrogen levels are related to anxiety-like behavior. We performed behavioral tests during the diestrus (low estrogen levels) and proestrus (high estrogen levels) stages of the estrous cycle. Males were used as a control group due to natural lack of hormone fluctuation. The stage of estrous cycle in mice was determined by the vaginal cell cytology identification method. Anxiety-like behavior was tested using the Elevated Plus Maze paradigm. Our results show that low estrogen levels during the diestrus stage are associated with an increase in anxiety-like behavior, evident in the amount of time spent in the closed arms as opposed to the open arms of the maze. In contrast, high estrogen levels during the proestrus stage are correlated with an increased preference for the open arms which is representative of low anxiety-like behavior. The results confirmed our starting hypothesis, and the study is currently seeking to establish a link between changes in brain gene expression and levels of anxiety-like behavior to provide a molecular mechanism underlying this behavioral phenotype.

Oral-19

Economic and Demographic Impacts of Refugee Resettlement on Upstate New York Cities with Declining Populations

Chiara Moslow, International Political Economy, Fordham College at Rose Hill & Darryl McLeod*, Economics, Fordham College at Rose Hill

As world refugee migrations reach a historical peak, the issue of refugee flows has come to the forefront of political and economic debates. Recent popular discourse often emphasizes the negative, claiming that resettlement is an economic drain on United States communities, as well as a national security risk. However, several upstate New York rust belt communities are welcoming refugees with open arms. This research considers how refugees may affect communities that are presently losing population and closing schools, hospitals and churches, as well as

struggling economically. Cities such as Utica, NY have utilized refugee resettlement as a repopulation and economic development strategy. This project focused on outcomes for Bosnian refugees in Utica, a group that has been in the US since the mid-1990s, and one that we can look to as an example of how further resettlement may affect Utica. In an analysis of census data, this project found that Bosnian refugees stood out in some indicators, while they lagged behind the general population in others. Additionally, as time went on, the indicators improved. My research suggests that while Bosnian refugees in Utica can be considered a “success story” in a sense, refugee resettlement is not a quick fix for a declining city. As scholarly writing has suggested, the payoff for refugee resettlement is long term, and results are slow to appear. This research both demonstrates the positive effects that refugee resettlement can have on rust belt cities, while complicating local narratives that refugees will “save” the declining city.

Oral-20

The Phenomenon of Populism in the Argentina and the United States

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Fordham College at Rose Hill

A resurgence of populist-style government, centered on appeals to the will of the people and often drawing strength from the magnetic personality of a leader, is a striking feature of contemporary politics in liberal democracies. The proliferation of right-wing populism in Western Europe and the electoral victory of Donald Trump in the 2016 U.S. presidential election illustrate this trend. Populism, however, is not a new phenomenon, and it has previously been prominent in world history. This study uses the cases of Argentina and the United States to explain the rise and fall of populism. Argentina has had rich experience of populist government associated with Peronism, a movement named after three-term President Juan Domingo Perón. Yet, as a result of the 2015 election of Mauricio Macri, a non-Peronist, as President of Argentina, Argentina is moving away from its populist legacy. In contrast, the 2016 election of Donald Trump as President seems to be signaling a shift towards populism in the United States. To explain these divergent political outcomes, this study considers such factors as demographic disunity, economic crisis, and the presence of a charismatic leader. The analysis demonstrates that the United States is more demographically diverse than Argentina and that it has witnessed the rise of a charismatic leader, but that Argentina has recently suffered greater economic crisis than the United States. Further research is necessary to understand causes of populism in comparative perspective.

Oral-21

Shifting Identities: Middle-Eastern Gay Muslims in New York City

Julius Bowditch, Anthropology and Middle Eastern Studies, Fordham College at Rose Hill & Oswaldo Benavides*,
Anthropology, Fordham College at Rose Hill

When I began this study in May 2016, I was curious about how the identities of Middle-Eastern gay Muslims change as they face different forms of oppression. Growing up in Cairo, Egypt, I witnessed acts of aggression that we rarely see openly in the West. I came to understand some of the fundamental challenges facing the Middle-Eastern gay community, at home in the Middle East. When I moved to New York City, I found other problematic prejudice. I witnessed Islamophobia and Arabophobia first hand. To focus my study of Middle-Eastern gay Muslims, I decided that limiting the study to New York City would provide me with insight into how these aforementioned forms of oppression influence the identities of this population. My research relied on background research coupled with a series of interviews I conducted. To make people comfortable sharing personal information with me, I conducted the interviews in the form of discussion so that the interviewees could express what they considered to be important about their respective identities’ in a pressure-free environment. I was able to isolate three relatively distinct identity shifts in the population that I studied, which I will present at the symposium. To make the study as inclusive as possible, I interviewed a diverse group of people. This group included individuals from varying age groups hailing from Egypt, Jordan, Lebanon, Morocco, and Syria. I used this research to complete my honors thesis for Anthropology, which I submitted in the 2016 Fall semester.

Oral-22

Development of Self-Assembled Nanoconstructs from Purine and Pyrimidine Derivatives for Use as Antioxidants and Biosensors

Sarah Lundell, Chemistry and Philosophy, Fordham College at Rose Hill, Alexandra Brown, Biological Sciences, Fordham College at Rose Hill, & Ipsita Banerjee*, Chemistry, Fordham College at Rose Hill

Pyrimidine and purine derivatives were conjugated with functionalized cinnamic acid, a natural antioxidant in order to prepare nanoscale biosensors and antioxidants. It was found that the growth and molecular self-assembly of the nanoconjugates was dependent upon pH. The nanoscale assemblies were then characterized via various spectroscopic and electron microscopy methods. The purine-based assemblies' binding interactions with DNA were examined due to the purine derivative's known ability to intercalate with DNA. The assemblies exhibited high binding efficacy with DNA and underwent conformational changes as demonstrated by spectroscopic studies. Gold nanoparticles (AuNPs) were attached to the assemblies to increase sensing ability, and it was found that the purine assemblies could biomimetically produce AuNPs in an environmentally friendly manner. The pyrimidine assemblies' antioxidant ability was examined with several types of radical scavenging assays and an antioxidant peptide was bound to the assemblies to determine if radical scavenging ability improved. It was found that peptide-bound assemblies showed a higher radical scavenging ability than the peptide alone and that all assemblies, purine and pyrimidine-based, were non-cytotoxic to normal mammalian cells.

Oral-23

Data Visualization: Global Migration

Nina Heyden, Interdisciplinary Mathematics and Economics, College at Rose Hill & Erin Burke *, FCRH Dean's Office, Fordham College at Rose Hill

As the quantity of data collection in all disciplines continues to increase, there is potential to drastically improve how decisions are made. However, there is a substantial gap in the ability to interpret large amounts of data; visualization offers an efficient way to understand "Big Data." Tools readily accessible across disciplines were used to publish graphics on the total population of concern, including refugees, asylum-seekers, internally displaced persons and others of concern to the UN Refugee Agency. The graphs and maps published with Tableau software (<https://public.tableau.com/profile/nina.heyden#!/>) allow interactive exploration of migration in over 220 countries throughout the past six decades. Users can zoom into geographical areas and select specific countries of interest, in addition to viewing changes in migration year-by-year in a similar fashion to watching a stop-motion video. The research indicates that over 626 million members of the total population of concern have sought asylum in various countries throughout the world since 1951. The current Syrian crisis is noteworthy—for example, 1.6 million Syrians took asylum in Turkey in 2014. Yet also significant were the 6.0 million internally displaced persons in Colombia in 2014, who were not a focus of international attention. Visualizing the migration data allowed for effective presentation of findings that support statistical conclusions from further research conducted during IPED's Applied Econometrics class—including that underlying economic and social factors are important predictors of the total population of concern, in addition to political instability. This research has important implications for addressing a major global crisis.

Oral-24

Gender in the Public Bathroom Context

Cameron Rockelein, Sociology, Fordham College at Rose Hill & Daisy Deomampo*, Anthropology, Fordham College at Rose Hill

The way in which people do gender in a public bathroom context is currently a hot topic, brought on by debate about transgender individuals. This paper focuses on the theories underlying two potential policy issues concerning gender in public bathrooms. First, I examine how transgender people navigate the gendered space of a bathroom. Then, I examine a commonly overlooked way that gender is done in a public bathroom: the gendered parenting task of

changing a child's diaper. There are many anecdotal reports of changing facilities being available in women's, but not men's, restrooms. These two issues are contextualized with discussions of the role of gender and space, together and separately, in society, and how each concept applies to a specifically bathroom context. This work is significant because access to space, including a bathroom, is intertwined with access to power. Hopefully this work will shape these contemporary policy issues to prevent discrimination, promote equality, and encourage those on opposite sides of the culture war to understand one another's points of view. This work will also hopefully prompt others to explore the academically neglected area of public changing tables.

Oral-25

Unequal Opportunities: Measuring and Predicting Social Mobility

Connor Redpath, Economics, Fordham College at Rose Hill & Troy Tassier*, Economics,
Fordham College at Rose Hill

Will the relative income of your parents affect your earnings potential? If so, for whom and how much? Analyzing Panel Study on Income Dynamics data, parent/child pairs and various social variables are used to estimate the inter-generational elasticity of wealth (IGE or social mobility) and find which variables most affect one's relative income. Unsurprisingly, age, sex, and relative parental income are strong predictors of one's current relative income. However, education is not a significant predictor even 'number of children' and 'age at first child' are more significant.

Oral-26

A Good Kiwi Isn't Acidic: How Ocean Acidification Is Affecting the New Zealand Economy

Lily Hurley, Environmental Studies, Fordham College at Rose Hill & Edward Van Buren*, Environmental Studies,
Fordham College at Rose Hill

In a country that houses a mere 4 million people, it is no wonder that agriculture has become the main facet of New Zealand's economy. However, while the sheep and produce have flourished from land protection laws, marine life has struggled in recent years due to an increase in oceanic carbon levels. In an area of the Pacific that is so rich in coral reefs, Great White breeding areas, and a plethora of fish species, any upset of the natural preexisting chemical balance has a tangible impact. With its proximity to factory-laden Asian countries, New Zealand is dealing with a crisis that the nation had a minute role in creating. I study the exact adverse effects that ocean acidification has had on the economy of New Zealand. The scientific process of how ocean acidification occurs is a building block of this understanding as well as the Gross Domestic Product (GDP) of the country. The rise of marine pH levels is inextricably linked to the downturn of prosperity in New Zealand's agricultural sector. My solutions address stricter policies in regards to pollutants generated from Asian factories to augment the goals set in Paris in 2015 as well as better regulation of established New Zealand commercial fishing laws. In this thesis, my goal is to highlight that ocean acidification is a climate problem that affects the entire New Zealand population. By putting these effects into economic terms, I hope to urge change in the "business as usual" way countries conduct themselves, starting with policymakers whose main focus is growing their GDP. In order to illustrate this point effectively, I utilize the disciplines of chemistry, economics, and politics to analyze the trends and consequences of ocean acidification.

Oral-27

Incorporation of Metal Oxide Coated Transition Metal Nanowires into Dye-Sensitized Photoelectrochemical Cells

Josephine Jacob-Dolan, Chemistry, Fordham College at Rose Hill & Christopher Koenigsmann*, Chemistry,
Fordham College at Rose Hill

With limited fossil fuel resources and increasing energy consumption, there is a growing interest in developing alternative energy sources which are efficient, sustainable, and affordable. One alternative is to harness the sun's energy with photoelectrochemical cells (PECs), which are capable of converting solar energy into either electricity

or into solar fuels. The goal of my project is to improve the solar conversion efficiency of the PECs and therefore improve their cost efficiency and their overall performance. To improve the efficiency, we propose incorporating metal oxide coated transition metal (i.e. gold and silver) nanowires into the mesoporous semiconductor framework within the photoanode of PECs. Transition metal nanowires were chosen because of their surface plasmon resonance, which allows the wires to scatter photons of light in the visible spectrum. The scattering effect increases the path length of the light through the cell, allowing for more light to be converted to current. We optimized the size of the wires so that the scattering spectrum overlapped with the absorption spectrum of the light absorbing chromophore in the device. In terms of synthesis, we have optimized the synthesis of transition metal nanowires using a template-based technique and have coated them with thin layers of metal oxides. These results have been confirmed using scanning electron microscopy (SEM) as well as transmission electron microscopy (TEM).

Oral-28

Causes of Legislative Gridlock in the United States: The Cases of the 104th and 113th Congress

Jamie Hashem, History at Rose Hill & Olena Nikolayenko*, Political Science,
Fordham College at Rose Hill

In recent decades, there has been a growing sentiment that US government is incapable of getting things done. Political scientists coined the term “legislative gridlock” to denote “the inability of the government to enact significant proposals on the policy agenda.” This study analyzes the effects of electoral polarization, filibustering, and party seat margin on the likelihood of legislative gridlock. It is hypothesized that the higher electoral polarization, the higher incidence of filibustering, and the smaller party seat margin might lead to a legislative gridlock. The empirical analysis focuses on the cases of the 104th Congress (1995-1996) and the 113th Congress (2013-2014). Using data from the US Senate, the House of Representatives, Pew Research Center, and other publicly available sources, this study finds that increased electoral polarization is the main driving force behind an increasing occurrence of gridlock. The results also challenge a popular assumption that party seat margin and filibustering account for legislative gridlock. This study contributes to the growing literature on legislative politics in the United States.

Oral-29

Spatially resolved Raman spectroscopy of head and neck squamous cell carcinoma

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Physics, Fordham College at Rose Hill

The ability to identify precise cancer margins in vivo during a surgical excision is critical to the well-being of the patient. Decreased operative time has been linked to shorter patient recovery time, and there are risks associated with removing either too much or too little tissue from the surgical site. The more rapidly and accurately a surgeon can identify and excise diseased tissue, the better the prognosis for the patient. To this end, we investigate both malignant and healthy oral cavity tissue using Raman spectroscopy, with a novel microsphere probe. Our results indicate that this probe has decreased the size of the analyzed area by at least two orders of magnitude, as compared to a conventional prefabricated probe. Scanning the probe across the tissues reveals variations in the Raman spectra that enable us to differentiate between malignant and healthy tissue. Consequently, we anticipate that the high spatial resolution afforded by the probe will permit us to identify tumor margins in detail, thereby optimizing tissue removal and improving patient outcomes.

Oral-30

Fabrication of core-shell platinum coated nickel nanowires as electrochemical catalysts for glucose sensors

Ian Colliard, Chemistry, Fordham College at Rose Hill & Christopher Koenigsmann *,
Chemistry, Fordham College at Rose Hill

Effective treatment of Diabetes requires regular monitoring of blood glucose concentrations. Commercially available glucose sensors, which use Glucose Oxidase enzyme, are advantageous because of their high sensitivity and selectivity towards glucose. However, commercial sensors are limited to operation in a narrow window of temperature and pH, since variations in these parameters can denature the enzyme and lead to poor performance of the sensor. Given the limitations of the enzyme-based sensors, there is a growing interest in enzyme-free catalysts that are equally sensitive and selective as enzyme-based sensors. Platinum electro-catalysts have been reported to be highly active toward glucose oxidation. Despite its catalytic performance, its high cost and poor selectivity has hindered a widespread use as catalyst. The main goal of this research project is to develop new and cost-efficient sensing platforms for glucose detection based upon a core-shell motif, which will combine inexpensive and abundant first row-transition metals with precious metals. For example, nickel has been reported to show very promising results as a catalyst for the oxidation of glucose in alkaline conditions. Our objective is to increase the catalytic activity of these metals at physiological pH by creating 1D catalyst and modifying the surface of first-row transition metal nanowires such as Ni, Co, and Cu with precious metal alloys. We expect that the presence of bimetallic pair sites to increase the oxidation kinetics for glucose. The activity and catalytic efficiency of the new sensing platforms will be then evaluated as a function of the precious metal content and by nanowire size using cyclic voltammetry.

Oral-31

Fair Trade in Guatemala and Brazil: Banana and Coffee Industries

Kathryn M. Madigan, International Studies, Fordham College at Rose Hill & Sara Lehman*, Latin American and Latino Studies, Fordham College at Rose Hill

Coffee and bananas are breakfast staples not only within the U.S. but also around the world. Furthermore, the banana and coffee industries represent billions of dollars and millions of workers worldwide. However, many consumers do not stop to contemplate if workers in the banana and coffee industries are winning fair wages and guaranteed dignified working conditions. This study looks at fair trade initiatives and its effects within the countries of Guatemala and Brazil. The long complicated history of unfair working conditions in Guatemala, such as the history of the United Fruit Company, is one of the many catalysts that have inspired fair trade in Latin America and all over the world. Fair trade is supposed to promote social development and ethical standards of production while valuing the hard work of individual producers. After obtaining Fair Trade certification, these collective farmers' products are sold on local and international levels bringing stability to their rural communities. This paper seeks to prove that when rural farmers and indigenous producers have the opportunity to collectively own and operate farms in their prospective communities, as fair trade models encourage, they are more able to escape human rights abuses and unfair wage policies often imposed by large corporate run farms. However, the neoliberal influences of free trade and the open markets have had positive and negative impacts within Guatemala and Brazil.

Oral-32

Geochemical Analysis at Cottonwood Creek Village in Southcentral Alaska

Kelly Walsh, Anthropology, Fordham College at Rose Hill & Kathryn Krasinski*, Anthropology, Fordham College at Rose Hill

ICPMS analysis (Inductively Coupled Plasma Mass Spectrometry) has been conducted on sediment samples from house features at Cottonwood Creek Village - one of the last remaining pre-contact Dena'ina villages in Alaska, occupied from AD 1490 to about 1918 with the outbreak of Spanish influenza. This village consists of over 1199 surface features including semi-subterranean houses and cache features. This method reveals chemical traces of elements present in sediments; unique chemical signatures correlate to specific human activities. During their history, Dena'ina experienced a transition in political and socio-economic complexity, from a highly mobile and egalitarian culture to a sedentary and slightly stratified culture. These transformations are archaeologically evident through changes in house structure and in contents of houses. However, this village is both lacking in evidence of material culture, and oral history does not detail contents and activities of site features. Therefore, this research will be useful in preserving Dena'ina culture, in reconstructing past lifeways, and in better understanding spatial organization of the village. Preliminary results demonstrate that ICPMS is useful in differentiating both cultural

from non-cultural sediments, and between various feature types within Southcentral Alaskan contexts of this period. Multivariate discriminant analysis reveals that natural sediments are distinct from anthropogenic ones within house features, side rooms, and cache features. Concentrations of isotopes of Thorium, Rubidium, and Uranium have been associated with natural sediments, while isotopes of Cobalt, Copper, Zinc, and Strontium have been associated with anthropogenic sediments. Interpretations of these results will enhance oral tradition for the descendant community.

Oral-33

Are there ethnic differences in psychological distress in cancer patients?

Cassandra Jensen, Psychology, Fordham College at Rose Hill & Barry Rosenfeld*, Psychology,
Fordham College at Rose Hill

This study examines whether levels of psychological distress differ between ethnicities for patients with advanced cancer. Two samples of participants with advanced cancer (N=436), were drawn from studies examining the efficacy of Meaning-Centered Psychotherapy (MCP). Prior to receiving treatment, Caucasian, African American/Black, and Hispanic/Latino patients were compared on their baseline level of distress. This study found statistically significant results suggesting Caucasian patients report and experience greater hopelessness and a lower quality of life than ethnic minority patients. These results contradict previous research that suggests ethnic minority patients experience greater psychological distress than do Caucasians. Additional research using larger ethnic minority sample sizes is needed to further understand these findings.

Oral-34

Adjusting Strategy in Africa: U.S. Policy Toward Africa in the "War on Terror" Era

Elizabeth Wetzler, International Studies, Fordham College at Rose Hill & Anjali Dayal *, Political Science,
Fordham College at Rose Hill

In the 1995 U.S. National Security Strategy, the United States' strategic posture toward Africa was summarized with the following: "America's security interests in Africa are very limited." By 2006, however, the U.S. National Security Strategy asserted that "Africa holds a growing geo-strategic importance and is a high priority." What explains this shift? More specifically, this project seeks to determine what explains the Bush administration's increased focus on Africa between 2001 and 2009? The events of September 11, 2001, the rise of neo-conservatism within the Bush administration, and the emergence of the "Bush Doctrine", changed U.S.-Africa policy in the post-9/11 era by placing an emphasis on nation-building as a crucial counterterrorism tool. The Bush administration created and implemented counterterrorism policies and programs which sought to strengthen state institutions and promote democracy throughout Africa. These policies include the Pan-Sahel Initiative, the Combined Joint Task Force - Horn of Africa, the Trans-Sahara Counterterrorism Partnership, the Millennium Challenge Account, and AFRICOM. Each of these policies placed a nexus between strengthening state and/or economic capacities and quelling terrorist activities. Additionally, these policies focused on African countries where either state or economic capacities (in some cases where both state and economic capacities) were weak. The Bush administration believed that within the context of the "War on Terror", fragile and failed states served as breeding grounds for terrorist activities, and as such, the administration sought to strengthen fragile and failed states in Africa through new policy initiatives.

Oral-35

Drone Warfare without War: An Analysis of the United States' Restraint in Expanding its Drone Program to Counter Boko Haram

Elizabeth Wetzler, International Studies, Fordham College at Rose Hill & Anjali Dayal *, Political Science,
Fordham College at Rose Hill

Following the terrorist attacks of September 11, 2001, the United States has engaged in a Global War on Terror. One of the principal weapons used in this fight is the armed drone. The United States has used armed drones against

terrorist organizations across the globe, including and especially, al Qaeda and its affiliates. The United States has not, however, used armed drones against one of the most vicious terrorist groups operating today: Boko Haram. This project seeks to determine why this restraint exists; why hasn't the United States deployed lethal drone strikes against Boko Haram? This project asserts that the number of U.S. drone strikes a particular country experiences is greatly influenced by the priority level of that country to the United States. In the case of Boko Haram, the U.S. has not deployed lethal drone strikes against Boko Haram because Boko Haram operates in Nigeria, which is a country of lower priority to the United States as compared to countries that have experienced U.S. drone strikes such as Pakistan, Somalia, and Yemen. This paper will examine the priority level between the years of 2009 to 2016 of four case countries: Nigeria, Pakistan, Somalia, and Yemen. This analysis shows that there is a correlation between the priority level of a given country and the number of drone strikes a country experiences based on the indicators used in this study. Generally, as priority level increases, the number of drone strikes increases as well.

Oral-36

Undergraduate Medical Volontourism: Uniting Ethical Dilemmas and Inefficient Cultural Immersion

Leah Ibrahim Puri, Anthropology and Biological Sciences, Fordham College at Rose Hill & Daisy Deomampo*,
Anthropology, Fordham College at Rose Hill

In recent years, Fordham University students have begun medical voluntourism with a service organization, Volunteers Around the World (VAW). To avoid clashes with ethical grey areas, especially exploitation, organizations market these trips as opportunities for 'cultural immersion' – rather than solely as medical learning opportunities. This study assesses the effectiveness of the 'cultural immersion' experience of undergraduate students on service trips to international locations and describes the way in which the motive for travel may cause issues both ethically and in regard to cultural immersion. I use the term 'cultural immersion' to refer to "the ability to discriminate and experience relevant cultural differences while thinking and acting in culturally acceptable ways." This study utilizes the Developmental Model of Intercultural Sensitivity (DMIS) proposed by Milton J. Bennett (1986). The DMIS was used to examine a sample of 8 participants, on a service trip to Albania, I hypothesized that due to the short duration of the service trip, participants will be unable to complete all the six orientations necessary for the acquisition of intercultural competence and thus cannot be immersed in a culture after a service trip. I found that the reasons for the incomplete cultural immersion of undergraduate students overlap with the ethical dilemmas of voluntourism – the motive of students on service trips was often the intersecting point. Therefore, I recommend structural changes in organizations offering service trips, as well as in universities where students participate, to create pre-trip ethical briefings and intentionally incorporate cultural activities into service trips.

Oral-37

The Impact of the Trans-Pacific Partnership Trade Deal on Emerging Markets: Mexico, Chile, and Peru

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Economics, Fordham College at Rose Hill

The Trans Pacific Partnership (TPP) is a highly ambitious trade pact that originally involved twelve signatories varying in degree of economic development across three disparate regions of the world. The tentative deal, which was spearheaded by the United States, was intended to respond to an expanding Chinese market inasmuch as it was meant to drive economic output in developing regions of Latin America and Southeast Asia. Its purpose was to establish a template for a sweeping multinational trading bloc, thereby shoring up a long-term strategy by creating a pathway for greater market liberalization in these countries. Our research is limited to Mexico, Peru, and Chile, three countries that have dramatically benefited from the market liberalization of the past two decades. We focus primarily on TPP's generous data protection grants to the pharmaceutical industry and their economic implications. Mexico is an excellent case in point: despite market reforms over the past decade, the private sector represents nearly 50% of the pharmaceutical market, of which over 90% of these expenses are paid for out-of-pocket. Meanwhile, a significant portion of the population is in poverty (45%), while health care spending per capita remains a meager 6.3%. Mexico is characteristic of many emerging Latin American markets. Hence, we argue that TPP's patent protections will establish a noncompetitive market for a protracted time interval, allowing

multinational firms the ability to drive up costs, which will inversely deprive huge segments of their populations from essential life-saving biologics and other medicines essential to treat various maladies.

