

FORDHAM COLLEGE AT ROSE HILL EIGHTH ANNUAL
UNDERGRADUATE RESEARCH
SYMPOSIUM

Showcasing Undergraduate
Research in the Sciences,
Social Sciences, and Humanities

Wednesday, April 15, 2015

Noon to 5 p.m. | McGinley Center | Rose Hill Campus



FORDHAM UNIVERSITY

THE JESUIT UNIVERSITY OF NEW YORK

The Eighth Annual Fordham College at Rose Hill Undergraduate Research Symposium

April 15, 2015 | McGinley Center | Rose Hill Campus

Welcome to the 8th Annual Undergraduate Research Symposium at Fordham College at Rose Hill. Today we celebrate the accomplishments of 312 of our dynamic undergraduate students who have engaged in original research this past year, as well as the dedicated faculty mentors who have shared their own passion and curiosity for knowledge with their students.

Comprising both oral and poster presentations, the work our 2015 presenters have done to create new knowledge, and to share it with their colleagues and peers, reflects a deep commitment to academic excellence. We are proud of them all.

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 about their work.

Undergraduate Research Symposium Committee:

Erin Burke, J.D., Fordham College at Rose Hill Dean's Office
Jennifer Petrella, Fordham College at Rose Hill, Class of 2016
Danielle Weinstein, Fordham College at Rose Hill, Class of 2016

The Undergraduate Research Symposium Committee wishes to thank the following for their assistance: Cody Arcuri, Jessica Baker, Francis Katai, Carol McNamara, Nicole Sano, the staff and administrators of Fordham College at Rose Hill Dean's Office, and the generous support of the Fordham College Alumni Association.

RESEARCH FELLOWSHIPS CREATED BY FORDHAM ALUMNI:

The Virginia L. Ambrosini, M.D. Fellowship
The Dominic T. and Rosina C. Adams Fellowship
The Fordham College Alumni Association
The Robert Schaffhauser, Ph.D., Fellowship
**The Fay Curcio Siciliano Undergraduate
Research Fellowship in Mathematics**
The Boniface A. and Alison Zaino Fellowship

The Peter J. Zangari, Ph.D., Fellowship
The Robert Russo, M.D., Fellowships
**The George and Mary Jane McCartney
Fellowship**
The Jeanne C. Myers, Ph.D Fellowships
The Frank Corvino Fellowship

**ALUMNI DONORS WHOSE GENEROUS SUPPORT FUNDS
UNDERGRADUATE RESEARCH WITHIN
FORDHAM COLLEGE AT ROSE HILL:**

Ann Marie Abate & Samuel J. Abate Jr., Esq., FCRH'77, LAW'81
 Virginia L. Ambrosini, M.D., TMC'69
 Angela M. Massarrone-Ammazzalorso, PAR & Michael D. Ammazzalorso, M.D., FCRH'83, PAR
 Charles Beard Anderson, PAR & Deborah A. Anderson, Esq., TM'73, LAW'84, PAR
 Ann Marie Assumma, FCRH'76, PAR
 Bernard R. Bahoshy, FCRH'50
 William E. Banfield, Esq., FCRH'74
 Sally C. Benner, FCRH'84
 Eleanor K. Burchianti & Edward J. Burchianti, FCRH'66
 Joseph A. Candio, M.D., FCRH'72
 Robert W. Capece, FCRH'65
 Brian J. Carney, FCRH'07
 Charles J. Casamento, PHA'68
 Michael P. Casey, M.D., FCRH'67
 James J. Castner, M.D., FCRH'66
 Peter R. Cella, Esq., FCRH'53
 Mary F. Chisholm, M.D., FCRH'79, GSAS'81
 Rosemarie Ciccarello, FCRH'84
 Jon M. Conahan, FCRH'65, PAR
 John M. Costigan, FCRH'64
 Marion & George B. Curtis, Esq., FCRH'70
 Francis L. Daylor Jr., FCRH'54
 Michael T. De Stefano, FCRH'68
 Janet O. Drasco, TMC '70 & Dennis J. Drasco, Esq., FCRH'70
 Eleanor & Thomas Fahey, M.D., FCRH'55
 Michelle A. Falcone, FCRH '81, PAR & Philip M. Falcone, M.D., FCRH'81, PAR
 John F. Fenton, FCRH'74, GSAS'77
 Karen Shearer Forlano, PAR & David Forlano, DDS, FCRH'85, PAR
 Jane Leary Frank & Paul M. Frank, Esq., FCRH'60
 Louis R. Gaydosh, Ph.D., FCRH'65, GA'66, GA'75
 Julie J. Gebauer, PAR & Davin J. Gebauer, PAR
 Dr. Joseph R. Giallo, FCRH'62
 Julius A. Giglio, FCRH'51
 Sonia Rentas Gliatta, PAR & Stephen Gliatta, Esq., CSB'80, PAR
 Edwin J. Goss, FCRH'50
 Rosanne B. Hanratty, GSAS '75 & Dennis M. Hanratty, FCRH'72
 Francis J. Heffron, FCRH'53
 Mary M. Ippolito & Joseph A. Ippolito, FCRH'54
 Joseph C. Iraci, M.D., FCRH'74
 Linda Ishkanian, Esq., FCRH'77, LAW'80, PAR
 C. E. Johnson Jr., FCRH'57
 Patrick M. Kenny, Esq., FCRH'56, LAW'59
 Peter M. Kiernan, FCRH'68
 James R. Knickman, Ph.D., FCRH'72
 Mary Ellen L. Kris Esq., TMC'73 & Mark G. Kris, M.D., FCRH'73
 Thomas E. LaSala, Esq., FCRH'75, LAW'78
 Marigrace E. Lalli, FCRH'77 & Michael A. Lalli, Esq., FCRH'76, LAW'79

Rev. Robert B. Lawton S.J., FCRH'70
 Vicki LeBris & Christian P. LeBris, FCRH'68
 Dennis E. Logue, M.D., FCRH'64
 Kathleen H. MacLean, FCRH'75, PAR & Brian W. MacLean, FCRH'75, PAR
 James W. Masterson, FCRH'65, GBA'71
 Marie Theresa Maurer, MC'65 & Otto H. Maurer, Esq., FCRH'63, LAW'66
 James B. McCaffrey, FCRH'63, PAR
 William B. McCarthy, FCRH'64
 Robert S. McElroy, Esq., FCRH'51, LAW'57
 Francis J. McGrath, Ph.D., FCRH'63, GSAS'69
 John T. McGuire, Esq., FCRH'64, LAW'67
 Robert L. McLaughlin, Ph.D., FCRH'79, GSAS'82, GSAS'87 & Sally E. Parry, Ph.D., FCRH'75
 Barbara A. McNelis, Ph.D., GSE'83 & Michael F. McNelis, FCRH'61
 Kelly R. Barrera-McShane, PAR & John C. McShane, PAR
 Daniel Molerio, FCRH'75
 Maureen E. Monahan, FCRH'80
 Dennis N. Morea, D.D.S., FCRH'66
 Bernadette K. Mulhearn, TMC'72 & John R. Mulhearn Jr., FCRH'72
 Louis J. Murphy, FCRH'62
 Francis X. Murphy, FCRH'62
 Elizabeth M. Neff, TMC'77
 Christopher J. Nogeire, M.D., FCRH'68
 Dolores C. O'Hara & Richard L. O'Hara Esq., FCRH'52, LAW'58
 Antoinette Paone, FCRH'99 & Andrew L. Paone, FCRH'99
 Vincent A. Policelli, M.D., FCRH'68
 Susan M. Poppe & William G. Poppe Jr., FCRH'64
 Arthur F. Ramsdell Jr., FCRH'68
 Joseph F. Realini, FCRH'60, GBA'73
 Christa Hoehner Reddy, PAR & John J. Reddy Jr., Esq., FCRH'76, PAR
 Ellen M. Reilly, FCRH'83 & Thomas K. Reilly, Esq., LAW'88
 Ross A. Rimicci, FCRH'63
 Christine T. Rio, TMC'71
 Raymond P. Rochford, Esq., FCRH'60, LAW'69
 Nina M. Ross, FCRH'81 & John J. Ross, M.D., GSAS'83, GSAS'93
 Charles K. Ryan, FCRH'52
 James P. Sauter, Esq., FCRH'84, LAW'87
 Deborah A. Smith & Lawrence G. Smith, M.D., FCRH'71
 Eugene P. Souther, Esq., FCRH'53, LAW'59, PAR
 Daniel M. Sullivan, M.D., FCRH'88
 Michael J. Tortorella, Ph.D., FCRH'68
 Janet Giaimo Vitale & Paul J. Vitale, FCRH'72
 Theodore T. Wall, FCRH'58
 Kathleen A. Walsh, Esq., FCRH'84, LAW'89
 Edward T. Walsh, GSB'75
 Marian C. Weiss, FCRH'77
 Mark J. Wichern, FCRH'84, GBA'90
 Kathleen P. Winter, PAR & Dennis J. Winter, PAR

**The Eighth Annual Fordham College at Rose Hill
Undergraduate Research Symposium**
April 15, 2015 | 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**
Rev. Joseph M. McShane, S.J.
President of Fordham University
- Amy R. Tuininga, Ph.D.
Interim Chief Research Officer of Fordham University
- 3:15pm **Presentation of Fordham Undergraduate
Research Faculty Mentor Awards**
- 3:30pm-5pm **Poster Presentations**
McGinley Ballroom and McGinley Lounge

Oral Presentation Session Summary

Time	Music Room	McGinley 234	McGinley 235	McGinley 236	McGinley 237	Hughes Hall 313
12-1 pm	Gritty Faith	Money and Motivation in Education	Biochemical Bonds	Urban Transitions	Adapting Education	Visual Threads in Marketing
1-2 pm	Gender in Media	The Global Stakeholder	Clinical Pathways in Biochemistry	Human Rights and Protest	Global Diet and the Extremes of Rx	Creating Value
2-3 pm	Resurrection to Reality TV	Corrupt Consumption?	Smart Watch, Health watch	Nationalism in the Fine Arts	Stabilizing our Borders: Financial and Cyber Security	Accountability

ORAL PRESENTATIONS: NOON-1PM

Gritty Faith Music Room 12-1pm

- Oral-36 Faith and Rebellion: Existentialism in the Works of Dostoevski, *Bruno Cassara*
Oral-34 "So Old it Looks Like New": Catholic Worker Movement Uses of Scripture as a Model for Activism, *Kaitlyn Flanagan*
Oral-2 Marginalized Women in Central American and Mexican LGBTQ movements, *Carlos Salazar*
-

Money and Motivation in Education McGinley 234 12-1pm

- Oral-21 Training Cost Optimization-Based Cost Sensitive Learning, *Jessica Timko*
GSB Student Loan Industry: Some data trends and experimental evidence, *Wyatt Miller*
GSB Assessing the Determinants of Entrepreneurial Intention, *Kaitlyn Rodriguez*
-

Biochemical Bonds McGinley 235 12-1pm

- Oral-20 Synthesis and Characterization of Novel Poly (delta-decalactone-L-lactide) Block Copolymers for the Encapsulation of Organic Pollutants, *Erica DePalma*
Oral-16 Synthesis and Characterization of Di-Substituted Pyrazoline Monomers and Dendrimers, *Cara McDavitt*
Oral-12 Synthesis and Characterization of Pyrazoline-Derived Dendrimers for the Encapsulation of Organic pollutants Present in Water, *Daniel Brauer*
-