Oral-38

Political Efficacy Among African-American Women

Niara Walden, Political Science, Fordham College at Rose Hill & Olena Nikolayenko*, Political Science, Fordham College at Rose Hill

Political efficacy – the individual’s belief in the capacity to grasp politics and influence political processes in the country – is vital to political engagement. Prior research shows that women of color tend to have lower levels of political efficacy, which negatively influences the rate of their political participation. Insufficient attention, however, has been paid to sources of political efficacy. It is especially critical to understand sources of political efficacy during an election year to boost electoral participation of marginalized groups. Addressing this issue, this study examines why some African American women have a lower level of political efficacy than others. Specifically, this project explores the effects of political generations on the individual’s sense of political efficacy. It is hypothesized that African American women belonging to the Baby Boomer generation are more likely to have a higher level of political efficacy than the Millennials. The data from in-depth interviews with African American women provides an empirical basis for this study. I conducted interviews with 15 respondents, representing various generations, being employed in multiple sectors of the economy, and coming from different parts of the United States. One of the main findings that emerge from this study is that those who grew up during times of civil unrest and, in particular, resided in areas where civil disobedience was common, tend to place greater confidence in the individual’s ability to bring about political change. This study contributes to the literature by exploring the origins of political efficacy among a marginalized group.

Oral-39

Social Media and Adolescent Perceptions of Racial Identity

Tiffany McKay, Psychology, Fordham College at Rose Hill & Lindsay Hoyt*, Psychology, Fordham College at Rose Hill

Over 90% of teenagers report going online daily. Of those teenagers, African Americans had the highest reported rate of internet usage (34%), followed closely by 32% of Hispanics (Pew Research Center, 2015). Social media activity has become an important part of adolescent identity development, and the positive aspects of social media usage (SMU) are particularly understudied in minority adolescent populations. Most researchers focus on the negative consequences associated with SMU. However, social networking sites (SNS) have many benefits including providing different forums for discussion and access to information. Current events such as the #BlackLivesMatter movement have opened new avenues for conversations about race, power dynamics, and systematic problems among adolescents online. The current study addresses two key questions raised by high school students as part of a Youth Participatory Action Research (YPAR) course: “How does social media affect political awareness?” and “How does social media affect our perception of self-identity?” The student-developed survey examined the relationship between social media, political awareness, and racial identity development. The students hypothesized that more SMU would increase political awareness and negatively impact people’s self-perceptions. It was found that adolescents who consume social media without actively participating online are less likely to benefit from the positive relationship between online activity and racial identity. This study suggests that not all online activity has negative consequences for minority adolescent identity development; in fact, some adolescents may find that actively using SNS is protective against exposure to stereotypes or racial inequity.

Oral-40

Using novel linear block copolymer, block-poly(lactide)-block-poly(caprolactone)-block-poly(lactide), to remove organic pollutants from water

Katrina Bernhardt, Chemistry, Fordham College at Lincoln Center & Amy Baliya*, Chemistry, Fordham College at Rose Hill

Water-soluble organic pollutants are not satisfactorily removed by conventional methods of water treatment. Therefore, a new approach to removing these pollutants must be developed. Research in the Balija group focuses on synthesizing biodegradable and sustainable linear block copolymers that can efficiently remove organic pollutants from water. Previous research has shown that efficacy in removing these organic compounds is dependent on the hydrophobicity of the monomers used to prepare the polymer. This study focuses on the synthesis and characterization of block-poly(lactide)-block-poly(caprolactone)-block-poly(lactide). These polymers contain long, aliphatic chains within their interiors, and they are hypothesized to remove organic pollutants from water more effectively than any known system. Rose Bengal, an organic dye with photochromic properties, is utilized as the test pollutant in this study. Initial tests demonstrated that an organic solution containing the polymer could remove over 90% of the Rose Bengal from aqueous media within 30 s of contact with the polymer. Upon removal of the organic solvent, the polymer was able to remove the Rose Bengal completely within 5 min of contact. Synthesis and characterization of a family of these polymers and evidence for their removal of organic pollutants will be discussed in this presentation.

Poster-1

Smartwatch Based Transcription Biometrics

Francesco Ciuffo, Integrative Neuroscience, Fordham College at Rose Hill & Gary Weiss*, Computer and Information Sciences, Fordham College at Rose Hill

Handwriting analysis and the identification of people based on individualistic typing patterns are of particular interest in the field of biometrics. Smartwatches are relatively cheap and commercially available, making them an ideal candidate for implementation into already existing security protocols. The accelerometer and gyroscope sensors in modern smartwatches provide a novel platform for mobile biometrics. Wrist movements while performing transcription tasks can be analyzed using these sensors to map variables which describe a person's unique writing/typing patterns. In this study, we show it is possible to identify individuals performing transcription tasks (i.e. handwriting sentences, typing on a keyboard, etc.) using only a smartwatch, with high accuracy. The development smartwatch-based transcription biometrics represents a novel method for user identification.

Poster-2

Experimental Therapeutics to Treat NPC

Caroline Donahue, Integrative Neuroscience, Fordham College at Rose Hill & Berish Rubin*, Biological Sciences, Fordham College at Rose Hill

Niemann-Pick Type C (NPC) is a rare and fatal lipid-storage disorder caused by mutations in the NPC1 or NPC2 gene. Affected individuals experience symptoms such as ataxia, dysphagia, dysarthria, vertical supranuclear gaze palsy, and dementia. The symptoms are rapid-onset in nature and typically appear in middle to late childhood. Current treatments for NPC only help to manage symptoms and delay death, urging the development of drugs to cure this devastating disease. In a collaborative work carried out between scientists at Mount Sinai and NCAS a family of potential drug candidates was developed. Proteome analysis of these candidates revealed that the drugs affect the function of the mitochondria by reducing oxidative stress in NPC-affected cells. Thermal shift studies and computational modeling suggest that the drug candidates bind to a particular region of a mitochondrial chaperone, causing a conformational change that lowers the natural fluorescence of tryptophan residues. A drug's ability to activate this chaperone and lower oxidative stress was measured in murine hepatocytes that contained an antioxidant response element driving a luciferase protein expression. The fluorescence shift induced by each drug was measured via spectrophotometry. The implication of establishing such a relationship would equip researchers with a quick, easy, and relatively inexpensive way to screen effective drugs by the degree of fluorescence shift they induce in this chaperone. However, the current study failed to find any significant relationship between chaperone fluorescence shift and activity in the antioxidant response luciferase assay.

Poster-3

When Real Facts Turn Into Fake News

Jimena Galindo, Political Science, Fordham College at Rose Hill & Carla Romney*, Biological Sciences, Fordham College at Rose Hill

Because of the recent attacks on the media and proclamations of “fake news,” I decided to investigate if some of those articles labeled as fake are actually fictitious, and the reasons behind why people label them as fake. Using a statement said and an article written by Representative Lamar Smith (R-Texas), I was able to discover that sometimes what is labeled as “fake news” is not actually false, instead it simply disagrees with the position of the accuser. I was also able to discover that, in trying to prove a personal/political point, it is easy to misconstrue and misinterpret truthful and accurate data in order for this credible source to back up a claim. In this way, the public is less likely to double check these sources further spreading lies and incorrect information, and passing them off as truth.

Poster-4

Effects of menstrual cycle on cognition and autobiographical memory

Erin Hunt, Integrative Neuroscience, Fordham College at Rose Hill & Karen Siedlecki*, Psychology, Fordham College at Lincoln Center

The purpose of the proposed study was to examine the effect of menstrual cycle phase on cognition and autobiographical memory. The menstrual cycle may be divided into two main phases: follicular and luteal, which are accompanied by differing levels of sex hormone. Previous literature regarding the menstrual cycle has shown that each phase is associated with changes in cognition. The goal of the current study was to further examine the effect of cycle phase on cognitive flexibility and working memory. In addition, a novel aspect of the current study is to examine whether menstrual cycle influences autobiographical memory retrieval. Forty participants (20 females, and 20 males served as a control group to account for re-test effects) completed two laboratory testing sessions approximately two weeks apart. Several measures of cognition and autobiographical memory were administered during each testing session. Results of this study will help improve our understanding of how menstrual phase may affect different cognitive abilities and may help reveal different learning or attentional styles associated with different phases. We will examine whether cycle phase promotes cognitive flexibility or stability and if it affects the valence or confidence in word recognition or retrieval of autobiographical memories.

Poster-5

Effects of Urbanization on Wild Small Mammal Species Richness in New York City

Katarzyna Endler, Anthropology, Fordham College at Rose Hill & Elizabeth Carlen*, Biological Sciences, Fordham College at Rose Hill

Small mammals are crucial components of both urban and natural environments. Their roles include seed dispersal, seed predation, maintaining balance in an ecosystem by regulating insect and plant populations, and supporting other species as prey. Increases in impervious surfaces due to urbanization may result in habitat loss, habitat fragmentation, and a decline in species richness. Alternatively, urbanization may increase small mammal species richness through the importation of nonnative mammal species or vegetation which can provide an additional food source. We used track tubes to study the effect of two variables on small mammal species richness in New York City (1) canopy cover and (2) impervious surfaces (roads). Track tubes are a good way to measure species richness because they are inexpensive, non-invasive, and can reduce risk of disease exposure to researchers. We predicted that we would find greater species richness under dense canopies and away from impervious surfaces. Our results confirm our predictions. We also examined how bait influenced track tube success and determined that traps baited with peanut butter and oats, as opposed to birdseed, were more successful at attracting small mammals. These results suggest that both ecological and anthropogenic factors affect small mammal species richness in areas and that bait type likely influences the ability to detect small mammal species richness.

Poster-6

Developing a Growth Procedure and Measuring the Spectral Response of NaKSb Photocathodes

Daniel Wines, Physics, Fordham College at Rose Hill & Triveni Rao*, Brookhaven National Lab

The Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory (BNL) requires photocathodes with a high electron yield and long lifetime that can reliably provide current to cool the particle beam for the Low-Energy RHIC electron Cooling (LEReC) project. Bi-alkali metal photocathodes have been considered suitable for such an application. Vapor deposition of alkali metals in an ultrahigh vacuum environment is one technique for fabricating bi-alkali cathodes. At BNL, an existing deposition chamber had reliably produced high performance CsKSb photocathodes. However, this material is short-lived if raised to temperatures $>100^{\circ}\text{C}$. NaKSb photocathodes have been considered because of their ability to withstand higher temperatures. While at BNL we were tasked with the development of a procedure to reliably produce high performance NaKSb photocathodes. Procedures for developing such a photocathode exist in literature, but were not adaptable to the deposition chamber at BNL. In conjunction with BNL staff, we developed a preliminary procedure for the BNL deposition chamber by examining the stoichiometry, chemical properties and existing procedures of NaKSb. The temperature of the photocathode substrate, the evaporation rate of the metal sources and the stoichiometric ratio of potassium to antimony are variables that greatly impact the performance of a photocathode and need to be fine-tuned. One measure of the performance of a photocathode is its quantum efficiency (QE), the number of emitted electrons per incident photon. By measuring the QE and the spectral response, we were able to measure the performance of each photocathode and come closer to developing a replicable procedure.

Poster-7

Non-Invasive Prenatal Genetic Screening

Joanna Theophilopoulos, Biological Sciences, Fordham College at Rose Hill, Mehak Sawhney, Biological Sciences, Fordham College at Rose Hill, Liat Shenkar, Integrative Neuroscience, Fordham College at Rose Hill, Marissa Mesko, Biological Sciences, Fordham College at Rose Hill, Norah Aamoum, Biological Sciences, Fordham College at Rose Hill & Edward Dubrovsky*, Biological Sciences, Fordham College at Rose Hill

Prenatal genetic screening is the practice of examining a fetus in order to detect anomalies in its genetic code (3). There are two main types of prenatal genetic tests- screening tests and diagnostic tests. The two most common methods of diagnostic tests are amniocentesis and chorionic villus sampling. Amniocentesis is the removal of fluid from the uterus in order to further test fetal cells. Chorionic villus sampling (CVS) utilizes a sample from the placenta for further screening. These procedures are often followed by karyotyping or fluorescence in situ hybridization (FISH) which can be used to detect aneuploidy or structural abnormalities of chromosomes (1). Both of these tests are highly accurate methods of detecting chromosomal aneuploidies in the infant, however they are associated with some risks, including miscarriage in 0.5%-1% of cases (2). The recent discovery of cell free fetal DNA (cffDNA) in the plasma of the mother has allowed clinicians to develop a method of noninvasive prenatal genetic screening. This screening is available as early as ten weeks gestation and has a detection rate of 99% for trisomy 21 (2). The purpose of this project was to provide a comprehensive overview of the recent advancements made in non-invasive prenatal genetic testing.

Poster-8

Improving Current Models of Prosthetic Hands Using Three Dimensional Printing

Marissa Vaccarelli, Engineering Physics, Fordham College at Rose Hill & Stephen Holler*, Physics, Fordham College at Rose Hill

Exploring the rapidly expanding field of prostheses, which restore lost mobility, this project uses SolidWorks and 3-D printing techniques to modify the current designs of the e-NABLE Raptor Hand and Flexy Hand to create a more flexible prosthetic hand, providing the user with a greater range of movement that is as human-like as possible. Initially, individual two part fingers were constructed, followed by a palm, fixed wrist and forearm. The preliminary

circuitry on breadboards and servo mini motors were stored in the forearm, attached to the individual fingers via string in internal canals. The Arduino code enabled motor rotation, providing independent finger movement and primitive gripping for the user. Future work includes implementing a muscle sensor and improving circuitry along with Arduino code to provide smoother and more controlled movement. Additionally, current palm and wrist designs are also being modified to increase surface area and 3-D appearance, making models more analogous to that of a human hand.

Poster-9

Reducing the Production and Effects of Progerin in Progeria

Janeliz Fernandez, Biological Sciences, Fordham College at Rose Hill, Soodah Manzoor, Biological Sciences, Fordham College at Rose Hill, Demir Dacic, Biological Sciences, Fordham College at Rose Hill & Brittani Pearl*, Biological Sciences, Fordham College at Rose Hill

Progeria is a rare genetic disorder that results in premature aging. It is also known as HGPS, Hutchinson-Gilford Progeria syndrome, after Jonathan Hutchinson and Hastings Gilford who were the first to describe the condition. The symptoms of Progeria appear when the infant is around one to two years old and include protruding eyes, small facial features, alopecia, loss of fat, and slow bone development causing joint abnormalities. This disorder is caused by a dominant mutation on the gene LMNA. This gene produces the lamin A protein, which is key for maintaining the structure of the nucleus. However, in people who have progeria, it produces the protein progerin. Because progerin causes instability of the nucleus, the cells in the body die faster causing premature aging. The purpose of our study is to determine how the amount of the progerin can be reduced in the cells of those who have progeria. We are interested in identifying whether it is better to find a way to silence the mutated gene or to provide some sort of gene therapy in order to counteract the effects of progerin. Our hypothesis is that gene therapy will not eliminate progerin but it can prolong their life by reducing the effects of the symptoms, whereas silencing the mutated gene might be more conducive-but results are difficult to attain. We will then compare our results from the meta-analysis to our hypothesis to see if the hypothesis is supported or falsified.

Poster-10

Discovery of Comp-A: A MEK Inhibitor for Treatment of Clear Cell Ovarian Carcinoma

Jennifer Rutishauser, Biological Sciences, Fordham College at Rose Hill & Richard Moore*, Gynecologic Oncology, University of Rochester

Clear cell ovarian carcinoma (CCOC), a subtype of epithelial ovarian cancer (EOC), is the most lethal ovarian malignancy. Patients with CCOC receive therapies intended for EOC more broadly, which tend to fail, necessitating the development of CCOC specific therapies. Aberrant Ras/Raf/MEK/ERK signaling promotes onset, progression and chemoresistance among various cancers, including EOC. Our objective was to explore the effects of Comp-A, a novel MEK inhibitor developed in our laboratory, on ERK regulation and cell proliferation/survival in in-vitro CCOC models. OVMANA and OVTOKO cells were cultured in RPMI media supplemented with 10% FBS and 1% antibiotic. MTS Cell Proliferation Colorimetric Assay and BrdU Cell Proliferation Assay were used to evaluate the effect of Comp-A on cell proliferation and cytotoxicity. Regulation of ERK in response to Comp-A treatment was assessed by Western blotting. The effect of Comp-A on cell-cycle progression was determined by cell cycle analysis and DNA content was quantified using flow cytometry. Treatment with Comp-A inhibited proliferation of CCOC cells. Only OVMANA cells exhibited inhibition after 48 hours, but both OVMANA and OVTOKO cells exhibited dose-dependent inhibition after 72 hrs. Comp-A also inhibited the activation of the ERK1/2 pathway in both cell types. Cisplatin, a chemotherapeutic agent commonly used in treatment of EOC, promotes pro-survival ERK1/2 phosphorylation, which may result in emergence of resistance. Comp-A reduced ERK1/2 activation induced by cisplatin. Further studies are needed to explore the effects of combining these drugs. Preliminary studies indicate that Comp-A may invoke an apoptosis independent and cell cycle independent mechanism of action.

Poster-11

The Effects of Green Infrastructure in Large Cities on Air Quality and Human Health

Veronica Kot, Biological Sciences, Fordham College at Rose Hill & Steven Franks*, Biological Sciences, Fordham College at Rose Hill

Greenhouse gas emissions have risen exponentially throughout recent years, increasing concern over the harmful effects of the chemicals that remain trapped in the Earth's atmosphere. Preventative measures have been taken in order to reduce the causes of greenhouse gas emission such as engineering eco-friendly automobiles and nullifying the effects of nuclear power plants through outlets like wind energy. However, with the advent of these large-scale changes, there must be a difference made on the smaller, more local scale. In this experiment, we analyze the effects of manmade green spaces nestled within busy cosmopolitan hubs on ameliorating air quality. We will also examine the statistical evidence of poor human health of the residents in tested areas ranging from respiratory issues such as asthma and COPD to skin diseases such as psoriasis and eczema. This experiment uses data collected from NYCHealth.gov in 2014 to compare air quality measures of black carbon, ozone, NO₂, SO₂, NO, and particulate matter in relation to park area and implementation. A corresponding variable also being compared is that of the likelihood and occurrence of poor human health using statistical information from the Center for Disease Control and Prevention. Our hypotheses are the following: 1) there is a positive relationship between larger areas of green space and air quality, 2) there is a positive relationship between larger areas of green space and human health, and 3) there is a positive relationship between air quality and human health.

Poster-12

Activity Recognition Using Smartphone and Smartwatch Sensors

Abby O'Neill, Computer and Information Sciences, Fordham College at Rose Hill & Gary Weiss*, Computer and Information Sciences, Fordham College at Rose Hill

The use of smartphones to track individuals' daily steps is becoming more common, but the introduction of the smartwatch opens the door to more advanced activity recognition and research opportunities. The expansion of activity recognition using both smartphones and smartwatches can have impacts on the monitoring of health through both eating and exercising. This research utilized data collected from the gyroscope and accelerometer sensors on the smartphone and the smartwatch. Using the collected data set of 50 users to create data mining models, we were able to test the accuracy of predicting what activity is being performed.

Poster-13

The Genetics of Alzheimer's Disease

Alexandra Regan, Biological Sciences, Fordham College at Rose Hill, Adalain Meyer, Biological Sciences, Fordham College at Rose Hill, Lara Carrion, Biological Sciences, Fordham College at Rose Hill, Leo Weaver, Biological Sciences, Fordham College at Rose Hill & Edward Dubrovsky*, Biological Sciences, Fordham College at Rose Hill

There are many genetic risk factors that increase a person's chance of developing Alzheimer's disease, one of which is family history. There are two types of genes that can increase the risk of developing Alzheimer's, and they are risk genes and deterministic genes. One risk gene that scientists have discovered is the APOE-e4 gene. There are three alleles for the apolipoprotein E (APOE) locus including APOE – e2, APOE –e3 and APOE – e4. Everyone inherits two of these alleles one from each parent, and if one or both of these alleles is APOE-e4 then a person has a risk, but not a certainty, of developing Alzheimer's. The three deterministic genes that have been discovered are amyloid precursor protein (APP), presenilin-1 (PS-1), and presenilin-2 (PS-2). These 3 genes are autosomal dominant and have been associated with the development of -Amyloid plaques which is one of the two neurological features of Alzheimer's, the other being the development of tau tangles. The word deterministic means that anyone who inherits these genes will develop Alzheimer's. People can be tested for these genes, and gene therapy is offered for people who have the risk and/or the deterministic genes. The purpose of this project is to discuss these 4 different

genes, their implications, and the gene testing and gene therapy available to families who have a history of Alzheimer's disease.

Poster-14

Neighborhood Predictors of Drug Use in New York City

Maria Sermania, Biological Sciences and Classical Civilizations, Fordham College at Rose Hill & Emily Rosenbaum*, Fordham College at Rose Hill

Microbeads are known to have a detrimental effect on aquatic ecological systems but little research has been done to investigate their effects on freshwater microorganism populations. The purpose of this study is to determine whether microbeads have an effect on bacterial growth and diversity in a freshwater environment. We hypothesized that microbeads will absorb nutrients from the surrounding freshwater environment, resulting in decreased bacterial growth and diversity. Whole freshwater samples were collected from the Bronx River in the New York Botanical Gardens. The pH, salinity, turbid state, and concentrations of nitrate and phosphates of the water sample were tested at baseline. Equivalent volumes of microbeads were isolated from toothpaste, face wash, face scrub, body wash, and body scrub. These were applied to TSA plates along with an inoculum of river water. The microbeads and freshwater sample were also placed into a test tube to test for pH, salinity, turbid state, and concentration of nitrate and phosphates weekly for two weeks. Since smaller microbeads have an increased surface area to volume ratio, we expect the smaller microbeads to absorb more nutrients and to observe a higher degree of bacterial growth and diversity on TSA plates with larger microbeads than on plates with smaller microbeads.

Poster-15

Green Fluorescent Protein

Katie Mac, Biological Sciences, Fordham College at Rose Hill, Owen Hirschi, Biological Sciences, Fordham College at Rose Hill, Tom Arikian, Psychology & General Science, Fordham College at Rose Hill, Peter Gaffney, Biological Sciences, Fordham College at Rose Hill & Varuni Jamburuthugoda*, Biological Sciences, Fordham College at Rose Hill

Green fluorescent protein (GFP) was first discovered as a companion protein to aequorin, a chemiluminescent protein from *Aequorea victoria* jellyfish. It exhibits a bright green fluorescence when excited with blue light at 395 nm and converts the blue light emitted by aequorin into green light. GFP requires no other cofactor to fluoresce: the fluorophore forms from the cyclization of the peptide backbone. This is done via a radiationless energy transfer mechanism for exciting coelenterate GFPs in vivo. GFP is commonly used as a tracer molecule to visualize gene expression and formation of fusion proteins in organisms like *C. elegans* and bacterial distribution in mouse models. In the future, GFP will be used in Mitochondrial gene therapy to treat mitochondrial disorders, with GFP functioning as a tracer linked with the cloned mitochondrial gene ND1. Additionally, GFP is being fused to *Clostridium difficile*, a gram-positive bacterium, to gain a better understanding of the *Clostridium difficile* infection mechanism that causes inflammation in the colon. Moreover, localizations of *Listeria monocytogenes*, a pathogen that can survive in a range of environments and cell types, can be better understood when marked with GFP.

Poster-16

Forensic Genetics

Nancy Rutishauser, Biological Sciences, Fordham College at Rose Hill, Blair Brunetti, Biological Sciences, Fordham College at Rose Hill, Katherine Janiszewski, Biological Sciences, Fordham College at Rose Hill, Jackie Regan, Biological Sciences, Fordham College at Rose Hill & Varuni Jamburuthugoda*, Biological Sciences, Fordham College at Rose Hill

Forensic genetics is the application of DNA analysis techniques to criminal cases in order to help establish a suspect's innocence or guilt and is part of most criminal investigations. DNA samples are carefully collected from bodily fluids, hair, and bones found at the crime scene. The DNA is then analyzed using various techniques,

including PCR, STR, mitochondrial DNA analysis, Y-chromosome analysis, and gel electrophoresis. Short tandem repeats, base pair sequences that vary between individuals, are amplified by PCR, cut by restriction endonucleases, and then separated by length via gel electrophoresis. When biological samples have experienced extensive damage, they are insufficient for STR profiling. In cases where nuclear DNA evidence is limited, mitochondrial DNA analysis is a valuable resource. Y-Chromosome analysis distinguishes male and female biological samples and is useful in sexual assault investigations where a small amount of male DNA is recovered in the presence of female DNA. Forensic laboratories use a combination of these techniques to examine DNA samples. The quality and quantity of the collected biological sample determines which techniques will be effective. Some more recently developed techniques include single nucleotide polymorphism (SNP) analysis and DNA methylation analysis. Unlike STR, SNP analysis works on heavily degraded DNA and SNPs also have a lower mutation rate. DNA methylation analysis can be used to identify the body fluid the DNA sample came from and is thought to have other potential applications, such as determining age. Conclusions drawn using forensic genetics can exonerate the innocent and convict the guilty.