Urban Transitions McGinley 236 12-1pm

- Oral-25 New Amsterdam, New York: A Transatlantic Social History, *Peter Lacerenza*
Oral-24 Fordham Road: The Road Less Traveled? *Rebecca McSween*
GSB Economic Factors to Optimize US Olympic Bid City Selection, *Aurelia O'Keefe*
-

Adapting Education McGinley 237 12-1pm

- Oral-17 Self-Esteem, Sleep, Physical Activity, and Academic Performance among Minority Adolescents, *Hadley Brochu*
Oral-14 Listening to the Deaf: An Examination of Advice on Raising Deaf Children, *Katherine Lease*
Oral-30 From the Military Base to the College: Veteran Students' Choice of a Major, *Famim Huq*
-

Visual Threads in Marketing Hughes Hall 313 12-1pm

- GSB Entertainment Marketing Strategy and Transmedia Storytelling, *Vincent Pellizzi*
GSB Analysis of the Impact of Font Styles in Marketing Materials, *Nicole Holm*
-

ORAL PRESENTATIONS: 1PM-2PM

Gender in Media Music Room 1-2pm

- Oral-10 Feminist Theory and the Chick Flick: Can Woman Have it All? *Molly Shilo*
GSB Gender Roles in Advertising, *Kathleen Schmitz*
-

The Global Stakeholder McGinley 234 1-2pm

- Oral-8 Anti-Dumping Duties and the WTO Dispute Settlement Mechanism, *Anthoula Vasiliou*
GSB Tapping Out the Tap: American's Water Crisis, *Melanie Falk & Rachel Aguilar*
Oral-33 After the Bridge: Gullah Resistance to Development on Hilton Head Island, *Daniel Matthews*
-

Clinical Pathways in Biochemistry McGinley 235 1-2pm

- Oral-27 Modeling of Lipid Bilayer Fusion, *Brigid Mulroe*
Oral-35 The Role of the Highly Conserved Isoleucine-Leucine Motif of Human Papillomavirus Minor Capsid Protein L2 in Infection and Intercellular Trafficking, *Fenzia Maffucci*
Oral-15 Development of Nanoscale Drug Delivery Systems to Target Breast Cancer Cells, *Alexandra Brown*
-

Human Rights and Protest McGinley 236 1-2pm

- Oral-7 Building Berlin's Identity on the Boulevard: Unter den Linden and the Kurfürstendamm on the Forefront of a Cultural Cold War, *Richard Bordelon*
Oral-1 Gauging Success: The United Nations Mission in the Central African Republic, *Kayla Robinson*
Oral-29 The Determinants of Youth Protest: A Case Study on Ukraine and the United States, *Fawziyah Siddiqui*
Oral-32 Women's Use of Direct Action Tactics in Ukrainian Protests, *Maria DeCasper*
-

Global Diet and the Extremes of Rx McGinley 237 1-2pm

- Oral-9 Emotions to Ethics: A New Interpretation of Motivation in Vegetarians, *Margaret Desmond*
Oral-6 Human Foot traffic and its Impact on Arthropod Richness and Abundance, *John Turner*
Oral-19 More Than Medication: Understanding the Relationship between Columbian Indigenous Medical Practices and the Colombian People, *Margaret Desmond and Brandon Mogrovejo*
* The Replacement of Internal R&D in the Pharmaceutical Industry with M&A, *Khushali Upadhyay, *NYU*
-

Creating Value Hughes Hall 313 1-2pm

- GSB Executive Compensation Structure, *Robert Landhauser*
GSB Peer-to-Peer Lending: Analysis on the Returns and Volatility of P2P Loan Portfolios from 2007-2010, *Ross Garlick*
GSB Value vs. ValueS: Investment and Investor Longevity in SRI Funds, *Kevin Soares*
-

ORAL PRESENTATIONS: 2PM-3PM

Resurrection to Reality TV Music Room 2-3pm

- Oral-11 Christ's Humanity and Divinity in Tokali Kilise: A Theological Approach to Understanding Cappadocian Cave Paintings, *Elizabeth Zanghi*
- Oral-18 An Investigation of Portrayals of Christianity on Reality TV, *Marissa Dow*
- Oral-28 New Atheism: Nonbelievers on Offense, *Canton Winer*
-

Corrupt Consumption? McGinley 234 2-3pm

- GSB The Long-term Attractiveness of China's Automobile Market, *Nevin Kulangara*
- * Corruption and Economic Growth in China, *Nicholas D'Amico*, **John Carroll*
- * The Fall of the Sport of Kings, *Ashley Meeks*, **Loyola New Orleans*
- GSB Materiality and Access-Based Consumption: Understanding Consumer-Object Relationships in an Increasingly Cosmopolitan World, *Lauren Teske*
-

Smart Watch, Health Watch McGinley 235 2-3pm

- Oral-23 Smartwatch-based Biometrics via Gait Analytics, *Andrew Johnston*
- Oral-22 Gait Abnormality Detection Using Smartdevice Sensor Data, *Isaac Ronan*
- Oral-26 Activity Recognition using Smartwatch Data Sensors, *Andrew Schreiber*
-

Nationalism in the Fine Arts McGinley 236 2-3pm

- Oral-3 *Opera alla Francese*: Nationalist Responses to Verdi's *Les vèpres siciliennes*, *Katherine Delaney*
- Oral-13 The Rivers and Stones of Oraioakastro, *Jonathan Rooke*
- Oral-31 Facing Down the Leviathan: Political Themes in Andrey Zvyagintsev's Award Winning Film, *Andrew Mark*
- Oral-4 "I'm not thriving, I'm dying here": Globalization and Rootedness in Jamaica in Margaret Cezair-Thompson's "The True History of Paradise", *David Buchanan*
-

Stabilizing our Borders: Financial and Cyber Security McGinley 237 2-3pm

- Oral-5 br00t: Detecting and preventing web-deployed botnet attacks, *Aaron DeVera*
- GSB Can the Financial War on Terror be Viewed as Successful? *Nicole Iman*
- GSB The Impact of Financial Transaction Taxes: An Examination of Italy's Tax on High Frequency Trading, *Ashley Menjivar*
- GSB Effect of The Stock Act on Congressional Stock Returns, *Gregory Giordano*
-

Accountability Hughes Hall 313 2-3pm

- * The Impact of Geographic Proximity and Audit Pricing, *Katrina Wu*, **Pace*
- * Fair Value Accounting and the 2008 Financial Crisis, *Chris Mitschow*, **John Carroll*
- GSB The Changing Impact of Index Inclusion, *Jonathan Dokler*
-

Poster - 2

Graphical and statistical comparisons of chondrule size-frequency distributions.

Grant Hammerschlag, Vasiliki Patsiogiannis, Edrina Dushaj, Alexander Jing, Jeremiah Hyslip, Jon Friedrich*

Psychology, Fordham College at Rose Hill, Integrative Neuroscience, Fordham College at Rose Hill, Mathematics, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Mathematics, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*

We will compare this year's Chem 1999 results on the Ragland LL chondrite chondrule sizes with data from previous efforts at Fordham University. We will create statistical descriptions of the size-frequency distributions of chondrules found in five different chondritic meteorites. In addition to the data collected this year, we also have data from Saratov (L chondrite), Sharps (H chondrite), QUE 95594 (EL chondrite), and Chainpur (LL chondrite). We will additionally compare and contrast our results with the results of previously recorded chondrite size distributions from literature. Overall, the analysis of our results and the comparison of those with previous Fordham and literature data will foster a better comprehension of the different sizes of the chondrules that are present in chondritic meteorites.

Poster - 3

Ethical Issues in Mental Health Research

Daniella Squillante, Kimberly Garvey, Kayla Giampaolo, Marisa Stockdale, Stuart Wilson, Lincoln Zernicke, Adam Fried*, Orit Avishai*

International Political Economy, Fordham College at Rose Hill, General Science, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Math and Economics, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Bioethics, Fordham College at Rose Hill*, Sociology and Anthropology, Fordham College at Rose Hill*

It is believed that one in five Americans suffers or will suffer from some type of mental illness. Additional research aimed at providing safe and effective treatments to for individuals diagnosed with mental health conditions is critically important. Research with individuals diagnosed with mental health disorders, such as depression, bipolar disorder, PTSD and schizophrenia, presents several complicated ethical dilemmas. This presentation will discuss several major ethical considerations for investigators conducting research with individuals diagnosed with mental health disorders. Striving to maintain the highest scientific and ethical standards includes ensuring that informed consent is informed, voluntary and rational, providing protection of participants through IRB review and safeguarding the use of surrogate decision making. This presentation will emphasize that through careful consideration of complex ethical dilemmas common in this type of research, the scientific community may continue the critical progress in research necessary to improve the health and welfare with patients with mental health diagnoses.

Poster - 4

The Effect of Hydrated Cigarette Waste on Plant Life Cycle and Reproductive Potential

Matthew Lejeune, Brooke Hefele, Patrick Lenihan, Evon Hekkala*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Not all smokers are ecologically responsible and discard the filter remnant (commonly called the "cigarette butt") of their consumer cigarette in an appropriate manner. As a result, cigarette butts, like second hand smoke, have a negative impact on the environment and on organisms. The present study examines the negative effect of cigarette butts, a highly littered substance, on plant vegetation. In this experiment Brassica rapa, a plant species typical to temperate zone urban and suburban environments with high-density human populations, was raised in a uniform laboratory environment with controlled light, water, nutrients and soil. Forty plants were treated with one of four concentrations of water containing cigarette solutes: High (20cigs/L; n=10), Medium (10cigs/1L; n=10), Low (5cigs/1L n=10), and a Control (0cigs/1L, n=10). The water solutions were administered to Brassica Rapa

throughout the entire life cycle and plant reproductive potential was measured using biomass, number of seeds, and weight of seeds. Analysis of variance (ANOVA) was employed for the three dependent variable measures. The study concludes with a discussion of the negative effect of cigarette butt pollution on vegetation in urban environments.

Poster - 5

A Brief Study of Microtubule Persistence Length

Juin Zhou, Kayla Bushweiler, Drake Kessler, Taviare Hawkins*

Engineering Physics, Fordham College at Rose Hill, Physics, University of Wisconsin - La Crosse, Physics,
University of Wisconsin - La Crosse, Physics, University of Wisconsin - La Crosse*

Microtubules, which consist of α - β tubulin heterodimers, are the most rigid of the cytoskeletal filaments. They are both structurally and functionally important in the cell: providing shape and support, forming the highway by which intracellular cargo is transported, and are essential in mitotic processes. To be this versatile, the rigidity of microtubules has to play an important role in cellular mechanics. Persistence length (L_p) is a measure that quantifies microtubule stiffness. It determines how microtubules move and can affect how well they function. Mutated microtubule associated proteins (MAPs) cause various degenerative diseases, such as Alzheimer's and Lou Gehrig's. MAPs have been shown to have the ability to tune microtubule stiffness. Our study focuses on the mechanics of microtubules by imaging fluorescently labeled, freely fluctuating filaments within a thin ($< 3 \mu\text{m}$) chamber. Fourier analysis and bootstrapping statistics were then applied to extract the persistence length.