Poster-17

Telomerase and Aging

Angelica Storino, General Science, Fordham College at Rose Hill, Diana Abdallah, Biological Sciences, Fordham College at Rose Hill, Amal Elwan, Biological Sciences, Fordham College at Rose Hill, Margaret Shannon, Biological Sciences & Psychology, Fordham College at Rose Hill & Varuni Jamburuthugoda*,
Biological Sciences, Fordham College at Rose Hill

Telomerase is an enzyme composed of protein and RNA that adds telomeres, short repeated DNA sequences of TTAGGG, to the ends of chromosomes. Telomeres form a protective cap that allows for proper cell division and prevents deletion of important genetic information during DNA replication. Telomerase is believed to stall aging because it prevents essential genes from shortening and losing genetic information after each cell division. Researchers speculate that as humans age, telomerase function decreases while DNA replication continues. This leads to the deletion of important information from the genetic code at the chromosomal ends because chromatid ends shorten with each cycle. Modern cancer research hypotheses propose that cancer cells replicate indefinitely because cancer cells do not show a loss in telomerase activity or telomere shortening. Other modern research focuses on finding a cause and a cure for genetic disorders like Progeria, a crippling disease that causes premature aging and early death in children and affects one in four million newborns worldwide. Future research related to telomerase and aging focuses on increasing life expectancy, preventing diseases like progeria and dyskeratosis congenita, and discovering if telomere shortening is implicated in conditions such as Alzheimer's Disease, hardening of the arteries, high blood pressure, and type II diabetes.

Poster-18

Impact of Twitter Usage on the 2016 Presidential Election

Joseph Moresky, Political Science, Fordham College at Rose Hill & Paul Levinson*, Communications and Media Studies, Fordham College at Rose Hill

This paper examines the role the social media platform Twitter had on the 2016 Presidential Election, a subject area largely unexplored by current political science literature. It focuses solely on the Donald J. Trump campaign's usage of the platform and the impact it had on the organizational effectiveness of the modern campaign apparatus, as well as public opinion at large. In order to accomplish this, the role Twitter served on the Trump campaign is compared to the role new media plays in a traditional presidential campaign, as articulated by past literature. Qualitative analysis of specific events during the presidential campaign serve as case studies to observe candidate reaction and the role Twitter played in official and unofficial responses. In addition to theoretical framework provided by past literature, conclusions are supported by a combination of qualitative analysis of contemporary news coverage and public opinion data compiled by independent organizations. The paper concludes that the Trump campaign engaged in an unorthodox use of Twitter that resulted in organizational deficiencies. A high degree of candidate autonomy resulted in inefficient messaging, a lack of coordination by surrogate resources, and an unusual replacement of

traditional media strategies. However, solvency found in the wealth of earned media coverage the Trump campaign enjoyed, at least in part fueled by the candidate's Twitter usage, allowed the Trump campaign to continue onwards.

Poster-19

The Effects of Bilingualism on Executive Function and Cognition

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Fordham College at Rose Hill

Learning about the possible benefits of bilingualism on cognition is helpful for the improvement of our current early childhood education system, the elimination of commonly held misconceptions about the impediment of bilingualism on cognition, and the study of cognitive reserve. To date research on this topic has largely been confined to children and older adults, with equivocal results. It may be useful to better understand the role of bilingualism for youth who go onto the college environment, specifically its possible advantages. The present study compared monolingual (N=18) and bilingual (N=26) undergraduate students' scores on the Peabody Picture Vocabulary Test (PPVT), an assessment of general cognitive abilities and receptive language abilities and the Stroop Effect Test, a widely used measure of executive functioning. The Stroop Effect Test assesses the reaction time to complete a cognitive task in the presence of interference. It was hypothesized that bilingualism bolsters students' cognitive abilities. It was also hypothesized that fluently speaking two languages does not hinder vocabulary acquisition. Results are expected to reveal a significant difference between bilinguals' and monolinguals' scores on the Stroop test with higher scores for bilinguals. Results are expected to further reveal no significant difference between bilinguals' and monolinguals' scores on the PPVT. Overall, findings will contribute to a better understanding of the impact of bilingualism on learning and its potential benefits in higher education, an association that has received little attention to date.

Poster-20

Analysis of GMO Food Crops and Consumerism

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A genetically-modified organism is any organism, plant or animal, whose genetic material has been altered through biotechnology. Genetically-modified organism (GMO) production stemmed from the advent of recombinant DNA technology in the 1970s and has reinvented the genetic evolution of plants and animals. Today these same transformation techniques are used to produce crops that can be grown rapidly, be maintained with less resources and are resistant to environmental epidemics. The exponential increase of GMOs thus has allowed mass production of food to spread globally, increasing access to foodstuffs. In developing nations this is essential for sustaining population and economic growth. However, genetically modified foods may negatively impact biodiversity because of low variability among crops. In addition, techniques that create GMOs can potentially create super weeds and bacteria that are resistant to herbicides and antibiotics. Certain studies link the consumption of GMO foods to birth defects, cancer and the development of allergies. Finally what degree of federal regulation is necessary and what potential concerns for the average consumer exist when considering GMO foods are studied.

Poster-21

Vigilance Behavior in the Captive Dwarf Mongoose

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Studies of vigilance behavior are well-documented, and the Herpestidae family provides 34 species for examining sentinel behavior. Vigilance research on Herpestidae is divided, citing inclusive fitness as the motive behind sentinel duty, or selfish anti-predator motivations. Our research investigates vigilance behavior in the dwarf mongoose (*Helogale parvula*). The importance of this research lies in the goal of studying unexplored territory: the relationship between vocalization and vigilance, specifically in captive dwarf mongooses. We hypothesized that dwarf mongooses would vocalize more when a sentinel is on duty than when one is not. Additionally, we predicted: (a) when a sentinel is not present, mongooses will vocalize more when they are together in groups rather than alone as individuals and (b) when a sentinel is present, the sentinel will vocalize more than non-sentinel mongooses. We collected data during eight 30-minute observations at the Bronx Zoo. An ethogram-like behavior table was used to record how and when the mongooses vocalized. We found that dwarf mongooses produced more vocalization when a sentinel was on duty. Additionally, when a sentinel was not present, mongooses vocalized more in groups than alone as individuals. These observations indicate that the sentinel mongoose is responsible for communicating threats only visible to the sentinel. These data also suggest that when a sentinel is not present, long-distance single-mongoose communication is not likely to occur; rather, frequent short-distance group communication. This could denote that mongooses are not communicating about visible threats but rather about their current interaction.

Poster-22

Anthropogenic Effects of Nitrogen Runoff on Laminaria Growth

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Annually, anthropogenic activities, specifically over-fertilization from agricultural practices of our industries contribute an excess of 210 Tg of reactive nitrogen to our environment. Nitrogen is a crucial resource for the growth of many aquatic microorganisms, but in abnormal quantities, it can have adverse effects on marine ecosystems. Algal blooms that are a result of excess pollution limit the growth of other organisms, specifically basal photoautotrophs making it harder for marine ecosystems to thrive. Our group plans to investigate these effects on Laminaria, a macroalgae that is responsible for supporting both marine and human ecosystems, as a key producer in the coastal environments and a major food source in both oceans and industry. Our experiment included one control group and three experimental groups. The control group received no excess nitrogen, group 1 received a low concentration of nitrogen, group 2 received a moderate concentration of nitrogen, and group 3 received a high concentration of nitrogen. The growth of the seaweed was determined by the seaweed weight, size, and color before and after treatment. Color was measured via computer analysis. We hypothesize that abnormally high amounts of nitrogen in an aquatic environment, like that from fertilizer runoff, will lead to overgrowth of Laminaria and an increase in pigmentation that results from an increase in chlorophyll and photosynthetic capabilities due to high nitrate concentrations. This study is important because pollution has a growing impact on marine ecosystems and the extent of its effect on key basal species in these systems is undetermined.

Poster-23

Ethics in Mental Health Research

Erik Kropiwnicki, Biological Sciences, Fordham College at Rose Hill, Madeleine Cardona, Political Science, Fordham College at Rose Hill, Brian Dwyer, Psychology, Fordham College at Rose Hill, Theresa Mandile, Biological Sciences, Fordham College at Rose Hill, Kerry Rota, Psychology, Fordham College at Rose Hill, Colby Wood, Communications & Media Studies, Fordham College at Rose Hill, & Matthew Weinshenker*, Sociology, Fordham College at Rose Hill

In today's world, mental health research is a necessary endeavor in the world of psychology. The products of mental health research lead to improvements in the quality of life for individuals afflicted with mental disorders, and establish a greater base of knowledge about the nature of mental illnesses that can be applied to future treatments. However, researchers encounter multiple ethical issues when performing research on mental health, specifically in the violation of fundamental ethical principles outlined in the Belmont Report that include: respect for persons,

beneficence, and justice and fairness. In this poster, we will present an investigation of the ethical issues encountered by researchers investigating mental health, specifically regarding informed consent and targeting potentially vulnerable populations. There is ongoing controversy regarding the influence of mental health on fluctuating consent capacity and relevant issues such as surrogate consent. The role of the public regarding misconceptions of mental health will also be considered because stigmatization and misinformation may present difficulties in finding research populations. In addition to public misconceptions, therapeutic misconceptions by participants may diminish their capacity to be considered rational and voluntary participants. These factors are important to consider, as they heavily influence a researcher's ability to obtain a research sample. We will present relevant, published literature and case studies from schizophrenia research, research on minors, and research in Dementia and Alzheimer's to portray a variety of ethical issues that researchers may encounter.

Poster-24

Study of the Compositional Change of the CGC Green Roof

Conor Gilligan, Biological Sciences, Fordham College at Rose Hill & Elizabeth Carlen, Biological Sciences, Fordham College at Rose Hill

Green roofs host diverse assemblages of flora and fauna, and enable scientists to closely study environmental changes that occur in ecological communities. Recent research suggests that native plants, especially on unmanaged green roofs, are likely to be succeeded by hardier colonizers and invasive species due to the harsh conditions generally present on green roofs. The Center for Global Conservation's (CGC) green roof, originally established in 2009, has been unmanaged for seven years. Its plant community, originally consisting of native New England grasses, low-growing wildflowers, and small shrubs has been succeeded by common invasive weeds and trees. Our study of the CGC's green roof explored how both the biotic and abiotic conditions of an unmanaged, sloped intensive green roof changed from 2009 to 2016. We also investigated to what extent the green roof's community had been replaced by colonizers. We hypothesized that the overall species richness and vegetative abundance of the green roof would increase due to the introduction of invasive species via seed carriers and the wind. We also hypothesized that as the growing medium depth and moisture levels on the green roof increased, the abundance and richness of plants would increase as well. Lastly, we believed that due to the leaching of water-soluble minerals, the soil quality would diminish. Ultimately, we found that while the overall species richness of the roof did not increase, a greater proportion of nonnative plant species colonized the roof. Additionally, we found data that supported our hypothesis that there is a strong correlation between growing medium depth and plant abundance.

Poster-25

Is α -Chimaerin Involved in Daily Clearance of Photoreceptor Outer Segment Tips in the Eye?

Abigail Bruno, Integrative Neuroscience, Fordham College at Rose Hill & Silvia Finnemann*, Biological Sciences, Fordham College at Rose Hill

α -chimaerin is an inhibitory protein for Rac1, a key regulator of the F-actin cytoskeleton in many tissues. Within the retina, tips of photoreceptor outer segments (POS) shed daily and are removed by the retinal pigment epithelium (RPE) by clearance phagocytosis, which depends on F-actin regulation by Rac1. Clearance of POS tips is circadian and occurs at light onset in mammals. This process is essential to prevent POS debris buildup and its failure causes photoreceptor death and blindness. Here, we test if mice lacking α -chimaerin have abnormal POS tip turnover. We hypothesized that if fewer or no α -chimaerin inhibitory proteins are present then there will be more Rac1 activity, and hence more POS tip turnover. The experiments compared the number of POS tips destined to be cleared at light onset in wild type (WT, +/+), α -chimaerin knock-out (KO, -/-), and α -chimaerin heterozygote (HET, +/-) mice. The retinas were dissected and mounted live on glass slides. We used staining with a green fluorescent biosensor that marks tips for clearance followed by live imaging to detect these fluorescent POS tips. We tested mice blind, without knowing if they were WT, KO, or HET. We later identified the mice by tail clip genotyping. Averaging results of three mice of each genotype, there was no significant difference in tip density between groups. We conclude that α -chimaerin does not play a role in demarcation of POS tips, the initial step of POS clearance. Future experiments will test if a later step of clearance may be affected.

Poster-26

The Effect of Drey Presence on Flight Initiation Distance in the Eastern Gray Squirrel (*Sciurus carolinensis*) in New York City

Laura Frank, Psychology, Fordham College at Rose Hill, Olivia Giannakopoulos, Biological Sciences, Fordham College at Rose Hill, Ian Villagran, Biological Sciences, Fordham College at Rose Hill, Jenna Zuromski, Biological Sciences, Fordham College at Rose Hill & Seth Ganzhorn*, Biological Sciences, Fordham College at Rose Hill

Many animal species have evolved flight behaviors that allow them to escape predation. Studies have described ways to measure these flight behaviors, with the most commonly used being flight initiation distance, or the distance at which the animal decides to flee an approaching predator or threatening stimuli. Environmental factors such as urbanization and tree location can affect this flight distance, especially in the eastern gray squirrel (*Sciurus carolinensis*). Therefore, this study examined whether flight initiation distance in *S. carolinensis* was affected by the presence of a drey, or a nest built of twigs and leaves, in two urban greenspaces. We hypothesized that flight initiation distances would be greater for *S. carolinensis* fleeing to a tree with a drey, compared to *S. carolinensis* fleeing to trees without a drey. We also hypothesized that flight initiation distances of *S. carolinensis* fleeing to trees with a drey would be equal between sites and flight initiation distances of *S. carolinensis* fleeing to trees without a drey would also be equal among sites. To investigate these hypotheses, we measured flight initiation distances of *S. carolinensis* near trees with dreys and trees without dreys in Central Park in New York, NY and Fordham University's Rose Hill Campus in Bronx, NY. We expect the flight initiation distances of *S. carolinensis* fleeing to trees with a drey to be significantly larger than flight initiation distances of *S. carolinensis* fleeing to trees without a drey. We also expected to find no significant difference in flight initiation distances between sites.

Poster-27

Health Education Curriculum Demonstration

Alissa Pellegrino, Psychology, Fordham College at Rose Hill & Rachel Annunziato*, Psychology, Fordham College at Rose Hill

The aim of this research project was to evaluate an elementary school health education curriculum, "Family Health Challenge" that has been developed and piloted with NYC school children by The Mary Mitchell Family and Youth Center. The research was conducted in collaboration with the University of Pretoria in South Africa. The evaluation seeks to demonstrate the curriculum's effectiveness in four ways: 1.) as an easily teachable curriculum that can be used with fidelity by teachers to augment or as a stand-alone health education curriculum; 2.) helping to increase teachers' health knowledge and enhance their teaching efficacy of health issues; 3.) as an engaging curriculum that will teach health knowledge to young children in ways that they can maintain over time; and 4.) help young children develop positive attitudes about health issues. The study sites consisted of three elementary schools in the southwest portion of the Bronx, chosen so as to first help our Fordham neighbors in the spirit of university outreach to the community; the current analyses focus on third graders. Baseline, post, and follow-up measures were administered to enrolled children regarding knowledge and attitudes about good nutrition and physical activity. The long term goal of this project is to promote and disseminate a curriculum that can effectively educate young children and bend the curve on these important health issues. The project is concurrently being conducted by collaborators in South Africa with an overall aim of creating programs delivered in schools broadly equipped to improve health outcomes for underserved students.

Poster-28

Composition-dependent Electrocatalytic Behavior Toward the Oxidation of Small Organic Molecules in Binary and Ternary Precious Metal Nanowires.

Ricardo Marquez, Chemistry, Fordham College at Rose Hill & Christopher Koenigsmann, Chemistry, Fordham College at Rose Hill

The application of precious metals as catalysts for chemical reactions has been widespread in the areas of organic chemistry, fuel cells, sensors, solar cells, among others. Recently, it has been noted that precious metal catalysts make excellent candidates for the electrochemical oxidation of small organic molecules including methanol, ethanol, and glucose. The electrochemical oxidation of glucose is relevant to the amperometric detection of glucose in blood glucose sensors. Alternatively, the oxidation of methanol and ethanol is relevant to the anodic half reaction of polymer electrolyte membrane fuel cells, which is an important renewable energy technology. My project focuses on analyzing the relative catalytic effectiveness of alloyed nanostructured one-dimensional precious metal catalysts. Our goal is to examine the effect of composition in binary and ternary alloys of precious metals (i.e. Pt, Pd, Au, Ag, etc.) on the catalytic activity toward the oxidation of methanol, ethanol, and glucose. We have employed a template-based technique to synthesize nanowires with predictable composition and size. The size, shape, and composition of the wires were investigated by scanning electron microscopy, energy dispersive X-ray spectroscopy, and X-ray powder diffraction. Characterization of the electrochemical properties of these binary nanowires structures is underway.

Poster-29

Correlates of Nonadherence in Child Age Pediatric Transplant Recipients

Allison Parente, Psychology, Fordham College at Rose Hill & Rachel Annunziato*, Psychology,
Fordham College at Rose Hill

Solid organ transplantation has been a major milestone in the history of medicine. One of the most important things after a transplant is to prevent organ rejection. Transplant rejection can be reduced through the use of immunosuppressant drugs. This study aimed to investigate correlates of medication nonadherence among caregivers of children who have had liver transplantation. The study also determined which of these correlates were most influential. Previous studies have shown a correlation between nonadherence and poor medical outcomes. Prior work has concentrated on nonadherence among adolescent patients, but little is known about medication adherence in child age patients. For this age group, medication management is likely overseen by their caregivers. Therefore, it is extremely important to determine what factors may influence nonadherence and then determine what interventions would be necessary to help decrease risks and improve their outcomes. This study focused on children, ages 0-12, who were recipients of a liver transplant. The participants were being treated at Pediatric Liver Transplant Clinic at Mount Sinai Medical Center. These participants included caregivers of 50 child liver transplant recipients who received the transplant at least six months prior and were receiving the immunosuppressant drug Tacrolimus as part of their medication regime. Possible correlates of nonadherence investigated were distress, health literacy, barriers to adherence, and general parenting choices. Results will assist with identifying targets for parenting interventions in the context of post-transplant care.

Poster-30

Health Related Behaviors and Mental Health Literacy in College Students

Allison Parente, Psychology, Fordham College at Rose Hill & Rachel Annunziato*, Psychology,
Fordham College at Rose Hill

Concerns about mental health and mental health literacy in college students have become more prevalent in recent years. Findings are showing an increase in mental illness in young adulthood, specifically during the college years. Mental health literacy is the ability to know and understand mental health disorders so that one is fully equipped to recognize specific symptoms, be able to obtain the proper treatment and prevent further difficulties (Jorm, 1997). Limited mental health literacy affects an individual's ability to understand specific health information, cope with distress, practice healthy behaviors, and seek appropriate treatment. This knowledge deficit can be associated with decreased health outcomes, specifically when pertaining to health-related behaviors such as sleep patterns, alcohol consumption, smoking, drug use and sexual relationships (Cranford et al., 2009). This study examines the influence of mental health literacy on how students understand and cope with distress and their health behaviors. The current study targets college aged students through multiple questionnaires addressing mental health and health related behaviors. These included an adapted youth risk behavior survey, an attitude seeking survey, a mental health vignette, and a demographic survey. Results from this study may be important for students in regards to recognizing

deficits in mental health literacy and its correlates. Findings will be used towards possible college aged mental health help-seeking programs.

Poster-31

Social Dynamics on Learning: A Study of Facial Mimicry in Gelada Baboons

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The use of physical expressions and gestures is an important behavior in animals, especially primates, that allows for nonverbal communication. During early development, infants learn about their world by mimicking caretakers, most commonly the biological mother but possibly other members of their group or family. Within this behavior exists facial mimicry, an important tool used by humans and other primates. Geladas (*Theropithecus gelada*) are higher primates that utilize facial expressions to convey different emotional states to troop members or members of a different species. By studying facial mimicry of an infant gelada and their different social relationships, we aimed to better understand the effects of imitation on gelada social development. We observed a captive troop of geladas at the Bronx Zoo, New York, NY, USA. We hypothesized that infant gelada mimicry will be more rapid, frequent, and prolonged to the mother's facial expressions than to other members of their troop. Using an ethogram to record the duration and frequency of facial expressions, we found that facial mimicry occurred more frequently in the interactions of the infant gelada and mother than interactions with other related members within the troop. These data suggest that the maternal-offspring relationship has the greatest effect on social development in this troop of captive geladas.

Poster-32

Seasonal Variation is Associated with Executive Function in Young Adults with Elevated Depressive Symptoms

Tiffany Le, Psychology, Fordham College at Rose Hill, Eileen Moran, Clinical Psychology, Graduate School of Arts and Sciences, Cara Crook, Clinical Psychology, Graduate School of Arts and Sciences, Anika Masand, Psychology, Fordham College at Rose Hill, Brianne Roche, Psychology, Fordham College at Rose Hill, Adam Brickman, Neurology, Columbia University & Molly Zimmerman*, Psychology, Fordham College at Rose Hill

Extensive research has established a relationship between depression and cognition and that depression may be most severe in the winter months when exposure to natural sunlight is low. However, less is known about the effects of seasonal variation on the relationship between depressive symptoms and cognition. The purpose of this study was to examine the relationship between depressive symptoms and executive function as a function of season in a nonclinical sample of young adults. 111 participants (mean(sd) age=20(1.70; 29.7% men) recruited over the course of 1 year completed psychosocial questionnaires and neuropsychological assessment that included measures of depressive symptoms (Beck Depression Inventory II; BDI-II) and executive function (Trail Making Test part B; TMTB). A mixed design general linear model was used to test the main effects of season and BDI-II and their interaction on TMTB performance. Simple bivariate correlations between BDI-II and TMTB, stratified by season, were run as post hoc tests in the event of a significant interaction term. There was a significant main effect of Season ($F(1,103)=3.45$, $p=0.02$), which indicated that individuals tested in the winter scored the worst on TMTB. A significant interaction between Season and BDI-II ($F(3,103)=3.22$, $p=0.03$) indicated that there was a correlation between BDI-II and TMTB for individuals tested in the winter ($r=0.48$, $p<=0.01$), but not in the summer ($r=-0.03$, $p=0.93$), spring ($r=-0.34$, $p=0.36$), or fall ($r=0.23$, $p=0.12$). These findings demonstrate the importance of seasonal variation when examining cognition and depressive symptoms among young adults.

Poster-33

Public-Private Partnerships as a Solution to the Lack of Drug Development for Neglected Tropical Diseases

Richard Chao, Biological Sciences, Fordham College at Rose Hill & Paul Smith*, Chemistry,
Fordham College at Rose Hill

India's pharmaceutical industry currently ranks third in the world in terms of volume of pharmaceutical drugs produced and fourteenth in terms of industry value (Panchal). Yet, upon further investigation, India's pharmaceutical industry is focused primarily around the production of generic drugs rather than the developments of drugs to combat the many neglected tropical diseases that affect developing countries such as India. Neglected tropical diseases are a group of parasitic and bacterial infectious diseases that affect over 1.4 billion of the world's most impoverished people and are the cause of death for over 500,000 people a year (CDC). Some examples include: hookworm infection, lymphatic filariasis, and rabies. Because the victims of neglected tropical diseases often live in impoverished conditions, India's pharmaceutical industry have argued that research and development is too costly and risky to invest in low-return neglected diseases (Trouiller). For this project, I will be conducting research on public-private partnerships in drug development, especially in relation to India, to combat tropical neglected diseases. This project builds upon published works that have provided significant evidence towards the current pharmaceutical industry's disregard of tropical neglected diseases and will offer private public partnerships as a potential solution to the issue. Public private partnerships offer a potential solution because a neutral third party divides the investment into a drug's development between the public and private sectors as well as regulates the progress of the project to ensure efficiency. Public-private partnerships in drug development could solve the health policy issue of neglected tropical diseases.

Poster-34

Optogenetic stimulation of dentate gyrus engrams improves age-related cognitive decline

Maia Lauria, Integrative Neuroscience, Fordham College at Rose Hill & Molly Zimmerman*, Psychology,
Fordham College at Rose Hill

Aging often leads to cognitive decline. There are currently no effective treatments for improving age-related memory impairments. Here, we utilized a pattern separation (PS) task to determine how age impacts the ability to discriminate two similar contexts. One- and two-year old aged mice were severely impaired in PS when compared with 6-month-old (young) mice. Aged mice could not discriminate between a neutral and a fearful context, whereas young animals learned to discriminate and thus, pattern separate. In an attempt to improve this deficit, we targeted dentate gyrus (DG) engrams with optogenetic strategies in ArcCreERT2 mice, a transgenic mouse line that allows for the labeling of specific memory engrams using fluorescent markers. Optogenetic stimulation of neutral "B" engrams in the neutral B context significantly decreased freezing in aged ArcCreERT2 (+) mice. Optogenetic stimulation of fearful "A" engrams in the neutral context B did not alter freezing in aged ArcCreERT2 (+) mice, suggesting the previous experiment was engram-specific. Furthermore, chronic stimulation of neutral "B" engrams in the B context significantly decreased freezing in context B in ArcCreERT2 (+) mice, and decreased freezing levels the day after, without optogenetic stimulation, suggesting a long-lasting improvement in PS. Here, all implants were verified using histology to determine the correct placement. Moreover, activity patterns were measured to determine how stimulation affected c-fos, a marker of neuronal activity. Chronic, but not sub-chronic, optogenetic stimulation increased the number of c-fos+ cells in the DG. These studies suggest that optogenetic manipulation of the hippocampus (HPC) can improve behavioral PS, and that chronic optogenetic-like stimulation may be able to improve aged-related decline.