Poster - 6

Enamel Thickness in Guenon Incisors

Wajiha Khan, Caitlin Hufnagle, Reiko Goodwin*

Biological Sciences, Fordham College at Rose Hill, Anthropology, Fordham College at Rose Hill, Anthropology,
Fordham College at Rose Hill*

Although physical anthropologists clearly recognize the critical role of incisors in digestion, our understanding of enamel thickness in these teeth has not advanced much since Shellis and Hiiemae's (1986) pioneering study on the enamel thickness of incisors in several species of Old World Monkeys. Incisors are used in digestion and grooming in primates and we know that those species that largely feed on fruits have broad incisors while leaf-eaters have narrow incisors. Shellis and Hiiemae's study examined one tooth per species, so their findings must be corroborated by more evidence. For this reason, we tested our hypothesis that the guenons that primarily feed on fruits, but supplement their diets with hard seeds, will show thicker enamel on the labial side of the incisors than other guenons that primarily feed on fruits and supplement their diets with leaves. We took linear measurements of enamel thickness, incisor height, and crown height from about a dozen μCT scanned guenon jaws by using ImageJ and examined relationships with diet and body size. Our results indicate that the mona monkey, that sometimes feed on hard seeds, display thicker enamel on the labial side than previously thought. Further examination of the labial side of incisors would need to be obtained to gain a better understanding of interspecific variations in the enamel thickness of guenon incisors.

Poster - 7

Steiner Optimization in Unique Spaces

John Andersen, Jasun Gong*

Mathematics, Fordham College at Rose Hill, Mathematics, Fordham College at Rose Hill*

The Steiner problem deals with the minimization of a connected graph between given sets of points. Extending the problem into the range of the 1-infinity and 1-zero spaces could lead to new insights on optimization problems. This project deals with these spaces with a focus on simpler classes and provides a simple proof for the cases where n , the number of points, is two and where n is three. Hopefully these results can be extended to larger sets of points and perhaps help to solve the rectilinear Steiner problem.

Poster - 8

The impact of urbanization on water quality and the macroinvertebrate community on the Bronx River

Kathryn Callahan, Marisa Stockdale, Elizabeth Eisenhardt, Evon Hekkala*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill,
Environmental Science, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

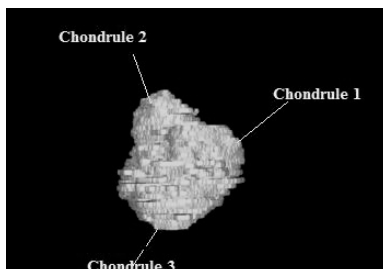
Landscape and land usage greatly contribute to the quality of surrounding bodies of water and their ecosystems. As areas become more populated and used for human benefit, the bodies of water can suffer, as can some of the organisms living in those areas. Analyzing water quality and the macroinvertebrate community allows for greater understanding of the effects of urbanization on aquatic ecosystems. Across the urban to rural gradient along the Bronx River, we expect to find lower macroinvertebrate species richness in commercialized areas which should also have poorer water quality. We hypothesize that we will find higher water quality and macroinvertebrate species richness in rural areas, while in more urban areas we expect to find lower water quality and macroinvertebrate species richness. We also expect more pollution tolerant species of macroinvertebrates to be found in urban areas than in rural areas due to the introduction of contaminants.

Poster - 9

Chondrule and Compound Chondrule Distribution in Sharps L3.4 Ordinary Chondrite

Stephanie Giordano, Jon Friedrich*

Chemistry, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*



Through this physical analysis of the microtomography, we have been able to produce data on chondrule mass distribution within the meteorite, comparatively to other meteorites within its family. This data is significant in that it offers insights into the formation of these materials by means of giving us parameters for which the materials have existed. To quantify the true three dimensional (3D) chondrule sizes in the Sharps L3.4 ordinary chondrite, I have scanned a small ~1 cm³ piece of the meteorite with x-ray microtomography (μ CT). This creates a series of grayscale images (“slices”) which together represent a volume or “stack” of images. The 3D volumes formed from stacks of these slices can be used for the quantitative measurement of components contained in them using computerized grayscale-based segmentation and separation methods. This data has been quantified within the 3D diameters of the chondrules in the chondrite.

Poster - 10

Effectiveness of Microorganism Control in Laboratory and Emergency Medical Settings

Alexandra Agins, Alyssa Ammazalorso, Kelsey Donlon, Kyle Mitchell, Christine Zolnik*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, General Science, Fordham College at Rose Hill*

In certain professional environments, including laboratory and emergency medical settings, it is essential that microbial levels be maintained at a minimum to prevent the contamination of both people and equipment. Protocols have been established to ensure low microbial levels using antiseptic and disinfecting agents. However, workers may not consistently adhere to these protocols and microorganisms may develop resistance to these decontaminating agents, resulting in the persistence of some species that exceed ideal levels. Given the frequent contact of these working environments with human skin, *Staphylococcus aureus* contamination is of particular concern because of its role as a potential pathogen. To study the effectiveness of the decontaminating agents used in a Fordham University EMS ambulance and a Department of Biological Sciences molecular laboratory, we tested for the presence of total viable bacteria as well as *Staphylococcus* spp., specifically, before and after treatment with these agents. When protocols were followed, we expected that the quantity of viable bacteria on the laboratory and ambulance surfaces would significantly decrease following treatment. However, we hypothesized that not all viable microorganisms would be eliminated in part because of potential development of resistance to these agents. Once sterile objects are exposed to the environment, air-borne microorganisms may contaminate them. Consequently, we also tested for the presence of viable bacteria on packaged sterile ambulance equipment before and after environmental exposure. We hypothesized that exposure of the sterile equipment to the ambulance environment would lead to an increase in the quantity of viable bacteria present.

Poster - 11

Evaluation of the Error Involved in Calculating the Volumes of Chondrules

Kristen Yang, Olivia Singler, Juliette Strasser, Jon Friedrich*

Biological Sciences, Fordham College at Rose Hill, Visual Arts, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*

Chondrules are spherical silicate objects found in primitive chondritic meteorites. The study of chondrules provides insight about the chemical and physical processes that were present during the early stages of our solar system. In our work with the crowdsourcing CHEM 1999 course, participants identified the borders of chondrules in x-ray microtomography slices of chondrites using the GNU Image Manipulation Program (GIMP). We then compiled all participants' data to construct 3D representations of the chondrules in our chondrite. Though this method seems precise in compiling volumes of chondrules, our concern is evaluating the error involved in calculating the true volume of a chondrule that may be introduced when different students identify the borders of the same chondrule. In this study, we compared the true volume measurement of a chondrule with the altered volumes obtained from chondrule slices with varying diameters. We used Microsoft Excel to calculate and compare the volume of the true chondrule to its altered volumes. It is important to accurately measure the volumes of chondrules because their diameters offer information about how they should be classified in terms of their chemical groups and formation mechanisms.

Poster - 12

X-Ray Microtomography Data Collection and Analysis of Chondrules in Hallingeborg

Nina Le, Jon Friedrich*

Chemistry, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*

During the formation of the solar system, chondrules were formed out of silicate materials. Chondrules are spherules found in chondrites that can be analyzed through two-dimensional (2-D) and three-dimensional (3-D) techniques. However, the 3-D methods provide more feasible and accurate data than that of 2-D since 3-D methods provide a nondestructive alternative to examine chondrules. My research has consisted of studying the chondrule dimensions within the chondrite Hallingeborg by working with the data collected from X-ray microtomography. I had the opportunity to perform synchrotron X-ray microtomography on chondrites by using a beamline generated by a particle accelerator at the Argonne Laboratory Advanced Photon Source (APS) in Chicago, Illinois. The data for Hallingeborg was processed through a computer program known as Image-J that aligned the X-ray microtomography slices to form a 3-D model of the chondrite. Through 3-D analysis, I have been able to outline chondrules in Hallingeborg in order to eventually extract volume measurements and spatial arrangements of the chondrules and obtain the size frequency ratio of the chondrules. These measurements and ratios can be used to further classify the chondrite into one of the many chemical classes for chondrites. This research will contribute to our understanding of the formation of chondrules and provide clues as to the formation of the solar system.

Poster - 13

Using Crowdsourcing to Obtain a Size Frequency Distribution of Chondrules in the Ragland LL Chondrite: Methods and Initial Results

Alyssa Shannon, Brixhild Llapa, Madiha Baig, Nabilah Nishat, Christina Sheedy, Faria Rahman, Jon Friedrich*

Chemistry, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*

During the early stages of the solar system, small micrometer-sized silicate (rocky) particles agglomerated, became molten, formed droplets, and solidified. These silicate droplets are called chondrules and they are found in meteorites called chondrites. Most (50-80%) of a chondrite is made up of chondrules, which are relatively small (<1 mm in diameter) but have different textures, sizes, shapes, and compositions. The fact that they were created during the very early stages of our solar system makes them great sources for finding answers to questions regarding the development of the early solar system, asteroids, planets, and ultimately the origins of life. This study focuses on investigating the size, volume, and abundance of the chondrules in the Ragland meteorite. During the past year, our CHEM 1999 class used the image manipulation programs GIMP and ImageJ to identify and tag each obvious chondrule from x-ray microtomography volumes of the meteorite Ragland. The data was combined and used to construct a 3D model of each chondrule in the meteorite. Analysis of the size as well as abundance of the chondrules ensued. An analysis of our overall process was also performed, examining sources of error in our methods. Our findings will provide important information to other researchers as the physical properties of chondrules can shed light on the origin of our solar system.

Poster - 14

Analyzing Chondrule Size Distribution in the Saratov (L4) Meteorite via the Open-Source Program ImageJ

Kirstin Tamucci, Jon Friedrich*

Chemistry, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*

Chondrule size is an important physical property for the classification of chondrites into chemical groups since each chemical group possesses a distinct size-frequency distribution of chondrules. Most chondrule size measurements have been made by physically disaggregating the sample and analyzing its individual components with a calibrated stereomicroscope. However, to obtain a valid chondrule size distribution with this technique, one must assume that no chondrule breakage occurs and therefore no fragments are included in the investigation.

Disaggregation-based chondrule studies can also lead to a bias toward larger chondrule sizes, which prompted us to find a more accurate as well as more efficient method of analysis. To overcome these limitations, we have developed and employed a method of digital analysis using the volumetric data visualization software known as ImageJ. X-ray microtomography, or high-resolution CT scans, was used to produce a series of two-dimensional “slices” which, when stacked together, yield a three-dimensional representation of the chondrite. The images were exported as 2-D positive image tiff stacks into the ImageJ plug-in TrakEM2, which thereby allowed us to manually identify a total of 550 chondrules from a representative subset of these 2-D slices. We examined our sub-volume to not only increase productivity, but to avoid biased data which had previously been a challenge with other techniques. Furthermore, we are currently performing our own physical disaggregation analysis to compare our results with those acquired via x-ray microtomography. This comparative technique has not been done before and would provide a means of validating our methods of digital analysis.

Poster - 15

Cultural and Ethical Considerations in International Clinical Research with Vulnerable Populations

Olivia Cortellini, Nora Hudec, Zhefu Fang, Xiaoyang Gong, Juli Kalaj, Christina Sailer, Adam Fried*, Orit Avishai*

Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Middle East Studies, Fordham College at Rose Hill, Center for Ethics Education, Fordham College at Rose Hill*, Sociology and Anthropology, Fordham College at Rose Hill*

This poster will examine ethical concerns in international clinical research with economically and otherwise vulnerable populations, including those related to culture, providing incentives to research participants, post-trial benefits, dilemmas in ancillary care, and local standard of care. The presentation will first explore the value of examining the host culture’s values and norms when conducting international research to ensure respect for participants and avoid misinterpretations of data due to cultural bias. The presentation will then consider ethical issues involved in research with international vulnerable populations, such as non-coercive payment for participation, tensions related to provision of post-trial benefits where otherwise unavailable, providing treatment for other health complications that participants may develop during the trials, and definitions of the standard of care for control groups in randomized clinical trials. The presentation will conclude with a call to create and enforce stricter ethical rules and procedures, including third-party reviewers, and contact with participants and other key stakeholders to ensure the responsible conduct of international clinical research.

Poster - 16

Innovations and their Significance in Paleopathology

Christopher Indudhara, Daisy Reinoso, Amina Bhatti, Christina Errichiello, Varuni Jamburuthugoda*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, General Science, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

The field of paleopathology has been revolutionized by many innovations in genetic techniques. Some of these procedures include the use of suicide PCR, radiology procedures, and high-throughput DNA sequencing. The use of suicide PCR, a more recent technique for genetic analysis, has been found to amplify specific templates of ancient DNA without reducing or modifying other templates, in contrast to normalized PCR. Paleoradiology, such as x-rays and computed tomography, allows detailed analysis of ancient human remains. These noninvasive processes have led to the discovery of valuable three-dimensional evaluation of archaeological objects, leading to diagnosis and treatment of various diseases. High-throughput DNA sequencing can amplify large amounts of DNA quickly and at low cost. This combined with in-solution hybridization provides high fidelity to the target region and confidence in the acquired DNA sequence. The importance of these new methods is seen in the study of ancient Mycobacterium tuberculosis (TB) strains, which has contributed insight into the evolution of the TB virus in humans and potentially the development of new drugs. These advancements, along with many others, are significant to the scientific understanding of ancient epidemiology and its connection to contemporary health practices.

Poster - 17

The Relationship Between Ecologically Responsible Behavior, Health-Promotive Behavior, and Perceived Quality of Life

Danielle Drummond, David Glenwick*

Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill*

Health and environmental crises have become increasingly prevalent on a global scale. Given the role of individual behavior patterns in such crises, better understanding such behaviors would allow for better, and possibly simultaneous mitigation strategies. In tandem with the health and environmental benefits of these behaviors, learning more about their relationship with individual quality of life (QoL) would allow for easier promotion of both the behaviors and improvements in QoL. In this study, 79 individuals aged 18-20 (Mage=18.73; 80% female) completed surveys with questions regarding their engagement in health promotive and ecologically responsible behaviors, as well as questions concerning their quality of life. Measures assessed three areas of ecologically responsible behaviors (environmental citizenship, willingness to sacrifice, and consumer behavior), four domains of quality of life (environment, social, psychological, and physical), and preventive health behaviors, which were all scored separately with correlational analyses conducted between all scores.

Poster - 18

Are Rare Colored Pigeons More Alert to Predator Attacks?

Rachel Lamy, Marisa Fleming, Natalie Perpepaj, Dustin Partridge*

Environmental Science, Fordham College at Lincoln Center, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Predators often target rare colored or outstanding individuals of a species. In response to increased selective pressure, the rare colored individuals may develop or inherit behavioral survival strategies. In order to overcome the predatory threats, behavioral or learned actions that increase survival are necessary. Rock pigeons (*Columba livia*) found in New York City develop many different colored feathers. Dark gray pigeons are the dominant phenotype, but white and tan pigeons exist as well. The light pigeons are more rare than gray pigeons and therefore easier to target when in a flock and consequently more likely to be captured by their raptor predators. Due to this threat, we proposed that lighter colored birds might have a behavioral response to these threats and a heightened awareness and alertness for raptor predators. Heightened behavioral awareness can be quantified in terms of the number of times the pigeon looks up and around, or if they fly away after hearing raptor calls. We surveyed flocks of pigeons in New York City. We measured pigeon alertness and quantified pigeon response to raptor calls. Our results will demonstrate that selective pressures can result in a learned behavioral response to the pressure or possibly an evolved trait that promotes survival of rare colored individuals.

Poster - 19

Epigenetics and Cancer

Frairee De La Fuente, Matthew Perrotta, Ian Tolmie, Varuni Jamburuthugoda*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Epigenetics is the study of the molecular mechanisms that lead to alterations in gene expression, which are not caused by changes in DNA sequences. Specific examples of epigenetic processes include but are not limited to histone modification, DNA methylation, and non-coding RNAs inhibition of mRNA transcripts. Epigenetics plays an everyday role in the differentiation of human cellular phenotypes however the same epigenetic mechanisms, which control these various pathways can also lead to severe pathological conditions such as cancer. The epigenetic causes of cancer are varied nonetheless research shows that disrupted patterns of DNA methylation play a significant role in tumorigenesis. With this knowledge there is the potential for new cancer therapies, which target the epigenome of diseased-state oncogenic cells.

Poster - 20

Conservation Genetics: Scientists attempt to sustain and restore natural biodiversity

Colleen Biemer, Zachary Jones, Casey Chun, Marie Rabadi, Varuni Jamburuthugoda*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Conservation genetics is an interdisciplinary field of research that aims to sustain and maintain the world's biodiversity. Researchers with expertise in biological and ecological sciences study patterns and habitats of the world's biodiversity to reconcile with natural and human-induced habitat change and development. These researchers use techniques to study conservation genetics: population genetics, mapping, and DNA analyses to name a few. The three most important qualities surrounding the work of conservation genetics is the management of small populations by promoting genetic diversity and minimizing inbreeding, resolving problems with taxonomy through genetic analysis, and looking at genetic factors that might explain a change in a species' population. Conservation genetics attempts to minimize the loss of genetic diversity within a particular species that would otherwise decrease the success of evolution on an ecological scale. One of the main concerns of conservation genetics is to maintain biodiversity, which is imperative to human survival. Biodiversity benefits humans by providing food, natural resources and pharmaceutical drugs. Conservation genetics attempts to utilize a species' genetic analysis and identity in order to better understand its biology.

Poster - 21

Gene Therapy

Samuel Davey, Dominic Fogarasi, Patrick Janeczko, Katherine Sadaniantz, Varuni Jamburuthugoda*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, General Science, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Gene therapy is an experimental set of treatments that rely on the replacement of a problematic gene with a corrected one. Unlike drug-treatment, which simply seeks to alleviate the symptoms of a disease, gene therapy treats hereditary diseases at their source, namely the mutated or ineffective gene. Gene therapy delivers corrected copies of defective genes to somatic cells, either by means of viral vectors (recombinant viruses) or by non-viral methods (the use of naked DNA). Commonly, gene therapy is accomplished by means of the viral vector, which delivers the gene to cells which necessitate a functional copy; from here, gene-reading machinery uses this gene to construct additional RNA and protein. Genetic disorders that involve mutations in single genes are more effectively treated by gene therapy than genetic disorders with many gene mutations. Usually, hereditary diseases such as cystic fibrosis, hemophilia, and Leber's congenital amaurosis (LCA). Gene therapy is still in its infancy and has encountered major obstacles to its mass application. Some trials of experimental gene therapy have resulted in unwanted and sometimes lethal side effects including massive unwanted immune response, viral-vector-induced infection, and cancer. Some concerns raised have also been ethical dilemmas, mostly regarding the concept of genetic engineering of humans and gene doping in athletes. Regardless of these drawbacks, over two thousand clinical trials of gene therapy have been performed since 1989, a demonstration of the perceived potential of gene therapy.

Poster - 22

Genetically Modified Organisms

Samantha Fraembs, Laura Calisi, Matthew Rogacki, Steven Kassapidis, Varuni Jamburuthugoda*

Biological Sciences, Fordham College at Rose Hill, General Science, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

A genetically modified organism (GMO) is any living organism whose genetic material has been manipulated through the use of biotechnology in a laboratory. Advances in recombinant DNA technology allow geneticists to isolate and characterize the specific nucleotide sequences of genes. Once identified, these sequences can be manipulated to alter an organism's genotype for research purposes or to enhance the organism's phenotypic characteristics. GMOs can be produced using recombinant DNA technology and reproductive cloning. GMO creation requires the presence of a transgene, target species, and a vector as an intermediary. The gene to be transferred, or the transgene, is isolated in the lab and its function is determined. The transgene is then inserted into a vector to create a recombinant DNA molecule. Recombinant DNA can be introduced into the target host species via transformation, injection, infection or bombardment with DNA-coated tungsten or gold particles using a gene gun. The host organism acts as a factory to produce copies of the transgene or proteins encoded for by the foreign genes. Genetic engineering techniques are used to create genetically modified plants that are resistant to certain bacteria and fungi. Genetically modified nematodes and mice are often used for basic genetic research. Researchers have found that GMOs can be useful in both research and commercial applications.

Poster - 23

Genetics in Forensic Science

Alexa Di Silvio, Rachel Sortino, Robert Raffaele, Elise Tigani, Varuni Jamburuthugoda*

Individualized Major, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Genetics' primary role in Forensic Science is DNA fingerprinting, a process that allows prosecutors to link a suspect to a crime scene. The concept of DNA fingerprinting is based on the fact that every human (except identical twins) have slight variations in their DNA sequence. Restriction Fragment Length Polymorphisms (RFLPs) were the first technique developed to analyze variable lengths of DNA fragments produced through restriction enzyme digestion of genomic DNA. PCR based finger printing amplifies a specific sequence of interest such as Short Tandem Repeats (STR). While DNA gets all of the attention in modern crime dramas, RNA is emerging as a new possible tool for investigators to narrow down a suspect list. RNA degradation occurs at variable rates for different types of tissue that can help to identify not only time of death, but also what condition the body was in preceding death. RNA can also be used to identify what type of bodily fluids are present in the crime scene, separating saliva from semen and blood from a wound from menstrual blood. RNA can be used to determine when a lethal wound was likely inflicted. Finally, genetic forensics can be utilized outside of the scope of crime, and has been used to identify victims of disasters such as tsunamis or earthquakes.

Poster - 24

Rapidly Mutating Pathogens

Anthony Iuso, Nicholas Sharkey, Ryan Mucherino, Paul Supple, Varuni Jamburuthugoda*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Anthropology, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

For as long as life has existed, diseases have plagued humanity and other organisms. Pathogens that can rapidly mutate and cause infectious diseases include influenza, Ebola and HIV. Mutation, which can be spontaneous or induced, is a change in the nucleotide sequence of the genome of an organism. A high mutation rate and rapid rate of replication generate a large number of genetic variants. Natural selection acts on these variants, with specific selection pressures often leading to beneficial mutations being passed onto progeny. The ability to rapidly mutate allow pathogens to survive, adapt, and infect more victims renders vaccines and antibiotics inefficient in combating the disease.