Poster-35

The Effect of Varying Nitrite Levels on Pathogenic Soil Bacteria Growth

Alice Herchek, Biological Sciences, Fordham College at Rose Hill, Thomas Mistretta, Biological Sciences, Fordham College at Rose Hill, Gianna Rosamilia, Biological Sciences, Fordham College at Rose Hill, Charles Seaks, Biological Sciences, Fordham College at Rose Hill & Seth Ganzhorn*, Biological Sciences, Fordham College at Rose Hill

The nitrogen cycle is an essential biogeochemical circuit that converts nitrogen into compounds which circulate through abiotic and biotic systems. Atmospheric nitrogen is converted into various compounds by soil microbes for incorporation and use by more complex organisms. Soil nitrogen levels have been progressively increasing as a result of the human effect on the global nitrogen cycle- this includes use of nitrogen fertilizer in agriculture and increased atmospheric carbon dioxide production in manufacturing. This study aims to assess whether increasing soil nitrogen levels have an effect on the growth rate of bacteria in the soil. *Bacillus cereus*, a microbe commonly found in soil, was grown on growth medium containing six different concentrations of nitrite, including a nitrite free negative control, under controlled environments. Colony counts were conducted after incubating for 24 hours at 37°C. We hypothesize that increased nitrite levels in growth medium will result in increased *B. cereus* growth rates because nitrite has been positively correlated with growth of other strains of soil bacteria. This study is important to human health because *B. cereus* is a common gastrointestinal pathogen, and an increase in the populations of *B. cereus* in the soil could transfer to agricultural crops resulting in higher infection rates upon ingestion.

Poster-36

The Effect of Physical Activity on Anxiety and Depression Symptoms in Young Adults

Anika Masand, Biological Sciences, Fordham College at Rose Hill, Eileen Moran, Clinical Psychology, Graduate School of Arts and Sciences, Tiffany Le, Psychology, Fordham College at Rose Hill, Cara Crook, Clinical Psychology, Graduate School of Arts and Sciences, Jessica Weathers, Psychology, Fordham College at Rose Hill, Brianne Roche, Psychology, Fordham College at Rose Hill & Molly Zimmerman*, Psychology, Fordham College at Rose Hill

Previous research has shown that physical activity improves the clinical syndromes of anxiety and depression. The goal of this study is to determine whether an objective measure of physical activity is associated with symptoms of depression and anxiety in young adults. One hundred eleven study participants (mean(SD) age=20(1.70; 70.3% women) completed questionnaires assessing depressive and anxiety symptoms as well as an actigraphy based measure of objective daily physical activity over a one-week period. It was hypothesized that increased levels of physical activity would be associated with decreased depression and anxiety symptoms. Pearson correlations indicated that increased physical activity was related to lower depressive symptoms ($r = -.265, p = .025$) but was not associated with anxiety symptoms ($r = -.160, p = .179$). It was also found that participants with greater depression experienced higher anxiety levels ($r = .519, p = .000$). A linear regression model indicated that depressive symptoms were associated with physical activity above and beyond the effect of anxiety symptoms ($\beta = -0.27, t = -2.04, p = 0.04$). However, there were no differences in these relationships between men and women. These findings highlight the important relationship between physical activity and symptoms of depression in young adults. Further longitudinal study is needed to explore the potential bi-directionality of these relationships

Poster-37

Comparative observations of herd demographics: A case study of captive California sea lions (*Zalophus californianus*)

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The answer to the problem of how to house surplus males in captive conservation programs can be found in the less typical formation of “bachelor herds” seen in some social mammals. Bachelor herds are formed when sexually

immature or non-dominate males form a new familial group. California sea lions (*Zalophus californianus*) are a social, sexually dimorphic, mammal that is native to western North America. Sea lions become easily accustomed to humans; thus, they have a long history of being exhibited in zoos and aquariums. However, captive California sea lions still exhibit many behaviors that are observed in the wild. These behaviors include aggressive and play behaviors, as well as unique vocalizations, behaviors that are the foundation of a herd's social structure. We observed two different captive herds, each with differing demographics: an all-male 'bachelor herd' at the Queens Zoo, and a mixed sex herd at the Bronx Zoo. Due to the differing demographics, we hypothesized that the mixed sex herd would be more active. The herds were observed over the course of six weeks; observation periods were recorded weekly for one hour at a time. Behaviors of individual sea lions were recorded and categorized as aggressive, play, or vocalization behavior. Observations supported our hypothesis that the mixed sex herd present at the Bronx Zoo exhibited the highest level of activity. These findings contribute to the idea that even in captivity, the social structure and demographics of the herd play a substantial role in behavior and interactions amongst one another.

Poster-38

Smoking status and dose of opioid prescription among Veterans of Recent Wars

Caroline Quon, Integrative Neuroscience, Fordham College at Rose Hill & Haruka Minami*, Psychology, Fordham College at Rose Hill

This study aims to further explore the relationship between the smoking status and opioid use by investigating if smoking status is associated with higher dose and greater number of opioid prescriptions among Veterans of recent wars in Iraq and Afghanistan. Cross-sectional analysis of the Women Veteran Cohort Study (WVCS), Veterans of recent wars, who had at least one visit to a Veterans Health Administration primary care clinic between 2001-2012. Smoking status was defined as current, former, and never smokers. Opioid receipt was defined as at least one prescription fill +/-6 months of smoking status, and dose and strength were examined comparing number of pills prescribed to calculate using Morphine equivalent dose (MEQ). Number of prescriptions filled in one year was categorized to one and more than one prescription. 32,994 veterans with an opioid prescription were identified. The mean age was 30 years, 49% were current smokers, 16% were former smokers, and 35% were never smokers. Current smoking was associated with higher mean MEQ values (27.5) compared with that of former smoking (26.4) and never smoking (25.3) [$p < .0001$]. Current smokers were also more likely to receive more than one prescription (77%) compared with former smokers (72%) and never smokers (65%) [$p < .0001$]. We found an association between smoking status and dose of opioid prescription in a cohort of young Veterans. Current smokers received a stronger dose of opioids compared to former and never-smokers. The findings of this study are important for further understanding the biological mechanisms between nicotine and metabolism of opioids.

Poster-39

Pre-participation mental health screening: An analysis of athletes' perceptions of mental health services

Turner Block, Psychology, Fordham College at Rose Hill & Rachel Annunziato*, Psychology, Fordham College at Rose Hill

The high demand for sport psychology services is founded in recognizing the numerous stressors which impact athletes' performance. This is especially apparent in university settings where many institutions do not have specialized mental health services for athletes. Past research has focused on barriers athletes face in seeking mental health services, including stigmas and a lack of available support. To further address these factors, the current study delivered surveys across 19 varsity teams to 150 student-athletes at Fordham University. These participants included both genders (47% female, 53% male) with ages ranging from freshman to graduate students. These participants filled out 9 mental health screening measures recommended by the NCAA and were asked about the current services offered for athletes' mental health. The first research question addressed was: is there a large number of athletes who do not pass the mental health screenings? The second research question was: do a significant number of athletes want specialized mental health services? The first hypothesis, that there would be a large number of athletes who do not pass the mental health screenings, was supported by the results. The second hypothesis, that a significant number of athletes would want specialized mental health services, was also supported by the results. In the future, research

should continue to focus on the need for mental health screenings for athletes before the start of their season. The results also suggest that there is a need for universities to have specialized mental health services for their student-athletes.

Poster-40

Human Disorders and Gene Therapy

Nicole Cox, Biological Sciences, Fordham College at Rose Hill, Claire Becker, Biological Sciences, Fordham College at Rose Hill, Mackenzie Connelly, Biological Sciences, Fordham College at Rose Hill, Adara Mifsud, Biological Sciences, Fordham College at Rose Hill, & Varuni Jamburuthugoda*, Biological Sciences, Fordham College at Rose Hill

Genetic disorders in humans are caused by abnormalities or mutations in one's genome that are either inherited or caused by environmental factors. Changes in the sequences of DNA can significantly alter the expression of a gene, which in turn can lead to genetic disorders. Genetic disorders can be grouped into three categories: single gene where only one particular gene is altered, chromosomal where the number or structure of a chromosome is mutated, and multifactorial where multiple genes have been altered. Gene therapy is an experimental technique that can effectively replace or inactivate mutated genes that are known to cause various human diseases. By introducing a normal copy of a defected gene into a cell, this technique is able to restore the genetic code to its original function for the cell. Gene therapy research is currently being tested on human disorders such as muscular dystrophy, cystic fibrosis, and Huntington's disease. If successful, gene therapy would not only allow doctors to effectively treat a disorder, but also would provide an alternative to surgery and medications. Although gene therapy was introduced in 1972, it has shown limited progress in treating a wide range of human disorders.

Poster-41

Optics of Confined Liquid Crystals for Gas Detection

William Charles, Physics, Fordham College at Rose Hill, Daniel Carrozzi, Engineering Physics, & Petr Shibayev*, Physics, Fordham College at Rose Hill

Cholesteric liquid crystals (CLCs) of a wide range of viscosities were studied experimentally in relation to their use as gas sensors and sensors of volatile organic compounds (VOCs), specifically ethanol, cyclohexane, toluene, acetic acid, and pyridine. CLCs were obtained by mixing low molar mass liquid crystals (MBBA and cholesterol derivatives with siloxane based oligomers). The droplets of CLCs were placed in containers with controlled atmospheres. The shift of the selective reflection band, predominantly from shorter to longer wavelengths, and the color changes were observed in the CLC illuminated by light coming from the various directions. Visible optical changes were observed in droplets with viscosities of CLCs ranging from c.a. 4 Pa*s to 10⁵ Pa*s. The most responsive droplets in which the shift of the selective reflection band occurs at lower concentrations of VOCs were prepared from CLC mixtures with the lowest viscosities. Higher viscosities of CLCs lead to a slower response to VOCs, but the rate of response is different for each pair of VOC and CLC with a certain viscosity. This finding opens a possibility for selective detection of VOCs by CLCs with different viscosities. The mechanism of VOCs diffusion, interaction with CLC matrix and optical changes is discussed.

Poster-42

Avian Species Distribution Along the New York Metropolitan Area Urban-Rural Gradient

Katherine Sadaniantz, Biological Sciences & Music, Fordham College at Rose Hill, Dominic Fogarasi, Biological Sciences and Spanish Language and Literature, Ryan Keklik, Biological Sciences, & Beth Ansaldi*, Biological Sciences, Fordham College at Rose Hill

Research has shown that bird abundance and species richness vary across the urban-rural gradient surrounding large metropolitan areas. Our study replicates these methods in the New York metropolitan area, focusing specifically on four urban exploiter and four urban avoider bird species. We survey abundance and species richness along an urban-

rural gradient and examine the impact of land-use on the prevalence of these species. At each study site, we walked five twenty-meter transects at a pace of thirty seconds per meter, with each transect at least ten meters apart. We observed and recorded individual birds by sight and sound. Habitat characteristics, such as presence or absence of trees and/or water bodies, were also recorded along each transect. In the lab, ArcGIS was used to analyze the landcover composition within a 0.25 kilometer radius of our study sites. Observational and GIS site data was analyzed using one-way ANOVA and Pearson's correlation tests. We hypothesize that there is a significant difference between the abundances of urban avoider and urban exploiter species across the urban-suburban gradient that is correlated with percent canopy cover, grass/shrub cover, and impervious surface. This research is important for understanding the impact of urbanization on the New York metropolitan area, and possibly for future conservation efforts.

Poster-43

Chiral Liquid Crystals of Different Viscosities and the Detection of Volatile Organic Compounds

Lee Anne Viglia, Engineering Physics, Fordham College at Rose Hill, Daniel Carrozzi, Engineering Physics, Fordham College at Rose Hill, William Charles, Engineering Physics, Fordham College at Rose Hill, Xiaoyurui Wang, Engineering Physics, Fordham College at Rose Hill, Violet Guzman, Engineering Physics, Fordham College at Rose Hill, & Petr Shibayev*, Physics, Fordham College at Rose Hill

Cholesteric and nematic liquid crystals (LCs) confined in different geometries such as rectangular, triangular and spherical grooves, as well as prepared as thin films and droplets were studied as promising gas sensors for volatile organic compounds (VOCs), namely ethanol, toluene, cyclohexane, and acetic acid. A variety of illuminating conditions was used to find an optimal configuration that provided the best sensitivity and selectivity of LCs to the VOCs. Differences in responses were studied for planar and homeotropic orientation of LCs on the substrates. It was found that waveguide geometry has a number of advantages for detecting small concentrations of VOCs well before LCs undergo isotropization transition. The light propagation in the waveguides was analyzed. The sequence of transitions previously discovered in [1] (change of order parameter on the surface of LC, mass transfer between areas of LC with different order parameter and isotropization) was confirmed for LCs with relatively low viscosities (c.a. 102). The prototype of the VOCs "smelling nose" was built in order to selectively detect the presence of VOCs in the air. Its characteristics, functioning and optimization were analyzed.

Poster-44

Chromosomal Abnormalities

Daniel Alicea, Biological Sciences, Fordham College at Rose Hill, Vanessa Wendler, Biological Sciences, Fordham College at Rose Hill, Nikole Lisa, Biological Sciences, Fordham College at Rose Hill, Cameron DiGate, Biological Sciences, Fordham College at Rose Hill, & Varuni Jamburuthugoda*, Biological Sciences, Fordham College at Rose Hill

Chromosomal abnormalities are disorders in which, entire chromosomes, or large segments of them, are either missing, duplicated, or altered. The Klinefelter Syndrome (KS), Down Syndrome (DS), and Turner Syndrome (TS) are numerical abnormalities--when an individual is missing one of the chromosomes from a pair or has more than two chromosomes instead of a pair. KS is caused by nondisjunction which occurs when a pair of sex chromosomes fails to separate during egg (or sperm) formation. While KS is mostly XXY individuals that develop as males, some XXY individuals develop as intersex or female. Doctors diagnose KS through karyotyping; it occurs when an individual has a full or partial extra copy of chromosome 21. This condition may occur through chromosomal defects such as translocation. When individuals have an extra copy of chromosome 21, it results in physical characteristics such as poor muscle tone and behavioral characteristics such as poor judgement. Complications of DS range from sleep apnea and obesity. TS occurs when an X chromosome is missing or partially missing in female cells. TS is caused by monosomy, in which cells are missing the chromosome, or by mosaicism, in which some cells are missing the chromosome and some have both. TS can cause infertility and heart defects. To test for TS, karyotyping determines the presence or absence of the X chromosome. Treatment options for girls are growth hormones and estrogen therapy. Future research is being conducted to connect the environmental and biological factors that pave the way for effective treatment options.

Poster-45

The Quality of Self-Defining Memories in Young-Adult Cancer Survivors' Personal Narratives

Cailee Tallon, Psychology, Fordham College at Rose Hill, Tessa Santarpia, Biological Sciences, Fordham College at Rose Hill, & Mary Procidano*, Psychology, Fordham College at Rose Hill

This study examined the qualities attributed by young adult survivors of cancer to critical, self-defining events in their cancer stories. It was part of a larger, mixed-methods (qualitative and quantitative) examination of the nature of resilient development in the specified population. In our culture, adolescents and young adults must develop coherent self-concepts, and develop secure personal identities in order to continue along healthy developmental trajectories and master later developmental tasks. (Erikson, 1998) This process is manifested in part through young adult's construction of narrative identities. Virtually nothing is known about ways that profound psychosocial disruptions, such as life-threatening illness including cancer, can influence young adults' narrative identities. 92 young-adult survivors (aged 18-30) of cancer were interviewed about several self-defining memories from their cancer stories; these included a high-point, a low-point, and a turning point. Coding systems were constructed and used to identify salient qualities of each event. Codes for high points were concerned with the timing, emotion, and occasion (just to name a few) of the participant's report. Codes for low points were concerned with the kind of self-image that resulted in the low point (among other codes). Results will include the frequencies with which these qualities emerged, and examples of non-resilient and resilient narrative constructions. Results are discussed in terms of potentially adverse versus enhancing impacts that severe stressors may have on young adults' development, and implications for preventive and treatment interventions for adolescents and young adults who experience serious illness.

Poster-46

Understanding the origins and diversity of wild and inbred brown rats (*Rattus norvegicus*) using nuclear and mitochondrial genome analysis

Olivia Micci-Smith, Biological Sciences, Fordham College at Rose Hill, Emily E. Puckett, Biological Sciences, Fordham College at Rose Hill, & Jason Munshi-South*, Biological Sciences, Fordham College at Rose Hill

The brown rat (*Rattus norvegicus*) was the first mammal species domesticated for research purposes. Inbred rats are useful genomic models to link genotypes and phenotypes, and frequently used as models for human diseases. The first inbred rat strain, the Wistar, was developed in 1909 in Philadelphia, and today there are over 500 inbred strains; however medical supply companies do not release information on the wild population that founded the inbred line. Thus the research community does not know the extent of global genomic diversity within these models. We analyzed both the nuclear and mitochondrial genomes of brown rats and inferred the geographic origin of the inbred rats. Using 32k single nucleotide polymorphisms throughout the nuclear genome, we projected 22 inbred rat strains into the principal components space from a dataset of global rat diversity (n=314). We observed that the inbred lines clustered with samples from Western North America. A preliminary network analysis of 59 mitogenomes revealed the inbred lines fell into two distinct clades, one each sharing recent common ancestry with Asian and European rats. Our results contradict our hypothesis that inbred rats originated from a limited geographic range, mainly Eastern North America and Great Britain, where early 20th century medical supply companies were located. The incongruence between the mitochondrial and nuclear genomes can be explained by the presence of both Asian and European mitochondrial haplotypes within Western North America. Despite higher than expected mitochondrial diversity, our results suggest that inbred rat strains represent a limited subset of natural diversity.

Poster-47

The Effects of Epidermal Wax Esters on the growth of *Pseudogymnoascus destructans*

Anna Jane Hudson, Environmental Science, Fordham College at Rose Hill & Craig Frank*, Environmental Science, Fordham College at Rose Hill

White Nose Syndrome (WNS) in bats is caused by a cutaneous infection with the fungus *Pseudogymnoascus destructans* (Pd). WNS produces high over-winter mortality in hibernating North American bat species, particularly *Myotis lucifugus*, *M. septentrionalis*, *M. sodalis*, and *Perimyotis subflavus*. The epidermis of mammals, including bats, contains wax esters that are produced by their sebaceous glands. The specific wax ester types found in the epidermis of a European bat species, *Myotis myotis*, were recently quantified by another laboratory. *Myotis myotis* is highly resistant to cutaneous infection with Pd, and thus we predicted that some of wax esters found in the epidermis of this bat species may inhibit Pd growth. We conducted laboratory culture experiments with Pd maintained on media varying in wax ester composition to test our hypothesis. We found that wax esters containing the fatty acids 18:1, 16:1, and 18:2 all inhibit the growth of Pd. These findings suggest that multiple epidermal lipids contribute to the susceptibility of bat species to infection with Pd during hibernation.

Poster-48

Is the use of deception ethical in psychological research?

Cassandra Jensen, Psychology, Fordham College at Rose Hill, Alexa McKnight, General Science, Fordham College at Rose Hill, Jayxa Alonzo, Psychology, Fordham College at Rose Hill, Eric Strazza, Fordham College at Rose Hill, Giuseppe D'Arrigo, Economics, Fordham College at Rose Hill & Bryan Pilkington*, Center for Ethics Education, Fordham College at Rose Hill

In research involving human subjects, deception is a highly debated ethical issue. Deception can range from relatively minor omissions, such as researchers not disclosing the full purpose of the study, to outright lies about their identity and the nature of the study. This issue is most relevant when full knowledge of the purposes of a study might change subjects' behavior and willingness to participate. There are many moral, methodological, and disciplinary criticisms that are typically in opposition of utilizing deception in research. This includes its ability to reduce the public's trust in research as well as their trust in expert authorities. Consequently, future research participants may be skeptical about participating in research studies. Furthermore, serious acts of deception in research violate informed consent standards, ethical principles and guidelines, institutional review board (IRB) regulations, and can infringe upon participant rights. IRB's accept the need for certain types of studies to employ strategies that include deception when other study methods are insufficient. However, employment of such strategies must be justified. This poster aims to raise awareness by discussing the dangers and implications associated with deception, situations where deception may be necessary and is justifiable, and post-experiment responsibilities of researchers who employ deception. We also intend to address the method used to check if a study is deceptive in nature, how to reframe research so that it is not, and implications and effects deception has on research and society. Here, we primarily rely on using examples and published case studies. These examples will be discussed after taking into account the outcome of the experiments, how some could have been prevented, and how the researchers used correct regulations and protocol.

Poster-49

A Resurrection Study Examines the Effects of Artificial Selection for Rapid Cycling in *Brassica rapa* Fast Plants

Adair Boudreaux, Biological Sciences, Fordham College at Rose Hill & Steven Franks*, Biological Sciences, Fordham College at Rose Hill

This study examines evolution in *Brassica rapa* plants that have been artificially selected for rapid cycling (fast plants). Using the resurrection approach, we compared ancestral and descendant fast plants under common conditions in the lab. The results show that the artificially selected descendants both germinated and flowered faster than the ancestors, as expected. In addition, the descendants grew larger leaves and more flowers on average than the ancestral plants, indicating that they may be more adapted to growth under lab conditions. During the course of this study, leaf tissue was collected from each plant for further testing, including carbon and nitrogen content analysis to determine differences in nutrient content between the populations. The results from this analysis indicated a higher carbon to nitrogen ratio in the ancestors as compared to the descendants. Tissue was also collected for DNA extraction and sequencing to locate the genes that control flowering. The results of this study contribute to our understanding of adaptive evolution.

Poster-50**A Review of the Current Models of Parkinson's Disease**

Lacey Stribling, Integrative Neuroscience, Fordham College at Rose Hill & Patricio I. Meneses*, Biological Sciences, Fordham College at Rose Hill

The advances made in understanding and treating Parkinson's disease (PD) are due in large part to effective animal models. The ideal model of PD should replicate the degeneration of dopaminergic neurons in the substantia nigra pars compacta via mitochondrial dysfunction, oxidative stress, impaired proteasome function, the depletion of striatal dopamine resulting in motor deficits, and the appearance of Lewy bodies in remaining dopaminergic neurons. This paper will examine three current models of PD, the MPTP model, the paraquat model, and the rotenone model. The MPTP model plays a major role in PD research due to its ability to damage the nigrostriatal dopaminergic pathway and respond to L-DOPA, but it fails to produce the characteristic Lewy bodies observed in PD. The rotenone model exhibits degeneration of nigrostriatal dopaminergic neurons, α -synuclein containing inclusions reminiscent of Lewy bodies, and responsiveness to L-DOPA, but this model is plagued by high variability and mortality rates, low reproducibility, and a labor-intensive protocol. Like the rotenone model, the paraquat model reproduces degeneration of nigrostriatal dopaminergic neurons and α -synuclein containing inclusions, but exhibits little if any dopamine reduction and is not responsive to L-DOPA treatment. New, more accurate and complex models of PD are needed to further elucidate the pathogenic mechanisms of PD and to develop more effective symptomatic drugs as well as novel disease-modifying therapies.

Poster-51**Depression in Amish and Mennonite Communities: Is it Stigmatized?**

Erica Howard, Integrative Neuroscience, Fordham College at Rose Hill & Amy Roy*, Psychology, Fordham College at Rose Hill

Given the severe impact of psychological illness, the need for appropriate treatment has become an important topic throughout mainstream society. Previous literature has targeted best practices for the general public, but little information is known about the prevalence of mental illness, especially depression, among more private communities throughout society. One such secluded group is the Amish and Mennonite peoples, who devote their lives to God and reject outside influence, including Westernized standards of mental health treatment. This study was designed to compare the prevalence of depression and utilization of care to stigmatic attitudes associated with mental illness in this commune. Amish and Mennonite subjects were asked to complete a survey, including the PHQ-8 and questions examining views of psychological illness. We hypothesized that there would be a negative correlation between attitudes of mental illness and the existence of depression. Results of lower depression rates and higher stigmatic beliefs may indicate a tendency to overlook depressive symptoms due to negative bias. Initial data review revealed a depression prevalence of 16.81%, although final analyses related to stigmatic attitudes are still pending. Conclusive work will be presented at the Undergraduate Research Symposium in April. Through final discussions, we hope to expand knowledge of the stigmatic reality and prevalence of mental illness in underrepresented communities. Future studies could expand on reasons underlying this stigma in an effort to increase cultural competence and to provide the best possible care for all cultures.

Poster-52**The Effects of Human Activity on Scent Marking in Captive Ring-Tailed Lemurs**

Alyson Ferrante, Biological Sciences, Fordham College at Rose Hill, Adair Boudreaux, Biological Sciences, Fordham College at Rose Hill, Olivia Micci-Smith, Biological Sciences, Fordham College at Rose Hill, Laura Wright, Biological Sciences, Fordham College at Rose Hill, & Beth Ansaldi*, Biological Sciences, Fordham College at Rose Hill

Mammals exhibit scent marking for a variety of reasons, including to show social dominance, to claim resource ownership, or to signal a reproductive state during mating. A previous study has shown that aggressive and stress-induced behaviors in primates increase as the number of zoo visitors present increases. Scent marking behaviors

may follow this trend, as an animal's intention when scent marking is usually associated with aggression. If so, this could indicate that mammals feel threatened by human visitors and seek to display social dominance in their presence. Ring-tailed lemurs are a female-dominated species that use scent marking as a means to defend resources, mediate inter-troop spacing, and indicate their social rank and reproductive state. We predict that ring-tailed lemurs will display more aggressive behavior, as indicated by scent marking, as human activity in the area increases. This study will examine the frequency of scent marking in female ring-tailed lemurs at the Bronx Zoo based on human activity by determining the average number of visitors and the occurrences of the behavior within 25 20-minute time intervals. These sampling periods will consist of different times of day and varying days of the week. Upon analyzing this data, we determined a significant correlation between occurrences of scent marking behavior and number of zoo visitors present in the exhibit. Our results indicate a potential need for zoos to regulate or limit the number of visitors in the ring-tailed lemur exhibit, in order to minimize the animals' stress and enhance their wellbeing.