Poster - 25

Organic Decomposition in Urban Forests and Undisturbed Forests

Joshua King, Mickaela O'Neill, Kevin Carroll, Robert Raffaele, Evon Hekkala*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Environmental Science, Fordham College at Rose Hill*

Organic decomposition, the breaking down of organic material, such as dead plant or animal tissue, into smaller molecules that are available for use by organisms, is a critical process in ecosystem energy transfer and nutrient cycling. Previous studies have indicated that decomposition is strongly correlated with increasing ecosystem biodiversity, and can also provide an ecosystem service for humans. For this study, we focused on the capacity of two different ecosystems to decompose organic matter, comparing the progress of decomposition and the biodiversity of invertebrates involved in decomposition in a relatively undisturbed forest, the Louis Calder Center, and an urban forest, the New York Botanical Gardens. This study hypothesized that the biodiversity of vertebrates and macroinvertebrates would be greater at the Louis Calder Center, but also hypothesized that the process of decomposition would progress faster in the Botanical Gardens. To investigate this process, we placed butchered rabbits, enclosed in crab traps, at both sites for four weeks, then measured weight loss and surveyed the invertebrates involved in decomposition at the sites. The results of this study indicated the effect of human development of ecosystems on the vital process of decomposition, and thus, on the nutrient and energy cycling capacity of the ecosystem and on the ecosystem service provided by decomposition.

Poster - 26

Adaptive and Innate Immunogenetic Variation and Microsatellite Diversity of an Endangered Species, the Black Lion Tamarin

Nadeen Matari, Amy Caffrey, Claire Droumbakis, Gabrielle Robertson, Varuni Jamburuthugoda*, James Lewis*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*, Biological Sciences, Fordham College at Rose Hill*

Leontopithecus chrysopygus, the black lion tamarin, is a New World Monkey species in the *Leontopithecus* genus, *Callitrichinae* subfamily. These arboreal species are restricted to disintegrated island forests in Sao Paulo, Brazil, which have been continually decreasing due to development, cultivation, and logging since the 1900s. *Leontopithecus* has a modest amount of genetic variation, making them susceptible to adaptation dangers by potentially losing more genetic variation, particularly in their immune genes, if their unstable fragmented habitat was to undergo any shifts in pathogen prevalence. This project measures the intraspecific variation of genes that associate adaptive and innate immunity necessary for survival. By particularly focusing on microsatellite genes that do not exhibit strong selective pressure, we hypothesize that such genes will show variation in black lion tamarins and help us identify the relative levels of inbreeding that these populations in fragments are subject to relative to their immune genetic variation.

Poster - 27

Everything Else You Need to Know about Social Exchange Theory

Marnie Vaughan, Lewis Freeman*

Communication and Media Studies, Fordham College at Rose Hill, Communication and Media Studies, Fordham College at Rose Hill*

In this paper I explore the nature of relationships between human beings through Social Exchange Theory. I learn a lot about relationship dynamics while simultaneously coming to the realization that relationships are almost solely created on a cost-benefit basis. Relying on the work of renowned individuals like Adam Smith, I am able to relate human interactions to monetary exchanges, and analyze them from that point of view. The purpose of this paper is not to prove a hypothesis, rather to expand on a theory that has already been dissected by many individuals before myself. That being said, this paper attempts to address previous claims made about Social Exchange theory while accentuating it with modernity and relevant ideas in order to appeal to a broader audience. The content also analyzes the applications of Social Exchange Theory in the past, the present, and its implications for the future.

Poster - 28

Ex-vivo holographic microscopy and spectroscopic analysis of head and neck cancer

Robert Wurtz, Stephen Holler*

Engineering Physics, Fordham College at Rose Hill, Physics, Fordham College at Rose Hill*

Optical probes to identify tumor margins in vivo would greatly reduce the time, effort and complexity in the surgical removal of malignant tissue in head and neck cancers. Current approaches involve visual microscopy of stained tissue samples to determine cancer margins, which results in the excision of excess of tissue to assure complete removal of the cancer. Such surgical procedures and follow-on chemotherapy can adversely affect the patient's recovery and subsequent quality of life. In order to reduce the complexity of the process and minimize adverse effects on the patient, we investigate ex vivo tissues samples (stained and unstained) using digital holographic microscopy in conjunction with spectroscopic analyses (reflectance and transmission spectroscopy) in order to determine label-free, optically identifiable characteristic features that may ultimately be used for in vivo processing of cancerous tissues. The tissue samples studied were squamous cell carcinomas and associated controls from patients of varying age, gender and race. Holographic microscopy imaging scans across both cancerous and non-cancerous tissue samples yielded amplitude and phase reconstructions that were correlated with spectral signatures. Though the holographic reconstructions and measured spectra indicate variations even among the same

class of tissue, preliminary results indicate the existence of some discriminating features. Further analyses are presently underway to further this work and extract additional information from the imaging and spectral data that may prove useful for in vivo surgical identification.

Poster - 29

Toward an Authentic Solidarity: Answering the Call to Love in a Weighted World

Lauren Ross, Jeannine Hill Fletcher*

Theology, Fordham College at Rose Hill, Theology, Fordham College at Rose Hill*

The commandment to love God and neighbor is reiterated time and again throughout the Christian Bible. However, while the existence of a requirement to love seems to be broadly accepted among Christian theologians, they each interpret the call to love in very different ways. This project will examine the work of Christian liberation theologians and activists, contextual theologians who use the social, political, and economic context of the world around them to draw conclusions about God and love, to observe some of the different ways that the Christian responsibility to love is understood and expressed practically. It will pay special attention to the Biblical and traditional sources that these conclusions are drawn from, and to the ways in which each conclusion is influenced by and addresses race, gender, class, religious difference, and historical context. The project is driven both by the larger project of Dr. Jeannine Hill Fletcher, which seeks to examine how White supremacy is imbedded in Christian theologies of religious pluralism, and by my own interest in theologies of liberation, particularly feminist theology. Ultimately, both Dr. Hill Fletcher and I hope to work toward a better understanding of what authentic solidarity consists of in a profoundly unjust world.

Poster - 30

The Effect of Urban Noise on Mating Behavior in the Greater Wax Moth (*Galleria mellonella*)

Brooke Mastrogiacomo, Elisa Russo, Fenizia Maffucci, Evon Hekkala*

Biological Sciences, Fordham College at Rose Hill, Environmental Studies, Fordham College at Rose Hill,
Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

The Greater Wax Moth, *Galleria mellonella*, relies on ultrasonic communication for effective reproduction. Males emit high frequency mating calls to attract females, who typically respond by fanning their wings in a sexual display. This process may be hindered in the presence of urban noise insofar as it presents an acoustic barrier between the male and female moths. We hypothesized that female moths would fan their wings less in the presence of males while exposed to urban noise than they would in silence. We observed male-female pairs of moths under one of two randomly assigned conditions – in silence or while playing a track of recorded urban noise. We recorded the number of instances in which females fanned their wings over ten minute time intervals. We compared these values and performed a one-tailed t-test to determine if significantly less female wing-fanning behavior was observed under the urban noise condition versus the silent condition. Our findings could contribute to a discussion on the impact of urban noise on the reproductive fitness of organisms living in close proximity to highly developed areas.

Poster - 31

Antibiotic Resistant Staphylococci in Environments with Varying Human Population Densities

Alison Rembisz, Nicholas Spanos, Gloria Siclari, Evon Hekkala*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Humans are common hosts for a variety of bacteria including potentially pathogenic microorganisms. Antibiotics can be employed to aid the human immune system in eradicating infectious bacteria but have been implicated in the evolution of antibiotic resistance in many pathogenic species. Numerous studies have found that densely populated areas are more likely to facilitate the spread of antibiotic resistant bacteria such as *Staphylococcus aureus*. This study compares the relative occurrences of antibiotic resistant *Staphylococcus* in environments that experience different human traffic. Four students regularly use Campbell Hall bathrooms and approximately thirty students use Alumni Court South bathrooms. We hypothesize that there will be a higher percentage of antibiotic resistant *Staphylococcus* in the public bathrooms of Alumni Court South compared to the personal bathrooms in Campbell Hall. After swabbing the surfaces of toilet, faucet and door handles in both dorms and exposing the positive colonies of staphylococci that we find to different antibiotics, we followed the American Society for Microbiology's protocol for mannitol salt agar plates and the Kirby-Bauer disk diffusion susceptibility test. This study's findings will reveal new insights into the presence and prevalence of antibiotic resistant bacteria in environments with varying population densities.

Poster - 32

Population Structuring of Eastern Chipmunk (*Tamias striatus*)

Colleen Biemer, Evon Hekkala*, Christina Frare*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*, Biological Sciences, Fordham College at Rose Hill*

Chipmunks are small ground squirrels that have a variety of ecological roles, including seed and mycorrhizal fungal dispersal. They are a primary food source for forest predators. There are 23 documented species of chipmunks in North America. The majority of which are found in the Western United States and Canada. There is only one species of chipmunk found east of the Mississippi, the Eastern Chipmunk (*Tamias striatus*). Currently, *T. striatus* is considered a single species, however, previous research has used morphology to divide *T. striatus* into five sub-species. One of the geographic breaks between two of the sub-species runs through the Hudson Valley in New York. The sub-species, *T. striatus lysteri*, occur north of the break and *T. striatus fischeri* occur south of the break. The purpose of this study is to determine if each of these two sub-species are genetically distinct and to what degree. We previously found fixed genetic differences between these populations using the mitochondrial 12s gene. In our current project we are using anonymous nuclear markers called microsatellites to support our earlier research. We performed polymerase chain reaction (PCR) to amplify the microsatellites and then ran the products on an ABI 3100 Genetic Analyzer. We called the peaks in the program GeneMarker. Population structure was assessed using the program STRUCTURE, which allows us to visualize potential genetic differentiation between populations or species.

Poster - 33

Environmental Sucralose on Growth Outcomes in *Brassica rapa*

Olivia Wilkins, William Smith, Frairee De La Fuente, Evon Hekkala*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Artificial sweeteners are synthetic sugar substitutes that can be derived from natural sources, and are added to many popular drinks. Due to the non-metabolic properties of these artificial sugar additives, wastewater treatment plants cannot properly filter the sweeteners. This study focuses on sucralose, an artificial sweetener that is not entirely filtered in wastewater treatment plants, which leads to its prevalence in environmental water supplies.

Previous studies indicate that sucralose has the potential to inhibit sucrose and nutrient absorption in plant phloem tracks. This study addresses the effects of sucralose presence in the water supply on the growth of the model species, Wisconsin fast-growth *Brassica rapa*. In this study, the *Brassica rapa* plants were treated with water containing varying concentrations of sucralose throughout their growing period. Plant biomass, height, and number of flowers were measured to determine growth patterns. These characteristics will be used to determine the objective growth outcomes of the *Brassica rapa* plants and assess the effect of sucralose on fitness. Lower growth will indicate sucralose negatively affecting the growth of the plants. The findings of this experiment will contribute to the understanding of how sucralose impacts the environment. These results have implications on conservation biology and the future treatment of sucralose in the water supply.

Poster - 34

Evolution of Bacterial Resistance to Antibiotics

Victoria Sieverson, Siobhan Rueda, Adele Heib, Leah Ibrahim Puri, Varuni Jamburuthugoda*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Bacteria are prokaryotic organisms that have historically been a major cause of human infections. Through multiple scientific advances ranging from improved hygiene and sterilization techniques to various pharmaceutical drugs, we have been able to prevent and cure bacterial infections. Antibiotics are powerful medicines that fight bacterial infections but have been overused and thus have created potentially serious effects on health. In our poster, we will be discussing the different ways in which bacteria have adapted to resist antibiotics. Penicillins are a class of antibiotics, and overuse of these drugs has created many strains of deadly, resistant bacteria, often in hospital populations. As we discuss the evolution of bacterial resistance to antibiotics, our main focus will be on gene transfer, mutation, and selective pressure. Bacteria containing resistance-encoding genes can transfer those genes to other bacteria through a process called gene transfer. Bacteria are also prone to random mutation that could possibly make them resistant due to their exponential replication. Selective pressure occurs when some bacteria in a population are antibiotic-resistant so when an antibiotic is administered, the non-resistant bacteria are killed, leaving only the resistant colonies. The surviving bacteria then multiply, creating a new population of resistant bacteria. We will also be exploring the consequences of antibiotic resistance on human life.