Poster-53

A comparison of protist biodiversity and water quality among freshwater sources in Southern New York State

Anthony Iuso, Biological Sciences, Fordham College at Rose Hill, Vahagn Stepanyan, Biological Sciences, Fordham College at Rose Hill, Alfred Amendolara, Biological Sciences, Fordham College at Rose Hill, & Evon Hekkala*, Biological Sciences, Fordham College at Rose Hill

The extremely diverse kingdom Protista is comprised of eukaryotic organisms that carry out a number of essential ecological functions including oxygen and nutrient production. The biodiversity of protists in aquatic environments may be dependent on water quality and could therefore vary among different freshwater sources. Human and naturally induced pollutants have significant effects on the sustainability of organisms in these water sources. We collected water from lakes at three sites, Central Park (Manhattan, NY), Van Cortlandt Park (Bronx, NY), and the Louis Calder Center (Armonk, NY). Sites were selected based on the level of urbanization, with Central Park containing the highest degree of urbanization and the Louis Calder Center containing the lowest degree. It was hypothesized that the natural water sources located in more urbanized areas of New York would contain lower protist diversity and poorer overall water quality, due to higher levels of pollution, as compared to natural water sources in less urbanized areas. Water quality was tested via a commercial water quality test kit, which included specific reagents that tested for phosphate, nitrogen, and pH levels. Protist biodiversity was measured by observing the microorganisms under a compound microscope, and quantified by using the Simpson's Diversity Index. Comparisons of biodiversity and water quality among sites were conducted using analysis of variance (ANOVA). We expected higher concentrations of phosphate and nitrogen, as well as lower pH levels and protist biodiversity in more urbanized water sources because those sites are exposed to greater levels of pollution.

Poster-54

Predicted vs Experimental NMR Chemical Shifts

Creston Singer, Chemistry, Fordham College at Rose Hill & Donald Clarke*, Chemistry, Fordham College at Rose Hill

NMR chemical shifts are often predicted using computer programs e.g. ChemNMR which is used at Fordham in connection with organic chemistry lab. When stereochemistry is involved, predictions don't match experimental spectra. Diastereotopic methyl groups are a common example of this problem. Quantum chemical programs such as Gaussian correctly predict diastereotopic differences in chemical shifts. However, the standard program calculates these shifts for the lowest energy model of a molecule at zero degrees Kelvin in solution. Therefore, it does not account for rotation about chemical bonds or inter- or intra-molecular effects which occur in solution at room temperature. Overall, while neither predictive programs are perfect, when used in tandem with each other, the two programs can help correct each other.

Poster-55

Health Disparities Between Alaska Natives and U.S. and Alaska Whites: The Legacy of Colonialism and Forced Assimilation

Janessa Warren, Anthropology, Fordham College at Rose Hill & Emily Rosenbaum*, Sociology, Fordham College at Rose Hill

Despite large gains in health status over the last few decades, Alaska Natives still have markedly less positive health outcomes than U.S. and Alaska Whites. In various mortality and wellness indicators including, but not limited to, all-cause mortality, suicide mortality, life expectancy, infant and child mortality, heavy drinking, and poor physical health, Alaska Natives are, on average, 2-4 times more likely to have negative outcomes. These disparities are not due to some inherent trait in Alaska Natives. Rather, they reflect the very high rates of social pathologies that burden Alaska Native communities today and the present-day marginalization and discrimination Alaska Natives are subjected to, both of which are legacies of a long history of colonialism and forced assimilation starting in the mid-eighteenth century. The purpose of this paper is to place Alaska Native health disparities in their proper historical and social context by relating this history of colonialism and forced assimilation. The paper will conclude with recommendations to help reduce the health disparities.

Poster-56

Data Fabrication and Plagiarism

James Stahl, Computer and Information Sciences, Fordham College at Rose Hill, Andrew Johnston, Computer and Information Sciences, Fordham College at Rose Hill, Alex Despotakis, Computer and Information Sciences, Fordham College at Rose Hill, & Gary Weiss*, Computer and Information Sciences, Fordham College at Rose Hill

Today's main terrorist groups, such as ISIS and Al-Qaeda, have become adept at leveraging the Internet to disseminate information both among themselves and to potential members. They use sites both on the "clear" or "surface" web and on the "dark" web. The network of sites on the dark web can only be accessed through certain protocols that render the user's browsing information nearly untraceable. Because of this, the dark web is a hotbed for various kinds of activity that benefit from being out of view of law enforcement, such as drug trafficking, illegal arms trades, and financial fraud. Of particular interest to us, a team in the WISDM Lab comprised of Andrew Johnston, Alex Despotakis, and me, is the high level of terrorist activity on the dark web. We identified a need to quickly and automatically detect terrorist sites as they appear, so that the information can be passed to investigators in the US government. In this project, our team is crawling the dark web much like how search engines such as Google crawl the surface web. Utilizing the information indexed from the dark web, we have begun building a classifier to identify the likelihood that certain content is extremist. Thanks to promising early results from our work, we have established an ongoing relationship with the FBI. We are doing this through using deep learning techniques; these techniques allow a computer to make associations and recognize patterns in a manner similar to the way in which the brain does.

Poster-57

Establishment of PCV2 as a novel research focus

Gianna Rosamilia, Biological Sciences, Fordham College at Rose Hill, Emma DeGrace, Biological Sciences, Fordham College at Rose Hill, & Patricio I. Meneses*, Biological Sciences, Fordham College at Rose Hill

Porcine circovirus (PCV) is a single-stranded, non-enveloped DNA virus with an unsegmented circular genome. PCVs are the smallest viruses that replicate autonomously in the nucleus of eukaryotic cells, using the host polymerase for genome amplification. The virus infects a variety of pig cell types, including hepatocytes, cardiomyocytes, and macrophages. There are 2 strains, type 1 and type 2. PCV2 infection is widespread and essentially all pig herds are infected with PCV2; however, few have PCV2-associated disease (PCVAD). PCVAD includes systemic PCV2 infection, PCV2-associated pneumonia, PCV2-associated enteritis, PCV2-associated reproductive failure, and Porcine Dermatitis and Nephropathy Syndrome (PDNS). This virus is of great concern due to its impact on the farming industry and potential to become zoonotic. The basis of distinct pathogenicity and

means through which the virus travels to the nucleus have not yet been discovered. Our current research involves isolating particular open reading frames (ORFs) of the viral DNA, designing primers and polymerase chain reaction (PCR) methods to amplify the sequences of interest. Restriction enzymes are used to cleave the ORF ends to a specific pattern so as to recombine those sequences with a plasmid expression vector. This vector is transformed into DH5- α cells, which can further replicate the sequence of interest using the cell's own machinery. In the future, this project aims to isolate the purified viral protein encoded by the ORFs, and develop antibodies for laboratory use that are not commercially available.

Poster-58

Rapidly Mutating Diseases (Influenza)

Olivia Ballone, Biological Sciences, Fordham College at Rose Hill, Michael Liberto, Biological Sciences, Fordham College at Rose Hill, Eric Ohlendorf, Biological Sciences, Fordham College at Rose Hill, Ryan Mason, Fordham College at Rose Hill, Hyun Jeong, Fordham College at Rose Hill, & Varuni Jamburuthugoda*, Biological Sciences, Fordham College at Rose Hill

Many pathogens associated with chronic infections evolve so rapidly that strains found late in an infection have little in common with the initial strain. This ability to mutate brings rise to infectious strains that are resistant to the established prevention method. Vaccination is the most effective prevention when it comes to rapidly mutating disease control. It is important for scientists to make accurate estimates of virus mutations in order to understand the evolution of the virus and how to go about combating them. Many studies are conducted, specifically with the influenza virus, to calculate the mutations per site per infectious cycle, and in turn, the annual evolutionary rates. Influenza, more commonly known as “the flu,” has high rates of morbidity and mortality throughout the United States. Influenza is split into two strains, Influenza A and Influenza B; both of which are an enveloped virus that contain eight negative-stranded RNA segments. Human influenza A viruses evolve more rapidly than influenza B viruses. The virus' ability to mutate is attributed to two processes, the first being “antigenic shift” – changing the order of its genome when many viruses have infected one host cell. The second being “antigenic drift” – the alteration of the major proteins within the virus without altering the function of the proteins. The study of the virus' ability to mutate highlights the current efforts to prepare for the unpredictable event of a possible global influenza pandemic and to minimize the burden of highly predictable, seasonal influenza epidemics.

Poster-59

Priority of Female California Sea Lion Responses to Male Mating Vocalization Cues and Maternal Demands

Ziming Wei, Biological Sciences, Fordham College at Rose Hill & Evon Hekkala*, Biological Sciences, Fordham College at Rose Hill

Across social animals there are numerous mating systems one of which is polygyny. A well-studied polygamous mating system is that of the California sea lions (*Zalophus californianus*). California sea lions are easily accustomed to humans; thus, they have a long history of being exhibited in zoos and aquariums. However, they still exhibit many behaviors that are typically observed in wild sea lions, such as the courtship vocalizations in breeding seasons. Territorial males are the loudest and most continuous callers, and barks are produced regularly during the peak of breeding season, which is between late April to June. However, female's response to these vocal cues may differ depending on maternal demands. I hypothesized that the female sea lions would not respond to the mating vocal cues of the males if there are pups nearby. To investigate I observed a breeding herd of sea lions at the Bronx Zoo, New York, NY, USA. This herd's demographics are five individuals: two pairs of adult females and their juvenile offspring, and an adult male, who is experiencing his first breeding season. The herd was observed over the course of four weeks; observation periods were recorded weekly in two hour increments. Behaviors of female sea lions were recorded and distinguished as either positive or negative response when the male initiated with vocal cues. Observations supported my hypothesis that the female sea lion did prioritize attention to the nearby juvenile over advances of the adult male. These data suggest that female sea lions will prioritize maternal requirements over mating.

Poster-60

Estimating Fitness in *Reynoutria japonica*

Daniel Restifo, Biological Sciences & Philosophy, Fordham College at Rose Hill & Steve Franks*, Biological Sciences, Fordham College at Rose Hill

Fitness, or the ability to transfer genes to the next generation, is a centrally important quantity in evolution, but it is often difficult to estimate. In this study, we examined whether panicle weight, which is easy to measure, can be used to estimate seed number, which is more directly related to reproductive fitness but more time-consuming to count, in the invasive plant *Reynoutria japonica* (Japanese knotweed). Japanese Knotweed panicles with seed were collected from one site, seeds were counted from each panicle and panicles were weighed. Panicle weight was then used as a fitness proxy and compared to stem diameter (BSD), height and weight of Japanese knotweed plants grown as part of a transplant study in Kentucky, New Hampshire and New York. Panicle weight and seed number are highly correlated ($R^2 = 0.93$), and therefore panicle weight can serve as a fitness proxy. However, none of the morphological traits, BSD, height and weight, correlated strongly to panicle weight, implying that those traits do not appear to be under selection.

Poster-61

Conflicts of Interest and Integrity in Research

Meghan O'Keefe, Biological Sciences, Fordham College at Rose Hill, Hiba Khanzada, Sociology, Fordham College at Rose Hill, Mackenzie Harte, Political Science, Fordham College at Lincoln Center, Carl Watts, Engineering Physics, Fordham College at Rose Hill, Evin Daniels, Economics, Fordham College at Rose Hill & Matthew Weinshenker*, Sociology, Fordham College at Rose Hill

The public often looks to published research as a source of new information in many fields, from academia to everyday life and society. When researchers commit misconduct, such as failing to disclose relevant conflicts of interest, using vague or misleading language, selecting which data to present, and generally failing to conduct a study with integrity, they disseminate potentially invalid or biased findings to the public. Because researchers require funding to conduct their studies, they are often influenced by the motivations of the people who fund them, thus losing objectivity: for example, research funded by pharmaceutical companies often conveys to the readers that the drugs tested are effective, even if that many not always be completely true. Additionally, researchers can design their research and interpret it in a manner that supports their hypothesis, or shows what the financially supporting institution wants it to show. In this poster, we will present the findings of a literature review concerning these conflicts of interest in research, and we will show that researchers, by failing to conduct research in an honest manner, can effectively deceive the public and disseminate inaccurate information, influencing public behavior and attitudes.

Poster-62

Predictors of Adjustment in Mothers of Children with Developmental Delays

Alyssa Mayer, Psychology, Fordham College at Rose Hill & Mary Procidano*, Psychology, Fordham College at Rose Hill

This study was designed to gain a better understanding of the unique self-defining stresses and personal goals of mothers raising children with developmental delays, and to identify factors that predict their distress and well-being. In particular, we hypothesized that social support and nonsupport, and positive and negative personal meanings attributed to stresses and goal strivings, would contribute differentially to well-being and to distress. Participants included 41 women throughout the United States, who completed online questionnaires in response to an invitation placed on a Facebook group for mothers. This study utilized a mixed-methods design: both qualitative and quantitative results will be presented. Findings will be discussed in terms of implications for preventive interventions, including group-support therapy for mothers, as well as the importance of raising public awareness of the challenges these women face.

Poster-63

The Efficiency of RNA Interference for Biomedical Research

Momina Tariq, Biological Sciences, Fordham College at Rose Hill, Alda Sukaj, Biological Sciences, Fordham College at Rose Hill, Abdul Rahim, Biological Sciences, Fordham College at Rose Hill, Shawna McGoldrick, Biological Sciences, Fordham College at Rose Hill, & Varuni Jamburuthugoda*, Biological Sciences, Fordham College at Rose Hill

Reverse Genetics is an experimental procedure that allows scientists to discover the function of a particular gene by engineering a change in the gene sequence and looking for a change in the phenotype. RNA interference is an integral technique and is extremely useful in regulating gene expression in eukaryotic cells. RNAi uses small RNA molecules, small interfering RNAs and microRNAs, to direct gene silencing in cells. RNA interference uses its own DNA sequence to silence specific mRNAs in the cytoplasm. The ability to silence genes can treat infectious diseases, especially those that are caused by errors in gene activity. This approach is both economically cheap and efficient because small interfering RNA can silence virtually almost any gene in the cell. Scientists now have to determine how safe RNA interference actually is and analyze the drawbacks in this new therapy. Off-Target Effects is a major drawback in RNA interference for treatment of diseases, it is essentially when RNAi targets the genes that are not the intended target which leads to the silencing of gene expression. The drawbacks facing RNA interference as therapy are immense but the benefits to curing diseases are massive.

Poster-64

New Practical and Efficient Methods for the Preparation of Oxazolidines from Aldehydes and Ketones

Samantha Bruno, Chemistry, Fordham College at Rose Hill, Pamela Scoca, Chemistry, Fordham College at Rose Hill, James Ciacco*, Chemistry, Fordham College at Rose Hill, & Shahrokh Saba*, Fordham College at Rose Hill

Oxazolidines (N,O-acetals) are routinely prepared by condensation of aldehydes and ketones with 1,2-amino alcohols in refluxing solvent by prolonged azeotropic removal of water using a Dean-Stark apparatus. We wish to report two new, alternative practical methods to prepare oxazolidines that obviate the need for extended reflux times or special apparatus, and which cleanly and rapidly affect the condensation reaction to afford oxazolidines in good yield.

Poster-65

Short Peptides and their Impact on Chemotherapeutic Drug Delivery

Nicole Cutrone, Biological Sciences, Fordham College at Rose Hill, Sara Hurley, Chemistry, Fordham College at Rose Hill, Jessica Dorilio, Chemistry, Fordham College at Rose Hill, Harrison Pajovich, Chemistry, Fordham College at Rose Hill, Andrew Smith, Integrative Neuroscience, Fordham College at Rose Hill, & Ipsita Banerjee*, Chemistry, Fordham College at Rose Hill

Peptide and peptoid amphiphiles gaining popularity for use in the development of drug delivery vehicles. Encapsulating chemotherapeutic agents in delivery vehicles allows for targeted delivery of the drug to specific tumor cells and reduces killing of non-cancer cells within the body. In this work we utilized peptoid mimics and examined their targeting ability on two different tumor cell lines. The assembly of the constructs was confirmed using FTIR spectroscopy, scanning electron microscopy and atomic force microscopy. The formed nanoscale drug delivery vehicles were encapsulated with chemotherapeutic drugs and encapsulation efficiency and drug release were studied. Cytotoxicity studies were carried out to examine the effects on ovarian cancer cells as well as breast cancer cells. Cell migration and JC1 assays were carried out to study the mechanism of cytotoxicity. Cell studies showed that the drug delivery vehicles encapsulated chemotherapeutic drugs successfully targeted and targeted cancer cells.

Poster-66

Targeting Cancer Cells at the Molecular Level

Sara Hurley, Biological Sciences, Fordham College at Rose Hill, Nicole Cutrone, Biological Sciences, Fordham College at Rose Hill, Jessica Dorilio, Chemistry, Fordham College at Rose Hill, Harrison Pajovich, Chemistry, Fordham College at Rose Hill, Andrew Smith, Integrative Neuroscience, Fordham College at Rose Hill, & Ipsita Banerjee*, Chemistry, Fordham College at Rose Hill

In this work, we synthesized a new drug delivery vehicle (DDV) at the nanoscale level for encapsulation and release of chemotherapeutic drug for targeting hormonal cancer cells. Nanoscale drug delivery materials have gained much interest due to their potential for therapeutic applications. The vehicle was synthesized by conjugating naturally occurring polyamines with aromatic heterocyclic compounds. The formed product was then further allowed to react with specific tumor targeting peptide sequences. We confirmed the synthesis of this product using a variety of analytic techniques, including FT-IR spectroscopy, scanning electron microscopy, and atomic force microscopy. We analyzed the drug loading capacity and drug release. We used differential scanning calorimetry to test for its thermal stability and phase changes under physiologic conditions. We confirmed non-toxicity to non-cancer (normal) cells using cell viability assays. We then confirmed its therapeutic applicability by testing for toxicity and inhibition of migration for varying ovarian cancer cell lines.

Poster-67

Layer-by-Layer Assembly of Natural Biopolymers for Tissue Regeneration

Harrison Pajovich, Biological Sciences, Fordham College at Rose Hill, Alexandra Brown, Biological Studies, Fordham College at Rose Hill, Andrew Smith, Integrative Neuroscience, Fordham College at Rose Hill, Sara Hurley, Chemistry, Fordham College at Rose Hill, Jessica Dorilio, Chemistry, Fordham College at Rose Hill, Nicole Cutrone, Biological Sciences, Fordham College at Rose Hill, & Ipsita Banerjee*, Chemistry, Fordham College at Rose Hill

Tissue engineering is aimed at restoring, regenerating, and replacing injured tissues and organs. We have developed a new biomimetic construct for tissue engineering applications specifically for the anterior cruciate ligament. Peptide sequences derived from lactoferrins and proteoglycans in addition to collagen were utilized to mimic the extracellular matrix of fibroblasts. As a template we utilized self-assembled plant based compounds to prevent infection and biofilm formation. Electron microscopy and spectroscopic methods were used to confirm the incorporation of each layer. The formed constructs were investigated using DSC and nanoindentation analyses to investigate the thermal stability and tensile strength. The formed constructs were also found to be biodegradable. Cell viability studies were conducted to investigate biocompatibility and cytotoxicity. Soluble collagen and proteoglycan detection assays were completed to determine the amount of newly synthesized soluble collagen and sulfated glycoaminoglycans formed by human fibroblasts in the presence of the construct. Thus, we have prepared a new biomimetic peptide-plant nutrient based construct that may be utilized for tissue engineering applications.

Poster-68

The Effect of Urbanization on Antifungal Ability of Cutaneous Bacteria on Amphibians

Erin Carter, Biological Sciences, Fordham College at Rose Hill & Elle Barnes*, Biological Sciences, Fordham College at Rose Hill

We are in the midst of a mass extinction; nearly 200 species of amphibians have gone extinct so far, and half of the remaining species are in danger. One of the main reasons for these extinctions is the wildlife disease chytridiomycosis. This infectious disease is caused by growth of the parasitic fungus *Batrachochytrium dendrobatidis* (Bd) on amphibian skin resulting in suffocation and death by cardiac arrest. Previous studies have found that the Eastern redback salamander, *Plethodon cinereus*, is resistant to Bd infection due to the cutaneous bacteria on their skin that inhibit fungal growth. The goal of this project is to identify cutaneous bacteria that inhibit fungal growth on salamanders in the Greater New York area. I swabbed the skin of wild salamanders in nine

locations of varying urbanization, plated their bacteria and sequenced the bacterial DNA to identify species. I predict that bacterial communities vary in composition with level of urbanization and species richness increases with an increase in urbanization. This study is essential to uncovering new bacteria species capable of inhibiting Bd, which improves our ability to protect other amphibian species in danger of extinction. It also reveals how urbanization affects surrounding wildlife by conferring survivability.

Poster-69

The correlation between present nutrients and the surrounding riparian zone of the Bronx River as they relate to water quality

Isabella Rogovin, General Science, Fordham College at Rose Hill, Brianna Blunck, Biological Sciences, Fordham College at Rose Hill, Manveer Reehal, Biological Sciences, Fordham College at Rose Hill, Katherine Sitler-Elbel, Environmental Science, Fordham College at Rose Hill, & Beth Ansaldi*, Biological Sciences, Fordham College at Rose Hill

As runoff from urban streets flows into rivers, potentially dangerous pollutants are carried downstream. When this happens, naturally occurring nutrients, such as nitrogen and phosphorus can become harmful to the ecosystem because their artificially high levels can alter the dissolved oxygen and pH of the river. Together, these factors disrupt the conditions required by organisms that live there. We investigate how landcover in the riparian zone may affect water quality of the river. Our study focused on the Bronx River, which is an urban river in New York City that faces runoff from nearby roadways, including the Bronx River Parkway, and has contact with industrial centers and parks. We visited 5 sites along the river and tested for nitrogen, phosphorous, dissolved oxygen, and pH. Landcover surrounding the river was measured in ArcGIS, by quantifying percent impervious surface and green space within a 200 m radius. We hypothesize that nitrogen and phosphorous will be higher in concentration as we move downriver due to the River Continuum Concept, which states that the concentration of all nutrients and pollutants will increase as the river continues downstream. As a result of the added pollutants, we predict that sites with higher nutrient levels will have lower dissolved oxygen due to eutrophication. Lastly, pH will be more acidic downriver as compared to upriver. By defining water quality by the measures mentioned above, and attributing the surrounding environment as the source of these factors, we can understand anthropogenic impacts on the Bronx River ecosystem.

Poster-70

Conservation Genetics

Nouralison Abdella, Biological Sciences, Fordham College at Rose Hill, Jake Keszthelyi, Biological Sciences, Fordham College at Rose Hill, Sabrina Sayegh, Biological Sciences, Fordham College at Rose Hill, Mohammedasad Khan, Biological Sciences, Fordham College at Rose Hill, & Varuni Jamburuthugoda*, Biological Sciences, Fordham College at Rose Hill

The field of conservation genetics focuses on protecting the genetic diversity of Earth's organisms. Populations with low genetic diversity are generally at a higher risk for endangerment or extinction than populations with larger genetic diversity. Such risk is particularly prevalent in smaller populations, as they are more sensitive to environmental pressures, geographic isolation, random mutations, and genetic drift. Furthermore, consequences, such as smaller population size, that result from human actions (i.e. the hunting of certain populations), are combatted through the implementation of conservation genetics. Through population management and, in some cases, genetic engineering, humans can work to preserve endangered species or promote genetic diversity. Conservation geneticists consider population size, measures of diversity, and gene flow in order to characterize populations and species in need of attention. Currently, conservation genetics could play a large role preventing species loss to climate change. Efforts are being made to strengthen the link between researchers and conservation practitioners to maximize the efficacy of conservation efforts. As a field, conservation genetics faces many challenges, such as uncertainties in defining species concepts and the limitations on the successfulness of conservation efforts. We will go into detail on how this field came to be, what current efforts are being undertaken to conserve the biological diversity of the planet, and where there is potential for further development in the field.

Poster-71

An Analysis of Prominent Ethical Issues in Clinical Trials Research Conducted both Domestically and Abroad

Sarah Loftus, History, Fordham College at Rose Hill, Adele Heib, Biological Sciences, Fordham College at Rose Hill, Ryan Keklik, Biological Sciences, Fordham College at Rose Hill, Gracie Jenkins, Integrative Neuroscience, Gabriella Tardera, Psychology, Fordham College at Rose Hill, & Matthew Weinschenker*, Sociology & Anthropology, Fordham College at Rose Hill

The National Institutes of Health define clinical trials as research studies that explore the efficacy and safety of medical strategies, treatments, and devices designed for human use. Clinical trials are an important step in the development of effective pharmaceutical and therapeutic treatments. This study will examine ethical issues involving clinical trial research on human subjects. Some of the most prominent ethical concerns regarding clinical trial research include clinical equipoise, consent, disclosure, and research trials in developing countries. This study also aims to explore these issues in the context of clinical case studies. Utilizing published literature and examples of ethical transgressions in clinical research, we will propose possible solutions to navigate these ethical issues. With this study, we hope to enhance the understanding of unethical practices in clinical research in order to improve future clinical research studies and to protect clinical trial participants.