Poster - 35

Conflicts of Interest in Research

Jennifer Minerva, Emily D'Adamo, Anthoula Vasiliou, Ray Tomlan, Glen Morrice, Orit Avishai*

Political Science, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Sociology & Anthropology, Fordham College at Rose Hill, Engineering Physics, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Sociology & Anthropology, Fordham College at Rose Hill*

Conflicts of interest in research occur when a researcher's ability to conduct non-biased studies is affected by outside influences such as monetary compensation, political affiliation or protection of reputation. Such confounding interests can compromise researchers' abilities to produce honest and accurate findings and conclusions. This presentation will discuss four case studies: Coca-Cola's endorsement of sugary drinks, Proctor and Gamble's marketing of drugs for female sexual dysfunction, a group of scientists' arguments against the negative effects of fossil fuels, and lastly the Monsanto Corporation's pronounced political influence on government policy. In these cases, unaddressed conflicts of interest led to the dissemination of biased information to the greater public. We will consider methods with which conflicts of interest can be aptly identified, addressed and ultimately dealt with in an ethically sound manner.

Poster - 36

Ethical Considerations in Informed Consent to Research with Children, Adolescents, and Cognitively Disabled Participants

Brianna Cali, Mary Koke, Lauren LaCorte, Sarah O'Brien, Marie Rabadi, Adam Fried*, Orit Avishai*

Biological Sciences, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Center for Ethics Education, Fordham College at Rose Hill*, Sociology and Anthropology, Fordham College at Rose Hill*

Informed consent to research with children, adolescents, and the cognitively disabled individuals raises complex ethical questions largely related to their perceived capacity to adequately understand the risks and benefits associated with participation in research. This presentation will focus on empirical research and legal guidelines related to assent and consent, including the ability make an informed, voluntary and rational decision, with respect to participation in research for children, adolescents, and the cognitively disabled. For example, legally, majority of these vulnerable groups require guardian consent to participate in research, even though individuals may be able to adequately understand the risks and benefits to make a rational decision with respect to participation. This presentation will emphasize the importance of individual factors, both for the subject population and the research methods, and the applicability of the Goodness-of-Fit model to research with these groups.

Poster - 37

Organization of Sequenced Peptides for Articular Cartilage Regeneration

Grant Knoll, Ipsita Banerjee*

Biological Sciences, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*

There has been increased biomedical focus on the development of peptide-based nanocomposites for cartilage tissue regeneration. These biocompatible materials are able to form scaffolds that function to increase cell-to-cell interaction and stimulate cell growth. In this work, we utilized a short peptide sequence, VQIVYK, conjugated with 1,4-Diaminobutane to promote molecular self-assembly. Our results showed that nanofibers were formed under neutral conditions and the formation of these structures was pH and concentration dependent. The assemblies were then used as templates for incorporation of dentin sialophosphoprotein motif and the integration of a short peptide sequence derived from spider silk protein, which is composed of repeats of alanine, glycine, serine. To further increase the biocompatibility of the assemblies we conjugated the assemblies with alginate, which formed an encapsulating hydrogel. Finally, we integrated the assemblies with a chondrocyte binding peptide sequence, which served to promote the attachment of chondrocytes to our materials and aid in the creation of cartilage in vitro. The thermal properties of scaffold assemblies were probed by the use of differential scanning calorimetry (DSC). We investigated the biocompatibility of the peptide-based nanomaterials by examining cell proliferation and proteoglycan synthesis in the presence of chondrocytes. The chondrocyte cells attached to the scaffolds and were able to proliferate successfully. The biodegradability of the scaffolds was examined by placing the nanomaterials in simulated body fluid, which showed that the scaffolds were indeed biocompatible. Therefore, we have a developed new materials that have the potential in aiding in cartilage tissue regeneration.

Poster - 38

Facile Synthesis and Computational Studies of Novel Pyrazoline Based Monomers and Dendrimers for Potential Use as Encapsulating Agents

John Caruso III, Amy Baliya*

Chemistry, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*

Organic pollutants in water pose a serious threat to our health and the environment. Current methods in removing these pollutants are becoming ineffective and thus novel approaches must be developed. Dendrimers provide an attractive alternative due to their interior voids which have previously been shown to entrap small organic pollutants. Our lab focuses on developing new families of monomers and corresponding dendrimers to

examine how dendrimeric composition impacts the removal of organic pollutants from water. In this presentation, the synthesis and characterization of a series of novel pyrazoline monomers containing different peripheral functional groups will be disclosed. These monomers can be prepared using commercially available starting materials and do not require purification by column chromatography. Attempts at preparing a pyrazoline based dendrimer using standard coupling conditions will be discussed. Computational studies of the pyrazoline systems examining how functional groups on the ring influence the molecular energy and partial charge will also be shown.

Poster - 39

Preparation and Characterization of Novel Poly(octalactone-L-lactide) Block Copolymers for the Encapsulation of Organic Pollutants

Philip Feibusch, Amy Balija*

Chemistry, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*

Current methods to remove organic pollutants from water are becoming ineffective as the world population continues to increase. Thus, new approaches to extracting pollutants from aqueous environments must be developed. One alternative is the use of polymers which contain hydrophobic sections which can facilitate the removal of hydrophobic compounds from water. In this research, a series of poly(octalactone-L-lactide) block copolymers have been synthesized using differing molar ratios of environmentally benign δ -octalactone and L-lactide monomers. It is proposed that the poly(octalactone) portion will facilitate the removal of organic pollutants due to the hydrophobic carbon sidechain. In this presentation, the synthesis and characterization of various polymer composition by modifying the amount of L-lactide will be presented. Preliminary results indicate that higher L-lactide to δ -octalactone ratios result in more effective removal of a photochromic dye from aqueous solution, the opposite effect than what was originally proposed. Data on how effective these polymers are in removing the photochromic dyes will be also be presented.

Poster - 40

Finite Temperature Effects on Graphene in a Magnetic Field

Matt Roveto, Antonios Balassis*

Physics, Fordham College at Rose Hill, Physics, Fordham College at Rose Hill*

Graphene is a thin layer of pure carbon. It is the thinnest compound known to man at one atom thick, the lightest material known, the strongest compound discovered and the best conductor of electricity known. For these and many other notable properties graphene is considered a sci-fi material with far reaching technological applications. We will investigate the physics of a graphene layer under the action of a perpendicular magnetic field at different temperatures. Among the effects that we are interested to study is the smearing of the Fermi surface of a single layer of graphene (Kohn anomaly). This smearing is a result of the curving of the trajectories of the electrons in the magnetic field. First we will calculate the energy eigenstates of the Dirac electrons in graphene in the presence of a magnetic field (Landau levels). We will then use a theoretical model based on linear response theory and on random phase approximation which along with the calculated energy states will give us the dynamical polarization function which is used to explain transport properties of materials (like plasmons for example) when they experience external fields. Numerical results will be presented for the derivative of the polarization operator as a function of the wave vector for different magnetic fields and different temperatures.

Poster - 41

Ethical Issues in Deception Research

Francesco Caruana, Cara McClane, Sierra Mitchell, Anthony Pizzolla Jr., Diana Velasquez, Samantha Walker, Orit Avishai*, Adam Fried*

Chemistry, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Sociology & Anthropology, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Sociology & Anthropology, Fordham College at Rose Hill, Physics, Fordham College at Rose Hill, Sociology & Anthropology, Fordham College at Rose Hill*, Psychology, Fordham College at Rose Hill*

The use of deception in scientific research remains controversial because the risks and benefits of this method are not always clear. Some scientists feel that the potential benefits outweigh the risks, while others argue that the use of deception in research is universally unethical and should be avoided. Deception can involve either the postponement of full disclosure of the details of a research study or intentional misrepresentation on the part of the researcher concerning important study-related information. While deception may offer the potential to achieve more accurate results, better scientific validity, and a greater contribution to scientific knowledge, it may also result in feelings of distrust or embarrassment among participants and compromise confidentiality and informed consent processes. This poster will explore and define different types of deception methods, enumerate its risks and benefits, and discuss the various controversies regarding its use. This presentation will also examine specific research studies involving deception and discuss the ethical implications of the methods used.

Poster - 42

An Investigation of Denture Adhesives and Facilitated Denture Removal Using a Citric Acid Rinse

Nina Cafone, Christopher Bender*

Chemistry, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*

Denture adhesive formulations represent a compromise of bond strength and removal ease. Removal, however, involves a prying process that is painful to some users. The adhesive contains salts of zinc and calcium, and it is degraded by acids. We have investigated the interaction of denture adhesive with acid solutions and the effect of citric acid solutions on the mechanical integrity of its bond.

Poster - 43

Ethics in Clinical Trials Research

Alyssa Dolan, Megan Foster, Robert Ciardullo, Ashley Mosquea, Giuliano Pichini, Orit Avishai*, Adam Fried*

Chemistry, Fordham College at Rose Hill, Physics, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Sociology & Anthropology, Fordham College at Rose Hill*, Psychology, Fordham College at Rose Hill*

A major goal of clinical trials research is to evaluate the effectiveness of various treatments and drugs with the intent of advancing medical knowledge and human health. The American Medical Association developed seven major requirements to evaluate the ethics of clinical trials research and ensure the safety of the participants. One of the requirements, informed consent, is imperative in evaluating the voluntariness, capacity, and understanding of the participants. Using informed consent and the other six principles, we will focus on three different populations that require special attention in clinical trials research: children, international populations, and individuals with mental illness. Information from this presentation may be used to inform future clinical trials research and other types of research with vulnerable populations.

Poster - 44

Inhibiting GSK3B Abrogates the Suppressive Effects of Adenosine Signaling on Single Cell Endometrial Carcinoma Cell Migration

Alexandra Makara, Russell Broaddus*, Jessica Bowser,*

Biological Sciences, Fordham College at Rose Hill, MD Anderson Cancer Center*, MD Anderson Cancer Center*

Metastatic endometrial cancer (EC) is essentially incurable by standard surgical and chemotherapy approaches. Novel therapeutic approaches are in need for this disease. Our laboratory is involved with delineating extracellular adenosine signaling in EC and defining its therapeutic potential. Adenosine is the breakdown product of adenosine triphosphate (ATP). Our lab has shown adenosine signaling to suppress EC cell migration and invasion. Recent work suggests this effect may involve adenosine's regulation of glycogen synthase kinase-3 β (GSK3 β). GSK3 β is a kinase of the Wnt/ β -catenin pathway that promotes the degradation of cytoplasmic, oncogenic β -catenin. We hypothesized that GSK3 β inhibition would abrogate the suppressive effects of adenosine signaling on EC cell migration. Unmodified Boyden chamber and scratch assays were used to assess migration in EC cells, HEC-1-A. HEC-1-A was treated with dimethylsulfoxide (DMSO) or 5-N-ethylcarboxamido adenosine (NECA), a stable adenosine receptor analog, with or without GSK3 VII, a GSK3 β inhibitor. In Boyden chamber assays, DMSO + GSK3 VII had no effect. NECA significantly suppressed HEC-1-A migration ($p < 0.001$), whereas NECA + GSK3 VII significantly increased HEC-1-A migration ($p < 0.001$). Similar effects on HEC-1-A migration were not observed with the scratch assays, indicating that while the suppression of EC migration by NECA involves GSK3 β , this effect is limited to particular conditions of migration (single cell versus collective cell). Both single cell and collective cell migration are seen in EC metastasis. In summary, GSK3 β is a downstream target of adenosine signaling. Targeting metastatic EC with NECA may be a potential strategy for abrogating Wnt/ β -catenin pathway activity in this disease.

Poster - 45

Data Fabrication and Plagiarism

Brendan Dagher, Jenna Kocsis, Orit Avishai*, Adam Fried*

Economics, Fordham College at Rose Hill, Engineering Physics, Fordham College at Rose Hill, Sociology and Anthropology, Fordham College at Rose Hill*, Psychology, Fordham College at Rose Hill*

Data fabrication and plagiarism, which occur when researchers provide incorrect or unsubstantiated data and misrepresent information, compromise the legitimacy and perception of research. Although established guidelines for research integrity exist, such as institutional review boards and peer review requirements, falsification practices often challenge the honorability of the scientific community. The Wakefield Study, which seemingly undermined the efficacy of the MMR vaccine, is one famous example of a case where the findings were scrutinized and challenged for falsification. The pressure to produce groundbreaking results and prove hypotheses drives researchers to manipulate data and, in some cases, lie in order to gain recognition and funding. An assessment of these instances of data fabrication and plagiarism will highlight the necessity for improvements within the research arena.

Poster - 46

The Student-Athlete College Experience: Team Relationships, Self-Control, and Discrimination

Nicole Arrato, Rachel Annunziato*

Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill*

The college experience of a student-athlete has many things in common with that of traditional students, yet also differs in several ways. Using a survey approach, the present study investigates and compares self-control between these two student categories as well as if their utilization of campus resources differs. Additionally, this study addresses the prejudice and discrimination towards student-athletes. Finally, student-athletes are asked about relationships on their team. The purpose of this study is to determine if college life differs between student-athletes and traditional students. We examine whether student-athletes' performance in the classroom is associated with self-control, utilization of campus resources, the experience of prejudice / discrimination, and sense of community from being on a team. By investigating these topics, this study complements the existing literature on facilitating all types of college students to reach their optimal levels of performance, both within and beyond the classroom.

Poster - 47

Examining the Mental Health of Pediatric Growth Patients and Parents Relative to Diabetes

Ailie Posillico, Christie DiPietrantonio, Rachel Annunziato*

Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill*

Little is known about the mental health of patients with concerns for growth failure, some of whom are treated with human growth hormone (HGH). The current study aimed to compare three patient groups in regards to depression, anxiety levels and treatment adherence. Participants of the study include those who are being treated or seen by Mount Sinai Medical Center, and their parents or guardians. The three patient groups were comprised of the following: the first with type one diabetes mellitus (T1DM; N=34), the second receiving HGH (N=43), and the third consisting of patients with untreated short stature (SS; N=46). Patients were administered the Children's Depression Inventory (CDI) and the Screen for Childhood Anxiety Related Emotional Disorders (SCARED), while parents were administered the Center for Epidemiological Studies Depression Scale (CES-D) and the Impact of Events Scale (IES). This study is the first to compare the mental health of growth patients and their parents to the mental health of patients and caregivers of patients with T1DM while also focusing on comparisons between growth patients receiving versus not receiving treatment. There was no detected difference in functioning between SS patients on and off treatment. Furthermore, the burden on T1DM patients was more so than HGH patients who have similar treatment requirements in the short-term. Results suggest that mental health concerns vary among pediatric endocrinology patients.

Poster - 48

Anxiety and Depression in Families with Pediatric Growth Concerns and the Impact of Growth Hormone Treatment

Elizabeth Galici, Michalina Lapinska, Danny Lee, Ailie Posillico, Christie DiPietrantonio, Rachel Annunziato*

Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill*

Poor adjustment is common in children with complex healthcare needs and their parents. Similar rates of depression have been reported in children with short stature compared to non-short peers. Yet, the impact of anxiety and the psychosocial status of parents caring for children with growth concerns are unknown. The purpose of the present study was to examine internalizing symptoms among families facing growth concerns, comparing those treated with human growth hormone (HGH) and short stature patients not on treatment (SS). One hundred and eight patients (ages 8-17) presenting for growth concerns and a parent were recruited from a Pediatric Endocrinology clinic. Patients were administered the Children's Depression Inventory (CDI) and the Screen for Childhood Anxiety

Related Emotional Disorders (SCARED). Parents were administered the Center for Epidemiological Studies Depression Scale (CES-D) and the Impact of Events Scale (IES). There were no significant differences in measures' scores between the treatment groups. The percentage above threshold for depression was higher for SS ($\chi^2=3.65$, $p=0.05$). All other thresholds did not differ. In HGH patients, depression and anxiety were related ($r=0.46$); parent depression related to child anxiety ($r=0.31$). In SS patients, depression and anxiety were related ($r=0.43$), as were parent and child depression ($r=0.31$) and anxiety/distress ($r=0.34$). In conclusion, a large proportion of patients and parents reported depression and anxiety/distress symptoms. Those not receiving treatment had greater rates of depression. For all, patient depression and anxiety significantly correlated with parents' well-being. Results suggest that families facing growth concerns are susceptible to internalizing symptoms.

Poster - 49

The Acceptability of Online CBT for Coping with Health Conditions

Bianca Campagna, Rachel Annunziato*, Kathleen Schiaffino*

Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill*, Psychology, Fordham College at Rose Hill*

The purpose of this study was to examine the acceptability of online cognitive-behavioral therapy (CBT) in coping with health conditions. CBT is an empirically proven effective therapy in coping with health conditions. Some studies of the use of online CBT in coping with health conditions have found online CBT to be an effective alternative to face-to-face sessions. Acceptability may be an important factor in the effectiveness and use of such therapies. The present study sought to examine this as well as the relationship between health-related Quality of Life (QoL) and the acceptability of online CBT. There were 85 participants whom were recruited from the Fordham University's Research Foundations of Psychology research pool system and from Mechanical Turk. Participants completed an online questionnaire that included the WHOQOL-BREF, a quality of measure, and a measure of the acceptability of online CBT. Preliminary analyses show that overall respondents find online CBT acceptable but specific facilitators and barriers were noted. Furthermore, quality of life is not a predictor of acceptability of online CBT. Despite this, items of the WHOQOL-BREF, such as the capacity to work, are associated with acceptability and the perceived benefits and barriers to online CBT.

Poster - 50

Attention Bias in NSSI

Meagan Kelley, Margaret Andover*

Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill*

Non-suicidal self-injury (NSSI) is defined as behaviors in which an individual harms himself or herself without the intent to die and for reasons that are not socially sanctioned (Klonsky & Olino, 2008). Despite advances in identifying risk factors for NSSI, it is still difficult to identify those who self-injure from those who do not. One of the goals of this study is to determine new ways to identify individuals at increased risk for self-injury. Attentional bias is a cognitive process in which an individual demonstrates selective allocation of attentional resources toward specific aspects of stimuli (Cha, Najmi, Park, Finn, & Nock, 2010). Attentional bias tasks present a performance-based method of assessing NSSI. Only one study has investigated attentional bias among individuals who self-injure. This study aims to build on this by investigating attentional bias in NSSI using two tasks, the Modified Stroop Task and the Dot Probe Task. The Modified Stroop Task assesses information processing bias where as the Dot Probe Task assesses spatial attention bias. Participants are Fordham University undergraduate students and are currently being recruited. Participants complete the two attentional bias tasks and a self-report questionnaire regarding NSSI history as well as inventories investigating depressive symptoms, anxiety, and impulsivity. It is hypothesized that individuals with a history of NSSI will exhibit attentional bias towards NSSI stimuli.

Poster - 51

The Millennial Present: Examining the Intersection of Religion, Gender & Sexuality in Generation Y

Grace Lilly, Orit Avishai*

Communication and Media Studies, Fordham College at Rose Hill, Sociology & Anthropology, Fordham College at Rose Hill*

As awareness of the LGBTQ community is on the rise, topics of gender and sexuality permeate our consciousness. In light of this, critics and theologians alike have begun examining the relationship between religion and issues of gender and sexuality. This artistic study will address the possible emerging crisis in Generation Y between religious ideologies and the freedom to express gender and sexuality autonomously. Within a group of 15-20 young people of Generation Y, each interviewee will be asked about their religious background (or lack thereof), their current religious beliefs (if any), and their opinions on matters of gender, sexuality and the role of religion in these spheres, both currently and in the future. The accompanying photographic portraits will meaningfully combine with the most pointed moments from their interview to create a multi-media final artistic collection. Together, the photographic series will display a set of diverse representations of people of various religious upbringings, thereby widening a conversation that could otherwise be limited to Generation X intellectuals. In this way, the study will open a frank discussion by the Millennial Generation about the future of religion and its relationship with gender and sexuality.

Poster - 52

Enamel Thickness in Guenon Incisors

Caitlin Hufnagle, Wajiha Khan, Reiko Goodwin*

Anthropology, Fordham College at Rose Hill, Anthropology, Fordham College at Rose Hill*

A number of researchers have demonstrated a correlation between enamel thickness and diet; thick enamel correlates with hard foods. In particular Shellis and Hiiemae's (1986) study showed that within the cercopithecines, the tribe cercopithecini (guenons) had thinner absolute enamel than the tribe papionini (macaques, mandrills, mangabeys, baboons), but their sample size was limited to mostly one per species. Do these findings apply even within the tribe cercopithecini? In an attempt to answer this question, we tested the hypothesis that the guenons that supplement their frugivorous diets with hard seeds and insects will show thicker enamel on the labial side of incisors than other guenons that supplement their fruit diets with leaves and insects. We measured the absolute enamel thickness of the labial side of 50 guenon incisors positioned perpendicularly at 0.1 mm below the tooth apex using ImageJ on Cintiq 13HD tablet. The virtual sections of the incisors from 12 jaws belonging to six guenon species were previously μ CT scanned at AMNH. We found that *Cercopithecus mona* has thicknesses similar to the papionini (480-630 μ m). Welch's T-tests indicate that *C. mona* ($M = 552.80 \mu\text{m}$, $sd = 79.61$) also shows thicker enamel than *Cercopithecus cephus* ($M = 446.11 \mu\text{m}$, $sd = 87.63$; $t = -2.7668$, $df = 16.303$, $p = 0.01357$), and than closely related *Cercopithecus pogonias* ($M = 413.83 \mu\text{m}$, $sd = 32.51$; $t = -5.281$, $df = 10.697$, $p < 0.01$) These results support our hypothesis however, studies that control tooth size, using larger sample size, should be conducted to verify.

Poster - 53

Self and Society: Is There a Difference?