Poster-72

Poor Sleep Quality is Associated with Negatively Valenced Autobiographical Memories in Young Adults

Brianne Roche, Psychology, Fordham College at Rose Hill, Eileen Moran, Clinical Psychology, Graduate School of Arts and Sciences, Tiffany Le, Psychology, Fordham College at Rose Hill, Anika Masand, Psychology, Fordham College at Rose Hill, Cara Crook, Clinical Psychology, Graduate School of Arts and Sciences, Jessica Weathers, Psychology, Fordham College at Rose Hill, & Molly Zimmerman*, Psychology, Fordham College at Rose Hill

Objective: Poor sleep quality has been linked to poor outcomes, including anxiety, depression, decreased athletic performance, and problems with attention. The current study will address the gap in the literature regarding sleep and the emotional valence of autobiographical memory. Autobiographical memories are defined as those memories that can be identified over a lifetime period and are described as being of a general or specific event that is personally relevant. Some evidence exists for a positive cognitive bias – a tendency for individuals to remember more positive stimuli than negative stimuli. Evidence also exists for a negative cognitive bias with some links to poor sleep quality.

Participants and Methods: The current preliminary sample consists of 8 undergraduate students at Fordham University (50% female), mean age 20.7 years ($SD=.71$). Participants wore an accelerometer device (Respironics Inc.) on their wrist for 14 days to objectively measure sleep and then completed the Memory Experiences Questionnaire – Short Form for two memories prompted with two neutral cue words (book and city). We hypothesized that individuals with poorer sleep quality would report more negative memories than individuals with better sleep quality.

Results: Preliminary results of nonparametric Mann-Whitney U indicate that sleep onset latency, a measure of sleep quality, was significantly higher for individuals who reported negative memories than for individuals who reported positive memories ($p=.05$).

Conclusions: Preliminary analyses indicate a relationship between poor sleep quality and negative valence of autobiographical memories. Further analyses will be conducted with a larger sample and using additional measures of sleep quality.

Poster-73

Development of Emotion Regulation in Children

Melissa James, Integrative Neuroscience, Fordham College at Rose Hill & Amy Roy*, Psychology, Fordham College at Rose Hill

Emotion can be defined as an attractive or aversive response to stimuli that result in experiential, behavior, and psychological changes. Emotion regulation refers to the way in which we mediate our emotions in response to the various stimuli presented to us. For children, the development of proper emotion regulation and behavior is crucial to their functioning in the world. Emotional self-control impacts a child in all settings, most importantly the family unit and learning cohort. The goal of this ongoing study is to add to pre-existing literature regarding emotion regulation development in children between ages 4 to 9. The present study will build off a task developed by Bar-Haim (2011), known as the Balloons Game. Using iMotions, facial recognition software, alongside a computer game that elicits frustrating experiences, we have collected data that can be used to assess our subject's capacity to mediate their emotions. We will assess the positive and negative affect as well as emotional expression and regulation across multiple age groups. As we conclude our data mining and begin the statistical analysis, we expect to see an increase in ability to control emotion with age, with a more significant increase in ability during the early years (4 to 5 years) as opposed to the later years (7 to 8 years). The implications of this study not only strengthen our understanding of childhood development but have the potential to inform parents and professionals interacting with children who experience difficulty with emotion regulation.

Poster-74

The Role of Cortactin in Phagocytosis by the Retinal Pigment Epithelium

Magdalena Christoforou, Biological Sciences, Fordham College at Rose Hill, Chen Yu, Biological Sciences, Fordham College at Rose Hill, & Silvia Finnemann*, Biological Sciences, Fordham College at Rose Hill

The mammalian eye has evolved a renewal mechanism that maintains vision for life. One of the main actors in this process is the retinal pigment epithelium (RPE), which daily engulfs and degrades spent photoreceptor outer segment tips. This clearance process is called phagocytosis. Failure of phagocytosis leads to retinal degeneration. The cellular mechanisms underlying RPE phagocytosis are still not well understood. Our objective was to determine whether the protein cortactin has a role in RPE phagocytosis, since it is a molecular scaffold for F-actin assembly and organization, both of which take place during phagocytosis. RPE cells grown in culture were fed with photoreceptor outer segment fragments under conditions that either permitted binding, or internalization to discriminate the activity of cortactin during these distinct phases of RPE phagocytosis. Immunoblot analysis revealed that cells transfected with wild type cortactin tagged with GFP (GFP-cortactin) were able to bind a greater number of photoreceptor outer segments than control cells, transfected with GFP alone. In addition, immunoblot analysis revealed that cells transfected with a mutant form of cortactin (D28 GFP-cortactin) that is resistant to proteolysis were able to bind more outer segments than control cells or cells transfected with GFP-cortactin. These findings reveal that cortactin is involved in the binding phase of RPE phagocytosis. Moreover, they suggest that cells may regulate their cortactin by proteolysis to inhibit its function possibly to end daily outer segment binding. Altogether, these findings provide new insight into the protein machinery that regulates phagocytic function in RPE cells.

Poster-75

Methodology of cortisol measurement in human subjects and applications in research and diagnostics

Margaret Sullivan, Chemistry, Fordham College at Rose Hill, Farjahan Akhter, Chemistry, Fordham College at Rose Hill, Saima Haque, Chemistry, Fordham College at Rose Hill, Michael Tynes, Psychology, Fordham College at Rose Hill, & Paul Smith*, Chemistry, Fordham College at Rose Hill

Cortisol is a hormone produced in the adrenal cortex, and can be measured to provide an indication of physiological stress. In our laboratory, both chronic and daily stress levels are quantified by analysis of cortisol presence in hair

shafts and saliva. Over the past year, our research methods have been continuously tested to minimize error, with use of two different salivary enzyme-linked immunosorbent assays, as well as the incorporation of a Tecan Genesis Workstation. Hair and saliva samples are collected from participants at Fordham University. The saliva is frozen and purified before analysis, while the hair samples undergo washing and grinding before the cortisol is extracted. Our data is currently being analyzed for Dr. Lindsay Hoyt's Election Study, as well as Dr. Tiffany Yip's Health and Memory Study, both in the Psychology Department. Biochemically speaking, cortisol is also involved in the regulation of calcium absorption, blood pressure maintenance, anti-inflammatory function, gluconeogenesis, gastric acid and pepsin secretion, and immune function. Measurement of cortisol levels can thus provide an indication of deficiency in any of the aforementioned biological processes. These deficiencies are most commonly associated with Cushing's syndrome, adrenal tumors, and Addison's disease. The present poster outlines our methodology, providing current data and further applications of cortisol analysis.

Poster-76

Intrinsic Functional Connectivity of the Habenula in Children with ADHD

Melissa Arfuso, Integrative Neuroscience, Fordham College at Rose Hill & Amy Roy*, Psychology,
Fordham College at Rose Hill

The habenula is a small brain region that is a part of the epithalamus. It directly regulates dopaminergic and serotonergic circuits through the ventral tegmental area and substantia nigra. Both of these circuits are implicated in reward processing, and show defects in children with ADHD, suggesting that habenula function may be irregular in ADHD. This study examines the functional connectivity of this brain region in children with and without ADHD. Children ages 5-9 years old were recruited both with ADHD (n=40) and healthy controls (n=38). Following psychological assessments, children participated in a 6-minute resting state scan. Neuroimaging preprocessing was done using the Configurable Pipeline for the Analysis of Connectomes (C-PAC). Seed-based intrinsic functional connectivity used habenula region of interests, identified individually from normalized T1 weighted images, to form 2mm radius spheres for the ROI's. It was found that groups did not differ in age, sex, or movement during the scan. The healthy controls exhibited significant positive iFC between the habenula and the putamen, but was absent in the group with ADHD. Group differences were also observed for iFC between the right habenula and the precuneus. This possibly shows disruptions in the habenula functional networks in children with ADHD. The disruption between the left habenula and the putamen can directly affect ADHD dysregulation of dopaminergic pathways. In children with ADHD, there was alteration between the left and right habenula, which is consistent with prior research on the brain region.

Poster-77

Early Child Care Arrangements and Mental Health in College Students

Paige Chamberlain, Psychology, Fordham College at Rose Hill & Joshua Brown*, Psychology,
Fordham College at Rose Hill

With the rise of more female caretakers working out of the home, children are becoming more exposed to caregiving arrangements aside from traditional parental child care. In a review by Child Trends (2016), certain demographic factors contribute to the choices caretakers make in deciding what arrangements are appropriate or feasible for their own children (e.g., income, age of children, race). Previous literature also suggests that young children exposed to multiple care arrangements exhibit more behavioral issues and are less prosocial (Morrissey, 2009). This study aims to investigate the relationship between early child care arrangements and potential mental health impacts on college students. Participants included 79 undergraduate students from Fordham University, who responded to an online survey, and were asked questions about their demographic characteristics (age, graduation year, gender, race/ethnicity), their early child care arrangements (parental care and/or different forms of non-parental care) between ages 3 to 5, ages 6 to 9, and ages 10 to 12, and their social-emotional competencies and deficits including emotional problems, prosocial tendencies, peer problems, hyperactivity, and conduct problems (Strengths and Difficulties Questionnaire, Goodman, 1997). It was hypothesized that participants with greater instances of non-parental care across the age intervals listed and those with more variance in their care arrangements as children will have higher rates of social-emotional difficulties as current college students.

Poster-78

Investigation of Hybrid Nanoscale Assemblies and their influence on neuronal growth

Andrew Smith, Integrative Neuroscience, Fordham College at Rose Hill, Harrison Pajovich, Chemistry, Fordham College at Rose Hill, & Ipsita Banerjee*, Chemistry, Fordham College at Rose Hill

Aging, degenerative neurological disorders and traumatic brain injuries are becoming increasingly prevalent. As a result, regenerative medicine is becoming a revolutionary field for developing new methods of treatment. In this work, we created a new nanoscale biomaterial that could potentially be implanted into damaged nervous tissues and propagate growth of new tissue. We have synthesized a bioamphiphilic construct that was then functionalized with various integral extra cellular proteins and growth factors to enhance the growth of neurons. To confirm binding interactions of functional molecules FTIR spectroscopy was conducted. The morphologies of the resulting nanoassemblies were studied using scanning electron microscopy (SEM) and atomic force microscopy (AFM). Furthermore, we utilized AFM to determine the mechanical properties of the nanoassemblies. Initial biocompatibility studies were completed with mouse hippocampal cells to ensure non-toxicity. An organic conductive polymer was then blended with the scaffold to enhance its ability to impart electrical properties. After successful binding, conductivity studies were conducted to obtain the I-V curves. Biocompatibility studies were also conducted with cortical cells to study the viability of the nanoassemblies. The obtained results showed that a new nanoscale assembly was synthesized with potential to enhance neuronal growth.

Poster-79

Childhood Brainstem Gliomas: The Developing Brain as a Uniquely Susceptible Microenvironment

Lauren Melley, Integrative Neuroscience, Fordham College at Rose Hill & Amy Roy*, Psychology, Fordham College at Rose Hill

Diffuse intrinsic pontine gliomas (DIPGs) are highly aggressive and difficult to treat brain tumors that arise from the glial cells within the pons. DIPGs can affect all age groups, but they are most commonly diagnosed in children from ages five to ten years. The current study explores the relationship between DIPG tumor characteristics and age through the use of structural MRI data, hypothesizing that age negatively correlates with poorer tumor prognosis and more aggressive tumor growth. If less developed brains are more vulnerable to DIPG, then younger patients will exhibit evidence of more obstructive tumors and have shorter overall survival. All data was privately donated from the parents of the patients at VU University Medical Center Amsterdam, Netherlands for the use in scientific study. MRI analysis remains ongoing, but results will be presented at the Fordham University 10th Annual Undergraduate Research Symposium in April. We hope that these preliminary analyses will provide a foundation for future more comprehensive research into pediatric brainstem tumors.

Poster-80

Passive Wildlife Monitoring Using Camera Traps

Alexandra Rebosura, Natural Science, Fordham College at Lincoln Center & Elizabeth Carlen*, Biological Sciences, Fordham College at Rose Hill

Increased urbanization—the construction of anthropogenic structures that fragment natural spaces—has greatly impacted the number of species per unit area, or species richness. Researchers advocate using camera traps to monitor species richness and encounter rate—number of groups of animals observed per unit survey effort—because they prevent influence from lures and allow for continuous monitoring. In the northernmost borough of New York City, the Bronx Zoo is a 265 acre park with mixed urban and natural areas. We studied how urbanization correlated with species richness in different sites around the natural areas around the Bronx Zoo exhibits. We tested three hypotheses: first, greater distances from walkways positively correlate with increased species richness; second, greater distances from the major roadways positively correlate with species richness; third, there will be greater species richness by walkways that without barriers, such as fences or guardrails. Our data supported the hypotheses that there would be greater species richness farther away from the roads and walkways. Of 560 total encounters, we

found more bird encounters than mammal encounters and speculated that the cameras' position above the leaf litter may have affected the visibility of present species for encounter rate calculations. However, when comparing the walkways, we found that the species richness at the camera sites near to walkways were not statistically different. We concluded that urbanization, in the form of paved thoroughways, negatively impacts the number of wildlife species present. This data encourages efforts to maintain natural spaces in protection of our wildlife.

Poster-81

Reproductive patterns and hybridization in *Fallopia japonica*

Dominic Fogarasi, Biological Sciences & Spanish Language and Literature, Fordham College at Rose Hill & Steven Franks*, Biological Sciences, Fordham College at Rose Hill

The exact reproductive patterns of *Fallopia japonica*, commonly known as Japanese knotweed, are not very well understood. This aggressive invasive species is known to cause many ecological problems in New York and other areas in the United States. It rapidly spreads through asexual, or clonal, reproduction, which it accomplishes through a rhizome network. Japanese knotweed is also capable of sexual reproduction via seed formation, but this mechanism is not well studied. It is unclear how extensive sexual reproduction is, and whether sexual reproduction in this plant involves hybridizing with a similar species. A flow cytometer was used with leaf tissue taken from seedlings (sexually reproduced) and rhizome-grown offspring. This method provides estimates of chromosome number, which indicates whether the individual is Japanese knotweed, the related species, or a hybrid. The initial investigation with plants from the Calder Center had statistically significant results, so the study was expanded to using plants from Wells, Maine and the New York Botanical Gardens. The results indicate hybridization is occurring with relative species Giant knotweed to produce the seeds. By understanding the invasive species' reproductive patterns, better tools can be developed to combat the species.

Poster-82

Effects of feeding on activity levels in a captive California sea lion (*Zalophus californianus*) population

Siobhan Rueda, Biological Sciences, Fordham College at Rose Hill, Muhammad Afridi, Biological Sciences, Fordham College at Rose Hill, Nicole Uzzo, Biological Sciences, Fordham College at Rose Hill, Paul Supple, Biological Sciences, Fordham College at Rose Hill, & Beth Ansaldi*, Biological Sciences, Fordham College at Rose Hill

In recent years, pinniped populations have declined due to food shortages caused by extreme weather events such as El Niño. El Niño-Southern Oscillation (ENSO) causes trade winds to reverse and moves warm water in the opposite direction. As a result of ENSO, the upwelling of nutrients decreases, which causes fish populations to decline. This causes food shortages for many pinnipeds, especially California sea lions. In the wild, decreased feeding has been shown to cause low activity states, which has led to increased vulnerability to predation among pinnipeds. This study examines the effects of feeding on activity levels in a captive population of California sea lions (*Zalophus californianus*) at The Bronx Zoo, in Bronx, NY. We hypothesize that activity levels will increase after feeding. California sea lion behaviors were observed in two 30-minute intervals, one before and one after feeding. The behaviors observed include time spent under water, social interactions, and time spent resting. Expected results predict that after feeding, the California sea lions will show increases in time spent under water and time socializing. Also, we predict resting time will decrease. Although there are some expected differences between captive and wild populations, we believe that there are important similarities between the populations regarding behaviors before and after feeding. This study is significant because it will give insight into the effects of food shortages on California sea lion activity levels. By making the connection between the two populations, it will show potential implications of increased frequencies of ENSO.

Poster-83

Searching for the Visual Components of Object Perception Using Similarity Trees

Amy Feng, Computer and Information Sciences, Fordham College at Rose Hill & Daniel Leeds*, Computer and Information Sciences, Fordham College at Rose Hill

Our understanding of visual characteristics used for object perception in the brain is limited. We understand the brain to perceive objects first by using basic features such as edges and ending more completely with the full object; however, we are uncertain of the intermediate stages of perception in the brain. Specifically, we wish to identify visual properties most exciting to the brain from a large set of possible properties. To quickly search through this set in limited fMRI scanning time, I developed a search program that explores new images to show a human subject based on their similarity to previous images that produced high fMRI brain activity. I adapted Hung's experimental model (2012) that examines visual properties by organizing images into a similarity tree. I have analyzed image search results based on different amounts of simulated noise. I also have analyzed different tree grouping methods using different visual properties such as SIFT and different data sets to develop a program that will organize a collection of images into similarity trees based on distinct features. These systems will improve upon the fMRI real-time stimulus selection system created by Leeds (2014) to improve efficient fMRI experimentation.

Poster-84

Children and The Elderly: Vulnerable Populations in Research

Kalena Laurent, Psychology, Fordham College at Rose Hill, Amy Endres, Theology Religious Studies, Faith Veloz, Psychology, Fordham College at Rose Hill, Sarah Heintz, Communications, Fordham College at Rose Hill, Brianna Blunck, Biological Sciences, & Matthew Weinschenker*, Sociology, Fordham College at Rose Hill

Research on children is essential for advancing child health and well-being as well as for developing innovative therapeutic and preventative intervention. As a larger population ages, more research is needed into medical issues that were unknown before today's long life span. However important the research may be, children and the elderly may lack medical literacy and may have physical, emotional, or mental incapacities. Informed consent procedures are thus complicated. In light of our literature review, we propose that medical research on children must assume that consent capacity is reduced, and therefore research with children requires proxy consent from a guardian. Researchers can use new approaches like comic strips or videos in order to ensure informed assent from children. In research with elderly subjects, we propose that consent capacity first be tested in recognition of their adulthood and autonomy, perhaps using the MacArthur Competence Tool. After, researchers should decide if consent from the subject is satisfactory or proxy consent should be obtained. Because participation rates tend to wane in the elderly, we also propose procedures like Experience Consent, which increases understanding during consent processes as well as participation rates. We conclude that, because of the lack of concrete guidelines on informed consent procedures, each research study should consider different approaches to ensure the most ethical research process.

Poster-85

Age-Related Decline in Photoreceptor Outer Segment Renewal in the Mammalian Retina

Anthony Halko, Integrative Neuroscience, Fordham College at Rose Hill, Nicholas Esposito, & Silvia Finnemann*, Biological Sciences, Fordham College at Rose Hill

Since the cells in the light sensing tissue of the eye, the neural retina, are permanent and do not re-grow, they must survive and maintain function for life. Daily light exposure to the retina over time causes oxidative damage, which if excessive, can lead to retinal cell death. Photoreceptor outer segment renewal is an essential process in the mammalian eye that maintains visual function for life by eliminating oxidized portions of photoreceptor neurons. It involves exposure of anionic phospholipid phosphatidylserine (PS) on outer segment tips each morning at light onset. It has long been speculated that outer segment renewal becomes inefficient with age, and that this decline in rejuvenation contributes to age-related macular degeneration, the most common cause of blindness in the United States. Here, we ask if PS exposure at outer segment tips is impaired in mice of high age.

To quantify PS-exposing outer segment tips, we applied a fluorescent PS-biosensor to freshly dissected, live neural retina from mice sacrificed exactly at light onset. We imaged fluorescent, PS-positive tips on a laser scanning confocal microscope. Frequency of PS-exposing tips was compared after testing cohorts of 18-month old and 4-6 month-old mice. We found a severely decreased frequency of PS-exposing outer segment tips in old mice as compared to young mice. We conclude that removal of oxidized portions of retinal neurons is impaired in old mice, which may contribute to retinal tissue dysfunction with age and age-related macular degeneration.

Poster-86

Domain-Specific Appraisals of Young-Adult Cancer Survivors' Self-Defining Memories: A Systematic Content Analysis

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We examined the content of meaning domains in self-defining memories of young-adult cancer survivors' illness narratives. Our previous research (Procidano, Vuotto, & Santarpia, 2015; Santarpia, Callon, & Procidano, 2016) demonstrates that domain-specific appraisal (DSAS; Galette & Procidano, 2017) is a valid approach to interpreting, and discerning resilient versus nonresilient adjustment in, such narratives. Domain-specific appraisals include positively- and negatively valenced experiences of mood, social relations, self-image, roles and responsibilities, sense of freedom vs. constriction, general outlook, and personal growth vs. setback (Galette & Procidano, 2017). This study reports analyses of transcribed interviews of 92 young-adult survivors of cancer. Participants described self-defining high-, low-, and turning points in their experiences of cancer. After examining the meaning structure (patterns of domain-specific appraisal, as defined above), we compiled a comprehensive list of instances of all 14 types of meaning (i.e., positively- and negatively valenced instances of all 7 domains), across all 3 self-defining memories. These results help to describe the full range of personal experiences of young-adult survivors of cancer, help to articulate the nature of resilient vs. nonresilient adjustment in this very important population; and may help to inform preventive and treatment interventions for young adults who receive cancer diagnoses.

Poster-87

Testing the Efficacy of Brassica rapa for Phytoremediation

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Soil contamination with heavy metals has become a global environmental issue as a result of industrialization and urbanization. Although some heavy metals, such as copper and zinc, are required by organisms in trace amounts, they have toxic effects when present in excess. Phytoremediation, a technology that uses plants to treat environmental pollution by accumulating heavy metals, has recently become a subject of scientific interest. This study examined the effects of two essential heavy metals, copper and zinc, on the growth of Brassica rapa, a plant that has been studied for its phytoremediation potential. The aim was to determine the highest concentrations of copper and zinc that B. rapa can tolerate before exhibiting growth defects, in order to examine its efficacy in phytoremediation. We hypothesized that B. rapa would tolerate higher concentrations of zinc than copper, but would be able to endure relatively high levels of both metals. We tested the effects of three concentrations of zinc and copper in triplicate, and had a control group not treated with any metals. Each plant was watered every other day with 25 mL of water, at which time various growth parameters were recorded. The three concentrations were 20ppm, 40ppm, and 80ppm. We expected that growth variables of B. rapa would be negatively impacted by copper at a concentration of 40ppm and zinc at a concentration of 80ppm. We expected that our study would indicate that B. rapa can tolerate higher concentrations of zinc, but can be potentially used for phytoremediation for both metals.

Poster-88

Examining the Relationship between Attention and Distress Tolerance in Individuals with Misophonia

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Misophonia, a disorder characterized by aversive physical reactions of irritability, disgust, distress and anger provoked by specific auditory sounds, has been understudied and misdiagnosed. In this study, distress tolerance will be examined in parallel with attention networking, or the inability to maintain and control mental focus, in individuals suffering from Misophonia. Distress tolerance is considered a meta-emotion construct that consists of one's evaluations and expectations of experiencing negative emotional states. The objective aims to determine the relationship between self-reported distress tolerance and attention to demonstrate how distress from auditory stimuli can affect cognitive abilities. By determining the effects of distress on attention, new strategies may be developed to strengthen attentional control abilities and help prevent distress in response to auditory stimuli for individuals with Misophonia. In this experiment, participants completed the Distress Tolerance Scale and the Attention Networking Task. The hypothesis of this study is that individuals reporting low distress tolerance will have longer response times on ANT, and therefore, worse attention, compared to individuals reporting high distress tolerance. Additionally, all participants will have slower response times and a more difficult time paying attention during ANT blocks with specific auditory stimuli than in the ANT blocks with no sounds. There will be an analysis of the results of the scale and attention task to accept or reject our hypothesis. It is predicted that individuals suffering from Misophonia will have decreased attention in the presence of auditory stimuli, specifically those reporting low distress tolerance.

Poster-89

The effects of artificial seed aging on plant traits in *Brassica rapa*

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The resurrection paradigm is a novel approach being used to uncover and understand microevolutionary trends within populations as they adapt to recent environmental changes. This is achieved by growing ancestral seeds stored in artificial or natural seed banks alongside descendant seeds of the same population and measuring phenotypic or genotypic differences among these samples. However, this approach is only successful if there is nothing selecting for traits other than the evolutionary forces in nature. One potential source of selection is the aging process the ancestral seeds undergo. Over time, a buildup of reactive oxygen species and other harmful substances within the seeds prevents a portion of the sample from germinating. In order to determine whether the loss of seed viability due to aging selects for particular traits, seeds were artificially aged for two days at 40°C and 90% relative humidity. These seeds were then grown together with a control sample from the same population, and several phenotypic traits (leaf size, flowering time, leaf number, seed size) were measured to determine whether aging caused directional selection. This was repeated for a second generation to eliminate the effects of damage caused by aging. These measurements indicated that growth of the aged seeds was stunted in the generation immediately after aging, indicating the need for a "refresher generation". The second generation did not show significant phenotypic differences between the aged and control samples, indicating that there likely was not directional selection caused by aging. This would mean that the resurrection paradigm could be used with seeds that have experienced significant mortality due to aging, though additional testing is necessary to confirm this finding.

Poster-90

A General Approach Toward the Construction of Chromenes, Coumarins, and Flavanones

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Fordham College at Rose Hill

Chromenes, coumarins, and flavanones, broad categories of aromatic heterocycles commonly found in natural products, are reported to have a wide variety of biological activity. Our group has interest in Calanolide A and 6,8-Diprenylaromadendrin, two natural products possessing anti-HIV activity. Our interest in these compounds led us to propose a tandem palladium-catalyzed cyclization sequence, a one-pot conversion that combined a Suzuki coupling with a Tsuji-Trost allylation reaction, that would putatively allow access to these cores in short order. The advantage of this proposal is a) relatively short synthetic sequences, b) potentially mild reaction conditions, and c) a broad tolerance for a wide variety of functional groups. Our first attempt, which involved using Pd(OAc)₂ as our catalyst and heating the reaction in a microwave reactor, was successful but resulted in only a 10% yield. We are in the process of preparing new substrates in an effort to optimize the reaction conditions for this cyclization.

Poster-91

Cross-Cultural Biomedical Research

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Cross-cultural biomedical research is a form of comparative research that explores the differences in biomedicine between cultures. Researchers can compare cultures within a small area or extend their analysis to worldwide health. This paper aims to investigate the many applications and ethical issues of cross-cultural biomedical research in a literature review. The greatest barriers to cross-cultural research are communication issues between researchers and participants. It is imperative in clinical research trials that participants are able to accurately convey their symptoms to the researcher, and that the researcher is able to interpret them accurately. This may prove difficult as culture, ethnicity, race, gender, and age may impact how participants express their symptoms. Cross-cultural differences also pose the challenge of a disparity in knowledge and authority between researchers and subjects. As a result, research subjects in many cultures are vulnerable to being deprived the same standards as the sponsoring countries. Trials in the third world highlight these cases and bring to light the importance of upholding international agreements to prevent the exploitation of participants accustomed to a different level of care in the Third World.

Poster-92

Consequences of Head Impacts on Memory

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Previous research has shown an increase in sports related concussions or mild traumatic brain injuries amongst college and high-school students (Langlois et al. 2006). Past studies have shown a link between mild traumatic brain injuries and cognitive loss. The purpose of our study was to understand the correlation between head impacts and memory retention amongst members of the United States Air Force Academy's Boxing and Swimming Team. Using data collected from 18 Boxers and 38 Swimmers, our goal was to conduct correlation analysis between head impacts and behavioral memory data. We used PCA analysis to construct a collection of potential head impact patterns that possibly could predict behavioral memory data. Our results show that the correlation differs depending on which head impact, "principal component", is being used and the results between Boxers and Swimmers. Based on which principal component is used, we see moderate correlation ($-0.4 < r < -0.1$) between head impacts and memory retention. Goals for further research include combining the Boxing and Swimming Data to obtain a holistic view for both activities.

Poster-93

Determining the Relationship Between Tree Health and Socioeconomic Status in New York City

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Research has shown that communities with low socioeconomic status generally have high air pollution. Trees planted in urban environments are typically strong indicators of multiple factors, ranging from community health, biodiversity, and viability of biological community growth within cities. We studied whether the soil composition of *Ginkgo biloba* and *Acer rubrum* varied in different communities in the New York City Metropolitan area. We predicted there would be positive associations between soil health and tree health, soil health and socioeconomic status, and tree health and socioeconomic status. Nine neighborhoods across Bronx, Brooklyn, and Manhattan were chosen based on median household income. From each borough, we selected a neighborhood of low income, middle income, and high income. Three *G. biloba* and three *A. rubrum* were selected from each neighborhood. Locations of trees were determined using information provided by the NYC Department of Parks and Recreation. Two soil samples were taken per tree and soil composition was analyzed using a soil kit that measures pH, nitrogen, phosphorus, and potassium. Additionally, physical factors such as discoloration, damage, crown density and diameter at breast height (DBH) were used to determine tree health. We expected to see a trend of increasing soil quality with an increase in income. Additionally, we expected a decrease in the frequency of tree damage, discoloration, and an increase in crown density with an increase in income. These results could have important implications for urban ecosystems, public health and environmental justice.

Poster-94

An Ecological Survey of Lichen Communities in Urban Cemeteries

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The ecology of cemeteries are an understudied sector of our highly urbanized world. With humans altering natural ecosystems through urbanization, suburbanization and agriculture, cemeteries may provide a great opportunity for certain taxonomic groups to flourish. The current study aims to understand how cemeteries may support lichen communities. Lichens are a major component in nitrogen regulation in an ecosystem, and prior research has shown that they can be found in cemeteries in other urban environments (Golm; Käffer). The main focus of the current study is on how the age and area of a cemetery and its gravestones affect lichen species richness, abundance and growth size. We hypothesized that the increasing age and area of a cemetery and its gravestones will positively correlate to the species richness, abundance, and growth areas of lichen. We conducted this study at 3 different cemeteries around the New York City area and examined the grounds for different lichen species on the gravestones. We measured the diameter, surface area, and colony number as well as the approximate surface area and age of the stone whenever we found lichen growth. Our results show a positive correlation between size and age of a gravestone and the surface area coverage of lichen on said gravestone. Our results also showed that there was a positive correlation between size and age of the cemetery and the lichen species richness and abundance.

Poster-95

Uncovering Species Richness and Abundance Underneath Coverboards in the Bronx Zoo

Pamela Comlan, General Science, Fordham College at Rose Hill & Elizabeth Carlen*, Biological Sciences, Fordham College at Rose Hill

Urban areas can promote or repress species richness depending on land use (McKinney 2008). City parks and nature preserves are important conservation sites because they mitigate the negative effects of human activity and preserve species richness (the amount of different species in an area). The Bronx Zoo, located in the northernmost borough of New York City, is a 265 acre urban park through which the Bronx River flows. While the zoo is home to many captive animals, the park lands surrounding the captive habitats are home to native species including arthropods. Native arthropods are good indicators of the ecosystem health because they have a sedentary life, are diverse, and have a short generation time (Van Straalen 1998). Coverboards, non-intrusive structures used in field research, are one way to assess arthropod species richness and abundance. This study focused on species richness and abundance at the Bronx Zoo. Here we examine the richness and abundance of invertebrates in riparian forests to see how

species richness and abundance correlate with three ecological factors: soil quality, canopy density, and dissolved oxygen in the nearby body of water. We hypothesize that sites with high canopy cover, high water retention, and high dissolved oxygen in a nearby body of water will have a greater species richness and abundance.

Poster-96

Ethical Issues in Cross-Cultural Social Science Research

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Cross-cultural research is difficult to conduct successfully as many times researchers are in positions of privilege compared to those that they seek to understand and study. This oftentimes results in unavoidable bias on the part of the researcher that may marginalize the “different” or “othered” cultures being studied. Due to this, many research projects that engage with cultures other than the researcher’s own have both positive and negative effects on the groups that they aim to study. It is imperative that researchers who wish to conduct cross cultural research today work towards evaluating how their own frameworks of understanding the world differ from those of their subjects. In this way, researchers can better identify their own biases in making sense of their subjects’ actions, thoughts, and/or beliefs and therefore better focus their research on how meaning is constructed from the point of view of the subjects. Successfully doing so would both allow for better results in research and also acknowledge the agency of those being studied. We will be conducting a literature review to evaluate the merits and shortcomings of cross cultural qualitative research. This will involve comparing the ethnographies of several social science researchers including Alice Goffman, Susan B. Greenwood, and Edward Evans-Prichard.

Poster-97

Transition Metal-Based Catalysts for PEM Fuel Cells with Increased Activity and Cost Effectiveness

Gurpeet Singh, Chemistry, Fordham College at Rose Hill & Christopher Koenigsmann*, Chemistry, Fordham College at Rose Hill

Direct methanol fuel cells (DMFCs) are an emerging renewable energy technology that electrochemically converts the chemical energy of methanol to electrical energy. Within a DMFC, the methanol oxidation reaction takes place in the anode half-cell and is catalyzed by platinum-based, nanoparticle catalysts supported on carbon. Currently, this reaction requires high platinum loadings and suffers from very slow reaction kinetics, which has hindered the cost-effectiveness of these devices. The poor performance is attributed to the formation of poisoning intermediate species, such as carbon monoxide, on the surface of the platinum. This results in a significant overpotential at the anode, which decreases the overall cell potential and reduces efficiency. Recently, significant improvements in the catalytic activity were achieved by supporting platinum onto more oxophilic metals, such as ruthenium, to facilitate the oxidation of poisoning intermediates. Although electrochemical activity is increased, ruthenium is expensive and is not sufficiently abundant for widespread use. Our goal in this project is to replace ruthenium with more abundant and less expensive transition metals such as cobalt and copper. We have successfully optimized the synthesis of transition metal nanowires with diameters of 50 – 200 nm. Using a solution-based technique, we successfully deposited a precious metal shell on the transition metal nanowires. Work is underway to optimize this process to produce precious metal shells with reproducible composition and thickness.

Poster-98

Executive Function is Associated with Sleep Disruptions in Young Adults with Elevated Depressive Symptoms

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Previous research has well established a relationship between sleep, depression, and cognition. Irregularities in sleep are common indicators of depression, and can cause deficits in cognitive functioning. The purpose of this study is to further understand the complex interrelationship between depression, sleep and cognitive functioning in a non-clinical sample of young adults. This cross-sectional study comprised 82 participants (74% female, age in years = 19.9 (1.3)). All participants wore an actigraph for 7-11 days to measure average sleep time and wake after sleep onset (WASO). Participants completed the Beck Depression Inventory (BDI-II) to measure depressive symptoms and completed Trail Making Test Part A (TMTA) and Part B (TMTB) to measure attention and executive function. Pearson correlations indicated that participants with higher depressive symptoms had more WASO ($r=0.30$, $p<0.01$) and poorer performance on TMTB ($r=0.26$, $p=0.02$) and participants with more WASO had poorer performance on TMTB ($r=0.31$, $p<0.01$). TMTA and total sleep time were not related to BDI-II. A formal test of mediation using the PROCESS Procedure in SPSS did not support sleep as a mediator of the relationship between BDI-II and performance on TMTB. Linear regression with the inclusion of an interaction term (overall model $F(3,69)=9.12$, $p<0.01$) and follow-up stratified analyses revealed that WASO was only associated with executive function in individuals with clinically significant depressive symptoms ($r=0.65$, $p<0.01$) and not in those without depressive symptoms ($r=0.06$, $p=0.68$). This study further highlights the complex interrelationship among depression, sleep, and cognition and suggests that clinicians should pay close attention to associated disruptions in sleep and cognition in young adults with clinically significant depressive symptoms.

Poster-99

The Effect of Leaf Litter on the Biomass of *Lumbricus terrestris* and the Levels of Soil Phosphorous and Nitrogen

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Nutrients such as nitrogen and phosphorous, which are vital for terrestrial organisms, are continuously being recycled in the soil. Studies have shown that nutrient cycling can be altered by factors such as leaf litter composition and the presence of decomposing macroinvertebrates (e.g. earthworms). However, little research has been conducted on the effect of the leaf litter on the growth of the decomposer. Therefore, we investigated whether two types of leaf litter would affect soil nutrients and the growth of the common earthworm (*Lumbricus terrestris*). We hypothesized that the change in soil nutrients would be equal across leaf litter treatments. We also hypothesized that increase in earthworm growth would be equal across leaf litter treatments. To investigate these hypotheses, we weighed and added *L. terrestris* to the soil and measured N, P, and pH of the soil with 1) *Acer platanoides* leaf litter, 2) *Pinus strobus* leaf litter, and 3) no leaf litter (i.e. control). Four weeks from the start of the study, we again measured N, P, and pH, as well as weighed the *L. terrestris* to calculate change in weight. We expect that the *L. terrestris* in the soil with the *A. platanoides* leaf litter will have the greatest mean increase in body weight. Further, we expect the *L. terrestris* in the soil with no leaf litter will show minimal growth or death. Finally, we expect that the change N, P, and pH values will be greater in the soil with leaf litter added.

Poster-100

Investigating a Novel Cytotoxic EGFRvIII-Targeted Fusion Protein for Use in Cancer Therapy

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Cancer claims millions of lives annually; in both 2014 and '15, the CDC reported that over 500,000 Americans died from cancer. Despite numerous advancements in the field of cancer biology, many problems remain. Adverse side effects of cancer treatments, including hair loss, fatigue, nausea and loss of appetite, arise from healthy tissue damage. The challenge to creating an effective cancer therapy that is preservative of healthy tissue, lies in the ability to destroy only cancerous cells. This research aims to develop a toxic, target-specific fusion protein, utilizing two molecules previously investigated in cancer therapies. Employing a peptide (PEPvIII) specific to the mutant Epidermal Growth Factor Receptor variant III (EGFRvIII), we intend to deliver the fusion protein exclusively to cancerous cells so that the other half of our molecule, a toxin named Streptolysin-O (SLO), may induce a pore, resulting in concentration gradient disruption and eventual cell death. The transformation of our protein into bacterial and mammalian cells will produce cells that can express our protein, as well as permit extraction of the isolated protein, upon secretion from mammalian cells. The cells and isolated protein will be administered to known EGFRvIII cell lines to assess their viability as therapeutic agents. EGFRvIII expressing cancers are especially resistant to apoptosis and currently account for 87% of Glioblastoma Multiforme, 67% of breast cancers, and 16% of lung cancers. Our intent is to provide new insights into possible alternate methods of cancer therapeutics, and if successful, to minimize tumor growth and metastasis in EGFRvIII expressing cancers.

Poster-101

Analysis of Reliability of Casts in Bioarchaeological Studies

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Dental casts are frequently used in bioarchaeological studies to preserve information about physical traits (Scott and Turner 1988). However, casts are not always the exact copies we hope for, due to environmental and anthropogenic factors that can cause variation in the replication of physical traits, and the subsequent metric and nonmetric information derived from those casts. This research aims to investigate the variables that arise from casting human skeletal remains, and the potential impact that casting variability may have on studies that are based on, or use, dental casts. Materials used in this study include both the ancient remains excavated from the Bronze Age site of Alalakh in Hatay, Turkey, and their respective casts. The morphology and size of the real teeth (N=80; n=500) are compared to assess the reliability of these replicas for research purposes, and include a comparison of metric and nonmetric traits. Assessments of these casts are recorded by three workers to achieve a better understanding of shrinkage, warping, and inter-observer errors in both the bioarchaeological and casted records. The results of the study provide a greater understanding of the variables that arise while casting human remains and the impact these variables may impose on morphological research using casted archeological materials.

Poster-102

Presence of Pathogenic Bacteria and Coliforms in Chipotle Food Samples

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The Food and Drug Administration investigations of two separate 2016 outbreaks of E. coli O26 infections identified food served at Chipotle locations in several states as the source of food poisoning. This particular strain of

Shiga toxin producing E. coli infected 55 people and prompted intensive microbial inspection of Chipotle's surfaces, food and equipment. The Chipotle outbreaks have raised awareness of the risks foodborne pathogens. E.coli is an example of coliform bacteria that is often tested as an indicator contamination, being particularly useful in that it is easily identified during coliform testing on culture media. The presence of E.coli usually indicates that there are other potentially pathogenic bacteria of fecal origin and coliforms. It was hypothesized that total bacterial abundance would be elevated, exceeding acceptable FDA standards for specific foods, and that coliforms would not be detected in each food sample. This experiment was designed to test for the presence of E. coli, other pathogenic coliforms and foodborne bacteria. Nutrient agar and eosin methylene blue plates were inoculated with saline suspensions of six different food samples from Chipotle using standard dilution technique. It was predicted that our NA plates would culture a heavy amount of bacteria-forming colonies for each sample, but that our EMB plates would not indicate the presence of lactose-fermenting coliforms, including E. coli, for the samples. Chipotle does not have coliform contamination but the bacterial abundance suggests quick spoilage and can provide information for further studies on food service regulation.

Poster-103

Daughters' Experiences with Having an Ill Mother

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With the increased prevalence of mental illnesses, follows a strong need to understand the associated familial effects. Having a mother with a mental or physical illness can positively or negatively influence a child; therefore, the study aims to understand the similarities, differences, and effects of the two experiences. The purpose of the present study is to examine the impact of a mother's mental or physical illness on their college-aged daughter, specifically by analyzing the participants' perceived stress, self-rated anxiety, attachment, and attitude towards those who are mentally ill. In this context, it was hypothesized that daughters who have a mother with a mental and/or physical illness would report the same levels of stress, daughters with a mentally ill mother (DwMIM) would report significantly higher rates of anxiety, DwMIM will have less stigmatized views of mental illness than daughters with a physically ill mother (DwPIM), and DwMIM will report significantly poorer attachments in their close relationships. To date, 82 participants have been enrolled in the study. Participants were recruited from Fordham University's Foundations of Psychology research pool, by contacting the presidents of both Active Minds and Relay for Life at Fordham University in an effort to circulate the link to organizations that serve the target population, and snowball sampling. Hypothesis testing will be conducted shortly. This research may inform future research in programming for daughters who have a mentally and/or physical ill mother.

Poster-104

Studying Stem Density, Animal Activity, Road Proximity, and Invasive Plants in NYC Forests

Emily Hargous, Biological Sciences, Fordham College at Rose Hill & Carol Henger*, Biological Sciences, Fordham College at Rose Hill

This study researched animal activity in relation to stem density, forest maturity, road proximity, and invasive plant species. In well-kept new growth parks, plant life is rigorously protected and maintained due to human activity and park workers, which could result in an increase of biodiversity. Invasive species can be detrimental to animals and habitats, causing a difference in animal richness between sites. They often outcompete native plant species, and overtake resources. Roads that are near forests can be influenced by human activity as well. In this study, 15 cameras were placed across 5 different NYC parks. A 5 m radius was measured at each site with the camera tree as the central point. Within the 5 m radius, all of the trees were counted and individually identified. The amount of invasive species was quantified using 1 m² plots. Animal activity and stem density were compared, resulting in a positive correlation between the two variables, supporting the hypothesis. Amount of invasive plants and animal richness were compared, with areas of more invasive plant species correlating negatively with animal species richness. Amount of invasive plants and stem density were compared with areas of higher stem density correlating positively with more invasive plants, supporting the hypothesis. Additionally, road proximity and animal activity

were compared, resulting in a negative correlation between animal activity and distance to road, contradicting the hypothesis.

Poster-105

Is the Bathroom Making You Sick?

Gabriella Blazich, Biological Sciences, Fordham College at Rose Hill, Theresa Mandile, Biological Sciences, Fordham College at Rose Hill, Teresa Swindal, Biological Sciences, Fordham College at Rose Hill, & Jacqui Johnson*, Biological Sciences, Fordham College at Rose Hill

Bathroom surface bacteria have been the focus of previous research due to the presence of harmful bacterial species such as *Staphylococcus aureus* and *Escherichia coli* on bathroom surfaces. These bacteria are linked to illnesses which could spread during bathroom usage. This is significant because humans encounter many surfaces including doors, toilets, and sinks, during a regular bathroom visit. To investigate bacterial abundance and coliform presence, sink and toilet surfaces from six women's bathrooms across Fordham University's Rose Hill Campus were swabbed. We tested surfaces for the presence of bacterial coliforms in particular since coliforms are found in fecal matter. We hypothesized that more frequently used bathrooms such as those in McGinley Center will illustrate more bacterial presence on surfaces than the less frequently used bathrooms including Dealy Hall. Standard plate count enumeration methods were used, with 1:1 and 1:10 dilutions plated onto nutrient agar. Endo agar was used to confirm the presence of coliforms. Our results showed limited bacterial presence on the Freeman and McGinley toilets, as well as on surfaces in Dealy, Collins, and Walsh bathrooms. There was similar bacterial presence among the range of bathrooms tested. No coliform presence was observed. Our results indicated a minimal bacterial presence of any kind, including coliforms, in a range of Fordham University women's bathrooms, so it is unlikely that you are acquiring pathogenic bacteria from campus bathrooms.

Poster-106

Measuring the Illegal Cigarette Market in New York City

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The illegal cigarette trade involves the sale of cigarettes that evade the payment of taxes: including (1) bootlegging where cigarettes are purchased from low tax states and sold in high tax states and (2) counterfeiting, the production of cigarettes without the expressed consent of tobacco manufacturers. The illegal cigarette trade negatively impacts New York City revenue when taxes are evaded. However, it also has negative implications for public health since it undermines the supposed health benefits of high taxes. Economic research finds that increasing taxes by 10% decreases smoking consumption by 4% (Jha & Chaloupka 1999). However, this is negated with the availability of cheap cigarettes. In an attempt to measure the extent of illegal cigarette trade in New York City, we use an empty discarded pack survey. Between August and November 2016, all of the authors collected empty discarded cigarette packs across every street nested within a stratified random sample of 120 neighborhoods. We find that the illegal cigarette market is quite pervasive in New York City, with 75% percent of our sample avoiding city and state taxes.

Poster-107

Bacterial Growth on Kitchen Sponges

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Kitchen sponges are ideal growth environments for bacteria, and the repeated use of sponges is known to increase the accumulation of various types of potentially harmful bacteria. The Centers for Disease Control and Prevention recommend to replace kitchen sponges every two weeks and to sanitize after each use by placing it in the dishwasher. This study examined the increase in bacterial growth in four sets of experimental sponges over a period of 10 days without sanitization each night. It was hypothesized that after 7 days, the colony forming units will reach a number deemed potentially harmful by the CDC, rendering the sponges unhealthy to use after one week. Samples of sponge water were taken at 24 hours, 3, 7 and 10 days after use. Samples were enumerated for total bacterial abundance using a standard plate count on nutrient agar. The presence of harmful coliforms, such as those that ferment lactose or contain fecal matter, were tested for using the selective media eosin methylene blue (EMB) and endo agar. Results from 24 hour and 3 day enumerations had above the expected amount of growth on EMB and Endo agar plates. Enumeration of total viable bacteria and coliforms from 7 day and 10 day sponges were used for comparison to CDC guidelines for safe sponges.

Poster-108

Hand Drying Methods Important in Reducing Risk of Infection

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Handwashing is an effective means to eliminate many of the harmful bacteria and microbes found on our hands. In 2008, the World Health Organization released its guidelines for proper handwashing techniques to be undertaken in order to maintain proper hand hygiene in health care professions. Following such guidelines have proven to significantly decrease the risk of infections in hospitals. Our investigation addressed the presence of bacteria on the hands of individuals after standardized handwashing techniques, followed by two different methods of hand drying. The focus of the experiment was to address the difference in bacterial presence between using warm air drying and simple paper towel drying techniques. We hypothesized that the bacterial and microbial growth using the warm air drying technique would be less when compared to that of the paper towel drying technique. After completing the hand washing and drying, our hands were swabbed and plated directly onto nutrient agar plates using the lawn technique. We then calculated the colony forming units for each plate and determined the percent change between the colony forming units of our hands before washing, and the colony forming units of our hands after using each drying technique. Our results supported our hypothesis, given that there was a 2-fold increase in the number of bacteria observed after drying hands with a paper towel. These findings provide support for the use of hand dryers over paper towels in reducing the risk of infection.

Poster-109

Examinations of relationships among mindfulness, distress tolerance, and past quit attempts among adult depressed smokers receiving psychiatric outpatient treatment

Carlos Vieira, Integrative Neuroscience, Fordham College at Rose Hill & Haruka Minami*, Psychology, Fordham College at Rose Hill

Previous studies suggested that intolerance to internal distress (low distress tolerance) is associated with early relapse. However, the relationships between distress tolerance and quit attempt have not been well studied among

depressed smokers who are especially vulnerable to relapse. This study investigates the relations among mindfulness, distress tolerance, and past smoking quit attempts among adult daily depressed smokers. We recruited a total of 26 participants (women=21) receiving treatment for a depressive disorder in an outpatient psychiatric center. Several measures related to mindfulness, distress tolerance, and psychological inflexibility (general and smoking-specific) were administered at baseline. Results showed no significant or moderate correlations between three quit attempt variables (i.e., the number of quit attempts, number of quit attempts lasting over 24 hours, and the longest quit attempts) and mindfulness, distress tolerance, psychological inflexibility as well as depressive and anxiety symptoms. However, analyzing data only for women revealed that greater total mindfulness scores were associated with longer quit attempt ($r = .35, p = .12$) and greater distress tolerance scores were associated with a greater number of quit attempt lasting 24 hours ($r = -.35, p = .12$) although these did not reach statistical significance. Moreover, anxiety ($r = -.42, p = .055$) and depressive symptoms ($r = -.45, p = .039$) were associated with the longest quit attempt. The significance or magnitude of these relationships did not change controlling for nicotine dependence and years of smoking using regression models. These findings suggest potential gender differences in the role of distress tolerance/mindfulness in cessation attempt/effort.

Poster-110

Examining Bacterial Loads of Conventionally vs. Organically Raised Meats

Christopher Indudhara, Biological Sciences, Fordham College at Rose Hill, Nicole Hose, Integrative Neuroscience, Fordham College at Lincoln Center, Alexander Mark, Biological Sciences, Fordham College at Rose Hill, & Jacquie Johnson*, Biological Sciences, Fordham College at Rose Hill

Over the past decade, concerns about the conditions in which livestock are conventionally raised have led to a boom in the organic and antibiotic-free meat industry. While some look favorably upon this increase as a long-term retardant to the development of antibiotic-resistant microbes, the lack of antibiotic treatment in these livestock may affect the bacterial load of meat products that they produce. We tested the bacterial load of commercially available organic, wild, or otherwise antibiotic-free chicken, beef, and salmon, against their conventionally raised counterparts. The samples were plated on nutrient agar after serial dilution, and bacterial load was assessed using the Standard Plate Count method. The most diluted samples were additionally plated on mannitol salt agar to assess the load of halophiles. We hypothesized that the meat products of conventionally-raised animals would have significantly lower bacterial loads due to the treatment of those animals with antibiotics. The results supported our hypothesis, as all antibiotic-free meats produced more colonies than their conventional counterparts. These findings raise concerns as to the safety of consuming antibiotic-free meat products, and call into question the widely-held belief that organic livestock will primarily positively impact public health. However, further testing is needed to determine the amount of pathogenic or otherwise harmful bacteria in organic meats, as well as antibiotic resistance of bacteria in conventional meats.

Poster-111

Combatting Wireless Network Security Issues for the Future: Hacking WEP, WPA, WPA2 and Finding Solutions

Luke Johnston, Computer and Information Sciences, Fordham College at Rose Hill, Chris Mallozzi, Computer and Information Sciences, Fordham College at Rose Hill, John Squillini, General Science, Fordham College at Rose Hill, & Sajal Bhatia*, Computer and Information Sciences, Fordham College at Rose Hill

Applications, services, and businesses that use wireless channels have been growing significantly in recent years. Many people use these channels to communicate personal and/or essential information using wireless access points. The use of radio waves to transport these signals leaves information open and vulnerable to attack. So how do we keep information safe in an age where anyone with access to a computer can become a threat to security? Current cryptographic techniques do not seem to be sufficient, instead, they need to be reinforced and complemented with other measures of security. Businesses today are realizing that hundreds of millions of new connected devices and networks are going to increase exponentially in the next ten years. This will be adding to the already congested system of wireless networks globally. How will data integrity be kept? There has not been much thought put into how to maintain security in this growing, interconnected, and wireless system. In our research we will first be

attempting to expose the vulnerabilities in WEP, WPA, WPA2-PSK, and WPA2-AES algorithms on routers. After performing numerous hacks into the router, we will record how each attack performs, the amount of time it takes for each attack on each security algorithm, and how easy/hard they were to perform. After recording and analyzing these results, we will work towards ideas for solutions to this security threat, specifically to cognitive radio networks.

Poster-112

Epigenetics

Senada Kadric, Biological Sciences, Fordham College at Rose Hill, Caroline Donahue, Integrative Neuroscience, Fordham College at Rose Hill, Mamadou Ly, Biological Sciences, Fordham College at Rose Hill, Sonia Bernal, Biological Sciences, Fordham College at Rose Hill, & Varuni Jamburuthugoda*, Biological Sciences, Fordham College at Rose Hill

Epigenetics is the study of hereditary traits that arise from modification in DNA structure and regulatory proteins rather than a change in nucleotide sequence. Charles Darwin's theory of inheritance, Alexander Fleming's discovery of the chromosome, and Watson and Crick's double helix model laid the foundation of what constitutes hereditary material. From these studies, a question arose: how can cells have various functions if they carry the same genetic information? The answer is differential gene expression. Epigenetics studies the mechanisms and effects of differential gene expression by factors that do not alter the DNA sequence, such as DNA methylation, histone modification, and non-coding RNA. These epigenetics modifications have been implicated in various pathologies, including cancer and obesity. For example, researchers have found that the Trim28 protein forms an epigenetic switch, leading to either an obese or lean phenotype in mice. In humans, low levels of this protein have been found in obese children. Transgenerational epigenetic inheritance is the phenomena in which the parents' epigenetic tags are inherited by their offspring, thereby inheriting the same patterns of altered gene expression. Intergenerational epigenetic inheritance has a farther-reaching effect, in which inherited epigenetic programming can be phenotypically seen even four generations after. The most studied effect of epigenetic mechanisms is imprinting, which results from epigenetic tags on parental germ lines. Parent-specific genes are silenced and only one inherited allele is expressed. While genomic imprinting is sometimes necessary for normal development, it can also alter the normal expression levels of genes, causing deleterious health effects.

Poster-113

Profile of Cannabis Use in HIV-positive and HIV-negative Individuals in a Primary Care Clinic

Katherine Sadaniantz, Biological Sciences and Music, Fordham College at Rose Hill & Patricio I. Meneses*, Biological Sciences, Fordham College at Rose Hill

Cannabis use in the HIV-positive community has been prevalent for many years. Research regarding true consumption and the effects of marijuana when used concurrently with anti-retroviral therapy is lacking. In this study we aimed to understand the prevalence of cannabis use and associated clinical findings in HIV-positive (n = 50) and HIV-negative (n = 50) individuals, at the CFAR Clinic, The Miriam Hospital, Rhode Island. Subjects completed a short survey regarding frequency, quantity, method, and reasons of marijuana use. Employment status, yearly income, alcohol consumption, and prescription/non-prescription drug use were gathered. A one-time blood sample was drawn from each subject for cannabinoid quantification. Statistical significance between HIV-positive and HIV-negative individuals was determined using Student's T Test. There was no difference in marijuana use between HIV-positive (64%) and HIV-negative (62%, $p = 0.84$) groups. The high percentage of marijuana use among HIV-positive persons in this study is nearly double the highest previously reported (33%, 2001). Ten percent of the HIV-positive subjects reported having a medical marijuana card. Alcohol use was nearly two-fold higher in the HIV-negative group (HIV-positive = 38%, HIV-negative = 70%, $p = 0.01$). Employment status differed significantly between the HIV-positive and HIV-negative groups (HIV-positive = 6%, HIV-negative = 44%, $p < 0.001$). Plasma samples are still being analyzed, but preliminary results suggest the presence of THC-COOH in subjects who reported no use of cannabis, possibly implying a response bias. We will discuss our findings and further studies regarding drug-interaction effects in cannabis users.

Poster-114

Pathological Dimensions of Migration and Ethnicity in the Levantine Bronze Age

Rachel Gabavics, English, Fordham College at Rose Hill, Jon Perroni, Anthropology, Fordham College at Rose Hill & Kimberly Consroe*, Anthropology, Fordham College at Rose Hill

Human migration has been a perennial topic of interest to researchers involved in archaeological investigations concerning physical difference amongst people in both ancient and modern populations. Between c.2000-c.1200 BC, the Middle Bronze Age city of Alalakh—now Tell Atchana, in Hatay Province, Turkey—was a major commercial and administrative hub that impacted the genetic, ethnic, and economic diversity of people at that site. One way to explore this diversity is to analyze dental pathologies that provide insight concerning developmental health as well as differential access to, and use of, dietary resources. Differential resource access and use likely impacted the rates and frequencies of dental pathologies and overall developmental health, and may reflect socioeconomic and ethnic variation. This study aims to identify and score that variation by using pathological evidence derived from excavated human dentition (n~1000), and cataloged photographs of these teeth (n~8000), to assess the rates and loci of defects (linear hypoplasias and caries) that indicate periods of stress and dietary variation. To understand the degree of variation that is present, the pathological information in this study is compared to the previously recorded morphological and bioarchaeological evidence to create a more nuanced population profile. This profile construction can highlight variability that may be associated with ethnic or socioeconomic difference, and ultimately provide insight regarding Bronze Age health and physical difference within this group.

Poster-115

Banking and Financial Services Access in the Bronx

Corina Minden-Birkenmaier, International Political Economy, Fordham College at Rose Hill & Emily Rosenbaum*, Sociology, Fordham College at Rose Hill

Low-income, black, and Hispanic populations statistically have low financial health and are more likely to be unbanked, underbanked, or use alternative financial services, such as check cashing facilities. Unbanked and underbanked families have difficulty building assets and getting loans for large purchases such as houses and cars, which leads to generational poverty and widens the gap between rich and poor. In addition, using high-fee service providers such as check cashing businesses further reduces the amount of money low-income. The majority of Bronx residents fit into one or more of these population demographics. Therefore, it is important to analyze the density of banks and financial services in the Bronx because ease of access impacts whether families use financial services and which services they use. The purpose of this research project was to amass a data set that would facilitate evaluation of ease of access to banks and other financial institutions for residents of the Bronx. The dataset includes bank location data from the FDIC, check cashing business location data from the New York Department of Financial Services, and the locations of Credit Union, Western Union, ATM, and other financial service businesses from their websites. The poster will consist of information regarding the importance of banking, maps showing the locations of the financial services studied, and comparisons with demographic data gained from the American Community Survey.

Poster-116

Measuring the Validity of Parent Reports vs. Child Self-Reports of Emotion Dysregulation

Graziella Ferrara, Psychology, Fordham College at Rose Hill & Amy Roy*, Psychology, Fordham College at Rose Hill

According to previous literature, discrepancies often exist when comparing child self-reports of behavior with adult reports of child behavior (Shahinfar, Fox, & Leavitt, 2000). Yet, these findings tend to vary based on several factors, one of which includes the tasks used within those studies. The current study assessed the convergent validity of child self-reports as compared to parent reports of anger by comparing reports from the Children's Inventory of Anger with the Parent Behavior Assessment System for Children. The study consisted of reports from a random sample of

33 children with ADHD and 33 parents recruited from ongoing studies at the Pediatric Emotion Regulation Lab at Fordham University. The data suggests correlations between parent reports of children's anger and child self-reports of anger. Further analyses will be conducted to determine the effects of the child's age in understanding the potential discordance between parent and child reports, as well as the employment status of the parents to consider the presence in the lives of their children. The implications of this study may be used to assess the validity of the ChIA as a good measure of emotion dysregulation, which could assist in future prevention and treatment plans of children with temper outbursts.

Poster-117

Anna's Aeneid in Punica 8.25-231

Richard Plunkett, Classical Languages, Fordham College at Rose Hill & Leo Landrey*, Classical Languages, Fordham College at Rose Hill

Silius Italicus, in his epic the *Punica*, elucidates and enhances the mystique of the Roman goddess Anna Perenna. Silius is a 1st century CE Roman poet who, until recently, has been overlooked due to ancient and modern misconceptions about his work. In the *Punica*, he tells a mythologized account of the Second Punic War, a pivotal point in Roman Republican history. Near the midpoint, Silius digresses on the character Anna, a familiar face to Roman readers of Vergil's *Aeneid*; however, she re-debuts as the goddess Anna Perenna, adopted into the Roman pantheon long before Silius' time. Only Silius and one earlier author, Ovid, conflate the literary Anna with the goddess Anna. In this paper, I will examine why Silius elevated the minor literary Anna to divine status, with particular attention paid to his Latin compared to Ovid's, which undoubtedly influenced him. Vital differences exist between the accounts, which I believe force the reader to connect the story of Anna to that of the Roman mythical hero Aeneas in Vergil's *Aeneid*. The digression, embedded in the Punic War narrative, also impacts the reception of the *Punica* itself. Anna's voice is stripped away at a particular moment of the digression, which I posit indicates Silius' response to censorship in the early Empire. Silius has revitalized the ancient goddess and entwined her with the cultural climate of his time.

Poster-118

Tree Health and Diversity in New York City Parks

Samantha Fraembs, Biological Sciences, Fordham College at Rose Hill, Linelle Abueg, Biological Sciences, Fordham College at Rose Hill, Joseph Barry, Biological Sciences, Fordham College at Rose Hill, Marie Feneron, Biological Sciences, Fordham College at Rose Hill, & Beth Ansaldi*, Biological Sciences, Fordham College at Rose Hill

In an increasingly urban world, green areas such as city parks are extremely valuable biodiversity hotspots that lend many benefits to cities and their residents. Trees in city parks improve air quality by decreasing the concentration pollutants and greenhouse gases in the air. Trees also limit our exposure to ultraviolet radiation by providing shade from the sun. We can only reap these benefits if the trees in urban parks are in good health. New York City (NYC) has numerous parks of various sizes. Our study explores the relationship between park size and tree health and diversity. Understanding this relationship will allow urban parks to be planned in a way that will maximize the benefits they provide to local residents. As park size decreased, we expected tree diversity and health would also decrease. Biodiversity was measured by recording the species and number of trees along three 20 meter transects in each park. Tree health was estimated by noting the general appearance of the trees and measuring their diameter at breast height. Based on our survey of twenty NYC parks, we found that tree health and diversity was closely associated with park size. Our results suggest that larger parks tend to have more biodiversity, but park size has little effect on overall tree health.

Poster-119

Levels of Anxiety and Coping Mechanisms in College Students

Nicholas Labruna, Psychology, Fordham College at Rose Hill & Rachel Annunziato*, Psychology, Fordham College at Rose Hill

College students are faced with elevated levels of anxiety, and only a small percentage of these students are receiving adequate treatment. Though anxiety has been widely studied in this population, the ways that students cope with anxiety are largely unknown. Furthermore, it is known that some anxiety can be healthy or adaptive but how this translates into coping strategies used during the stress of college will be explored here as well. This correlational study aims to understand how different levels of anxiety are associated with specific coping strategies. In addition it attempts to study coping less broadly and anxiety not necessarily in its relation to substance abuse. Also, we will examine levels of anxiety associated with adaptive coping as well as if there is a threshold of anxiety that needs to be passed before a college student shifts behavior from adaptive to maladaptive coping. The present study has enrolled 104 undergraduate students who completed the survey, which includes the measures the Zung Self-Rating Anxiety Scale and the Brief COPE, as well as a demographic questionnaire. Through this study, the long-term goal is to be able to provide adequate support and treatment for students burdened by high levels of anxiety, and to be able to foster effective and realistic coping mechanisms for this population.

Poster-120

Conservation Advocacy in the Domestic Sphere: Teaching Bronx Zoo Visitors to Bird-Proof Household Windows

Robin Happel, Environmental Science, Fordham College at Rose Hill, Emily Teppler, Oberlin College, & Christine Sheppard*, Ornithology, The Bronx Zoo

According to some estimates, upwards of 250 million birds are killed annually by collisions with household windows in the United States, and researchers have increasingly begun to view such bird strikes as a significant threat to avian biodiversity. By constructing an exhibit on various methods of bird-proofing windows at the Bronx Zoo, my project attempts to both reduce mortality of wild birds, including endangered species, and empower zoo visitors to feel that they can play a personal role in conservation. Additionally, the Bronx Zoo's large volume of visitors allows for dynamic retrofitting of the planned display to maximize visitor interest and engagement, and it is this optimization of display effectiveness with which my project is primarily concerned. To this end, this study holistically assesses visitor responses with an emphasis on conservation psychology, as well as color theory and other fields related to graphic design. Mock-ups of various designs were evaluated using both observational data and direct surveying of zoo visitors, and elements such as title, accent color, and imagery were tested across multiple mock-ups. Our findings show that, of the designs tested, titles phrased as a question performed better than titles phrased as a statement, red performed better than other accent colors tested, and full-color illustrations performed better than monochromatic images. This data may thus be used as a tool to construct a standardized display instructing the public on the importance of bird-safe glass, or similar environmental causes, with maximal efficacy.

Poster-121

Synthesis of Tri-Armed Block-Poly (ϵ - caprolactone)-Block-Poly (L-lactide) for the Removal of Organic Pollutants from Water

John Bruppacher, Biological Sciences and History, Fordham College at Rose Hill & Amy Balija*, Chemistry, Fordham College at Rose Hill

Organic pollutants in drinking water are a serious threat to environmental and public health. Current means of removing pollutants from aqueous solutions have become inadequate. Research has shown that polymers can be used to effectively encapsulate and remove organic pollutants from aqueous solutions. Previous studies in the Balija lab have focused on synthesizing linear block co-polymers using distinct biodegradable hydrophobic and hydrophilic regions. The linear co-polymers have been shown to effectively remove Rose Bengal, a model for an

organic pollutant, from aqueous solutions. In this presentation, studies focusing on the synthesis of a three armed block-poly(ϵ - caprolactone)-block-poly(L-lactide) with a novel core will be discussed. Changes in the molar concentration of L-lactide were used to examine the effectiveness of varying amounts of the monomer on the encapsulation rate. The resulting polymers were analyzed by ^1H NMR spectroscopy to determine purity and molecular weights.

Poster-122

Synthesis of Block-Poly(-Decalactone)-Block-Poly (-Glycolide) and its Effectiveness in Removing Organic Pollutants from Water

Alexa McKnight, General Science, Fordham College at Rose Hill & Amy Balija*, Chemistry,
Fordham College at Rose Hill

Pollutants in water resources pose a substantial threat to the environment, water quality and public health. Elimination of these various pollutants, consisting of pharmaceutical drugs, personal care products and everyday household chemicals, is extremely important for the production of safe drinking water. Previous research in the Balija group focused on using natural monomers to create biodegradable polymers, containing hydrophobic as well as hydrophilic portions, for the removal of pollutants from aqueous solutions. This project involved synthesizing linear block-poly(-decalactone)-block-poly(-glycolide) polymers, prepared with different proportions of the glycolide monomer, to examine how changes in the hydrophobic portion of the resulting co-polymer structure impact its efficiency in removing pollutants from water. The glycolide synthesis was successful in producing polymer, as confirmed by ^1H NMR spectroscopy. This presentation will discuss how polymers containing varying amounts of glycolide were examined to determine the effect that the hydrophilic monomer composition and amount has on the co-polymer in its ability to remove Rose Bengal, a trial pollutant. Additionally, results on detecting aqueous phase encapsulation, observed with UV-Vis spectroscopy, and solid phase encapsulation studies will also be shown. Biodegradable and natural monomers have been employed in this project to minimize waste and negative impact on the environment.

Poster-123

The Perception of Body Image in Lean and Non-Lean Female Collegiate Athletes

Nicol Natale, Psychology, Fordham College at Rose Hill & Nancy Busch*, Psychology,
Fordham College at Rose Hill

The purpose of this study was to discover if a difference in body image perception exists between lean and non-lean athletes. Past studies have revealed that lean-sport athletes, athletes involved in sports that attribute a thin body-type to athletic success, report higher perceived body image dissatisfaction than lean-sport athletes, sports that place value on a muscular body-type. It was hypothesized that it is hypothesized that lean-sport athletes will report a higher discrepancy between perceived body image and actual body image than non-lean athletes; that lean sports will report higher scores in body image disturbance; and lean sports will report having more social physique anxiety than non-lean athletes. 25 female lean athletes and 28 female non-lean athletes completed an anonymous self-report questionnaire. Results failed to reject the null that lean-sport athletes reported higher mean scores than non-lean athletes in body image discrepancy, body image disturbance, and social physique anxiety. Limitations in this study included the small sample size ($N=53$) and variability in sport-type. Suggestions for future research should look to increase sample size and variability in sport-type.

Poster-124

Understanding the Scientific Limitations and Social Consequences of Commercial Genetic Testing

Ritu Dahr, Biological Sciences, Fordham College at Rose Hill & Edward Dubrovosky*, Biological Sciences,
Fordham College at Rose Hill

Genetic ancestry analysis and testing has recently gained commercial popularity to identify biological relatives, validate genealogical records, and to fill in gaps in family histories. In addition, this testing may be used to aid in medical risk calculation, forensic investigations, and admixture mapping. It is important to understand the scientific assumptions and limitations that come with genetic testing because so many consumers depend on the genetic assessment of ancestry. When an allele or haplotype is most commonly present in one population, companies often assume it to be diagnostic of that population. This can be problematic because high genetic diversity exists within populations and gene flow occurs between populations. Another limitation is the complex relation between DNA, race, and identity. The tests promote the popular understanding that race is rooted in one's DNA, rather than race being an artifact of sampling strategies, contrasting geographical extremes, and the imposition of qualitative boundaries on human variation. As race has such profound social, political, and economic consequences, we should be wary of allowing the concept to be redefined in a way that obscures its historical roots and disconnects it from its cultural and socioeconomic context. As the popularity of genetic testing increases as an attempt to shape their personal identities the methods of genetic analysis must be questioned to weigh its risks and benefits and make clear its limitations and dangers.

Poster-125

Social Connectedness among College Students

Dominique Marino, Undeclared, Fordham College at Rose Hill, Theresa Amoruso, Undeclared, Fordham College at Rose Hill, Andrew Banfield, Undeclared, Fordham College at Rose Hill, Mavelle Bengzon, Public Accounting, Gabelli School of Business, Alexandra Berndt, Undeclared, Fordham College at Rose Hill, Marilyn Cariello, Undeclared, Fordham College at Rose Hill, Angelina Caruso, Undeclared, Fordham College at Rose Hill, Isabella Cimato, Undeclared, Fordham College at Rose Hill, Bailey Gabrielli, Undeclared, Fordham College at Rose Hill, Stephanie Galbraith, Undeclared, Fordham College at Rose Hill, Victoria Iannotti, Undeclared, Fordham College at Rose Hill, Samantha Knice, Undeclared, Fordham College at Rose Hill, Matthew Lalonde, Marketing, Gabelli School of Business, Sophia Maita, Undeclared, Fordham College at Rose Hill, Xavier McCormick, Undeclared, Fordham College at Rose Hill, Nathan Santa Maria, Business Administration, Gabelli School of Business, Emily Silfies, Undeclared, Fordham College at Rose Hill, Leila Witcher, Political Science, Fordham College at Rose Hill & Rachel Annunziato*, Psychology, Fordham College at Rose Hill

The purpose of the present study is to examine whether the experience of social connectedness in college is associated with quality of life (QoL) and if it varies by class year and geographical distance from home. Participants were recruited from Foundations of Psychology classes. After informed consent procedures, they were asked to complete a short battery of questionnaires on Qualtrics consisting of the Social Connectedness Scales-Revised (SCS-R) and two widely used measures of QoL, the SF-36 and the WHOQOL-BREF, as well as demographic questions. Correlations were conducted between the SCS-R and the QoL measures. In addition, SCS-R score was compared to distance from home and class year. Overall, results shed light on factors related to students' sense of social connectedness in college and the association between this and QoL.

Poster-126

Readiness to Quit Smoking in People Living With HIV

Remington Donnelly, Psychology, Fordham College at Lincoln Center & Haruka Minami*, Psychology, Fordham College at Rose Hill

People living with HIV (PLWH) smoke cigarettes at a higher rate than the general population, and smoking is a leading cause of morbidity and mortality among PLWH receiving treatment. While many PLWH who smoke report a desire to quit, a majority of them have low readiness to quit, resulting in lower rates of quit attempts. Identifying factors that impact readiness to quit among PLWH may help develop an intervention that facilitates quit attempts in this vulnerable population. This study examined the relations among readiness to quit, self-efficacy (SE), quality of life (QoL), and perceived vulnerability (PV). Baseline assessment data from 100 PLWH smokers who participated in a clinical trial designed to improve engagement in Tobacco Quitline treatment were used for this study. Regression analyses showed no significant main effects (SE, QoL, PV) or interaction effects (SE_xQoL, SE_xPV) on a

continuous measure of readiness to quit. However, logistic regressions showed that greater SE, but not QoL or PV, significantly increased the likelihood of reporting readiness to quit in the next 30 days (yes/no). Furthermore, significant SE x QoL and SE x PV interaction effects were found, indicating that SE predicted readiness to quit in the next 30 days only among those who reported low QoL or high PV. For PLWH smokers, increasing self-efficacy may increase readiness to quit especially among those with lower quality of life. Psychoeducation tailored to PLWH designed to reduce unrealistic invulnerability to smoking-related diseases along with interventions that target self-efficacy may help improve rates of quit attempts.

Poster-127

Toad Observation by Analysis of Depth

Armando Califano, Computer and Information Sciences, Fordham College at Rose Hill & Damian Lyons*,
Computer and Information Sciences, Fordham College at Rose Hill

Working in conjunction with Avishai Shuter, a Wild Animal Keeper at the Bronx Zoo, we are studying the rare Kihansi spray toads using Microsoft's Kinect sensor to analyze their behaviors in depth. There are few scholarly research papers regarding these toads because they are so rare, having gone extinct in the wild, so our study would provide much needed analysis on this species. We will be observing them in 3-dimensional space because it provides a more accurate way to track movement and categorize certain behaviors. The depth technology works by projecting a fixed number of pixels and then recording their distance in space; the more pixels that are projected will increase the accuracy of the depth readings. The Kinect for Windows v2 has a depth camera of 512x424 pixels and uses the Time-of-Flight method for recording depth, making it a high powered and cost-effective depth camera. The toads themselves measure up to about 2 centimeters in length, which makes it difficult to identify them with the camera's capabilities, but we are using a mixed Gaussian subtraction method to distinguish a toad's body and the nearest neighbor algorithm to track them.

Poster-128

Effects of Specific Environmental Factors on the Presence or Absence of *Heribaudiella* in Western Connecticut Streams

Sarah Steirer, Biological Sciences, Fordham College at Rose Hill & John Wehr*, Biological Sciences, Fordham College at Rose Hill

A survey was conducted to determine the possible factors affecting the presence and absence of an uncommon freshwater brown alga, *Heribaudiella fluviatilis* (Aresch.) Sved. The survey examined streams in western Connecticut, and was the first of its kind in the eastern U.S. Importantly, this alga was once discovered in a single stream in Bridgeport CT (in 1898), but that population is now locally extinct, likely due to deteriorated water quality in an urban stream. It was predicted that in the present, *H. fluviatilis* will occur in rocky, fast-flowing streams, with good quality water, and neutral to slightly alkaline pH being a key factor contributing to its presence. Over a 7-week sampling period, a total of 40 streams were surveyed (river flows were all low in these months). Out of those, just 6 were found to be positive for *H. fluviatilis*. Sites were chosen strategically, major points of interest included sites along the Housatonic River and sites in Waterbury and Kent, CT. At each site we took both qualitative and quantitative data. It was observed that latitude and longitude were strong predictors of *H. fluviatilis* populations, which were largely confined to a small area in NW Connecticut. Dissolved oxygen (%), pH, current velocity (m/s), specific conductance and boulder percentage were significant ecological factors, but notably, lower conductance levels of *Heribaudiella* sites were contrary to predictions. Mean turbidity levels for positive streams were greater than in negative sites, which also was contrary to predictions. This data may suggest different ecological optima for CT populations than has been observed in streams in western US and Canada.

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