Yasmin Merchant, Lewis Freeman*

International Political Economy, Fordham College at Rose Hill, Communication and Media Studies, Fordham College at Rose Hill*

The struggle between the individual and the community has been a common theme throughout literature and philosophy. It is often thought that society works against the self; that it discourages distinctiveness and calls for conformity. But is it possible for a self to form without a society? According to George Herbert Mead's theory of symbolic interactionism, the self does not exist before society. The nature of humanity is social down to the most basic instincts. These social instincts cause us to be aware of others, which is what causes us to be aware of

ourselves. Without this awareness of others, we would not become conscious of ourselves. In this theory, the self is defined as an ongoing process rather than being set in stone. There are certain qualities that humans possess that lead to the formation of individuals, communities, and the dependent relationships between them. Reflexivity – the ability to see ourselves as both a subject and an object – is the basis of all sociality. Consciousness of time allows us to become aware of ourselves in social and historical contexts. Both of these features lead to the development of language and culture, which are crucial aspects of societies. It can be inferred that an important factor in transitioning from an instinct-driven animal into a self-aware human being is the communication involved in a society. If this is the case, then how do humans manage to form these societies in a way that their self-identity relies on them?

Poster - 54

The effects of herbivory on plant breeding systems and fitness in *Triodanis perfoliata*, an annual herb

Gabriel Diaz, Steven Franks*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Herbivory, a plant-animal interaction that occurs when animals feed on plants, has been identified as one of the limiting factors in plant reproduction. Herbivory can limit a plant's ability to reproduce by either altering the flower display and thus, the plant's ability to attract pollinators, or feeding on the leaves, lowering the amount of resources available to the plant. In this study, we utilized the plant *Triodanis perfoliata* to study the effects that herbivory has on a plant with a mixed mating system, where a plant can reproduce through both cross-pollination and self-fertilization. For *Triodanis perfoliata*, this mixed mating system consists of cleistogamous flowers that can self-pollinate and chasmogamous flowers that pollinate with other flowers. These self-pollinations are a potential problem for a plant because they can increase the exposure of harmful genes in a plant's offspring. Additionally, self-pollination reduces genetic diversity of subsequent offspring, which limits their ability to adapt to a changing environment. We hypothesize that under resource constraints from herbivory, *Triodanis perfoliata* will favor the less resource expensive breeding system of cleistogamy rather than chasmogamy, and this will be reflected in an increase in proportional production of cleistogamous flowers. Additionally, we believe that under resource constraints from herbivory, that cleistogamy will act as providers of reproductive assurance and compensate for the negative effects of herbivory on the plant's ability to produce offspring.

Poster - 55

Effects of Artificial Selection for Shorter Generation Length in *brassica rapa* Plants

Marisa Stockdale, Nicholas Genovese, Colette Berg, Steven Franks*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill,
Environmental Science, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

The Rapid Cycling *Brassica rapa* has been artificially selected for rapid seed-to-seed life cycle for over 30 years. Theory predicts that an evolutionary shift to more rapid growth comes at a cost of reduced resistance to herbivory. In this study we used specialist caterpillars, *Pieris* range (Pieridae), and generalist caterpillars, *Trichoplusia ni* (Noctuidae), to investigate a possible cost due to the selection of the rapid life cycle. With these caterpillars we performed two types of trials. In one the caterpillars were fed an exclusive diet of either the fast or ancestor leaf tissue. In the other caterpillars were placed in a petri dish with leaf tissue and percentage of leaf eaten was calculated and recorded. We hypothesized that we would find that caterpillars fed on a diet of rapid cycling *Brassica rapa* or fast plant would grow to greater weights because of lowered herbivore defenses. Likewise we hypothesized that caterpillars, when placed in a petri dish with each type of leaf tissue, would consume a higher percent of the fast plant leaf tissue. After being fed a specific diet of either leaf tissue, the weights of the caterpillars did not differ significantly, but a higher percent of ancestral plant was eaten. Thus there was some limited evidence for reduced herbivory resistance in plants that evolved rapid cycling.

Poster - 56

Mitochondrial Changes Secondary to Oxidative Stress in the Retinal Pigment Epithelium of a Mouse Model of Age-related Macular Degeneration

Nicholas Spanos, Silvia Finnemann*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

In the mammalian retina, light sensitive photoreceptor neurons require life-long support by the adjacent retinal pigment epithelium (RPE). RPE cells in the eye are constantly subjected to harmful photo-oxidative stress. Excessive damage to RPE cells causes age-related macular degeneration (AMD), the most common adult blinding disease in the United States. Besides high levels of oxidative damage, AMD is associated with alterations in RPE mitochondria. It is not known if mitochondrial abnormalities in AMD are a consequence of oxidative stress. This study investigates whether changes in mitochondrial-specific protein levels are associated with oxidative stress in a mouse model of AMD induced by increased oxidative stress. In addition, we asked whether reducing oxidative stress by consuming a healthy diet supplemented with grapes, which contain anti-oxidants, alters mitochondria in the mouse model of AMD. RPE dissected from AMD model mice fed a regular diet showed increased levels of select mitochondria-specific proteins in immunoblotting protein detection experiments followed by densitometry quantification. AMD model mice fed an antioxidant diet showed an increased abundance of mitochondria compared to their normal diet counterparts as determined by immunofluorescence labeling of mitochondrial proteins and laser scanning confocal microscopy imaging. Taken together, these results suggest that increased oxidative stress in our mouse model AMD secondarily alters mitochondria. This constitutes new insight into the mechanisms of retinal disease progression.

Poster - 57

Quantification of light detection by photoreceptor neurons in mice lacking MFG-E8, a secreted protein that supports retinal tissue renewal

Kenneth Ochs, Silvia Finnemann*, Ayelen Bulloj*

Integrative Neuroscience, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*,
Biological Sciences, Fordham College at Rose Hill*

Vision begins when light reaches the retina and the photoreceptor neurons convert it into physiological signals. A specialized tissue renewal mechanisms maintains function of the retina for life. One of the proteins participating in retinal renewal is the secreted ligand protein MFG-E8. In mice lacking MFG-E8, retinal tissue renewal is abnormal. We hypothesized that these mice will develop impaired vision or blindness. The objective of our study was therefore to use electroretinography (ERG), diagnostic procedure for retinal function, to compare the retinal light responses of wild type mice with normal levels of MFG-E8 protein and mutant mice engineered to carry a defective gene for MFG-E8 and thus lacking MFG-E8 protein. Of both wild-type and mutant mice we raised and studied male and female cohorts of young adult mice (2 months of age) and old mice (4 and 10 months of age). We conducted all vision tests on live mice under dim red light so that the retina of the mice was dark adapted and maximally sensitive to light. We anesthetized mice one by one and administered eye drops for cornea protection and pupil dilation. We placed an electrode resembling a contact lens custom fitted for mouse eyes on the right eye of each mouse to record current changes from the surface of the eye. Mice were subjected to programmed series of white light flashes in the ERG that were distinct for rods and cones. Current changes occur in characteristic wave forms, whose parameters directly correlate with activity of retinal neurons. We found a significant impairment of response of mice lacking MFG-E8 when providing flashes specifically stimulating photoreceptor cones. In contrast, rod function, which was tested at five light intensities, did not differ between wild-type and MFG-E8 mutant mice. These results suggest that mice lacking MFG-E8 have abnormal bright light, color vision, which depends on cones. We conclude that cone function may be more sensitive to impaired retinal tissue renewal than rod function.

Poster - 58

A Survey of Approaches to the Mind-Body Problem

Diana Shao, Dana Miller*

Philosophy, Fordham College at Rose Hill, Philosophy, Fordham College at Rose Hill*

In philosophy, the mind-body problem deals with how our apparently boundless, incorporeal minds are connected to our physical bodies. Recently, neuroscience research has made significant progress such that many scientists and philosophers alike expect the answers to the peculiarities of human cognition to arise from scientific research alone. In other words, they anticipate that all aspects of thought will be explainable entirely in terms of physical processes, a position known as reductionism. There is something intuitively unsettling about this viewpoint—for instance, sequential neural firing does not seem to explain how we feel that our thoughts are in a continuous stream. My project involved examining different approaches to the mind-body problem throughout the history of philosophy, from phenomenology to materialist reductionism.

Poster - 59

Fmoc-Valine Derived Nanoscale Materials for Bone Tissue Engineering

Steven Romanelli, Ipsita Banerjee*

Biological Sciences, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*

Multilayered, biocompatible, biodegradable scaffolds have recently received a lot of attention for their application in tissue engineering. In this work we have developed a new family of biocomposite scaffolds for bone tissue regeneration. Utilizing self-assembled fluorenylmethyloxycarbonyl (Fmoc) protected valyl-cetylamine nanoassemblies as templates and the layer-by-layer assembly method, we attached (a) Type I collagen, (b) a hydroxyapatite binding peptide sequence (EDPHNEVDGDK) derived from dentin sialophosphoprotein and (c) osteoinductive bone morphogenetic protein-4 to the templates. The assemblies were then allowed to bind to hydroxyapatite nanocrystals blended with varying mass percentages of TiO₂ nanoparticles and coated with alginate to form scaffolds for bone tissue regeneration. The morphologies were examined by TEM and SEM and the binding interactions were probed by FITR spectroscopy. The scaffolds were found to be non-cytotoxic, adhered to mouse preosteoblast MC3T3-E1 cells and promoted osteogenic differentiation as indicated by the results obtained by alkaline phosphatase assay. Furthermore, they were found to be biodegradable and possessed inherent antibacterial capability. Thus, we have developed a new family of tissue-engineered biocomposite scaffolds with potential applications in bone grafting.

Poster - 60

Molasses: An Ingredient for the American Revolution

Megan McLaughlin, Elaine Crane*

History, Fordham College at Rose Hill, History, Fordham College at Rose Hill*

John Adams called molasses an “essential ingredient in American independence.” In this paper, I explore the role that this simple by-product played in the American Revolution. It has been overshadowed by sugar and tea in history books, but molasses was a staple of life and of trade that united British colonists in North America. To prove the significant impact of the Molasses Act of 1764, this paper will examine the socioeconomic and political backdrop against which Parliament passed the legislation. Not only was molasses a key trade good, but it was also used for the production of rum—the cornerstone of Rhode Island colonial economy. Contemporary newspaper articles demonstrate the impact of the legislation as well as its uniting effect on colonial behavior. Though reaction to the act varied by region and by individual, the overarching theme was one of disillusionment and anger. The intercolonial bonds formed in the aftermath of the Molasses Act laid the groundwork for future protests and sparked greater concern for Parliament’s ability to impose taxation.

Poster - 61

The Effects of Excessive Concentrations of Alternative Road Salts on Brassica rapa

Christopher Yiachos, James Goehl, Evon Hekkala*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Present day usage of NaCl in the United States for de-icing purposes is at an all-time high of 22 million tons per season. The adverse effects of adding such high amounts of NaCl to the environment has prompted various government agencies to adopt alternative road salts such as MgCl₂, CaCl₂, and KCH₃COO. We studied the effects of high concentrations of these salts on the model plant organism Brassica rapa. We hypothesized that the abnormal concentrations of MgCl₂, CaCl₂, and KCH₃COO would negatively affect the overall fitness of Brassica rapa. The effects of the salts on Brassica rapa fitness were elucidated by observing the development of nine B. rapa plots for each salt: 3 each for low, medium, and high concentrations respectively. These concentrations correspond to 2, 4, and 16 ds/m soil electrical conductance. Our B. rapa specimens were planted and allowed to germinate, at which time they were exposed to the respective concentration of salt as described above. We measured plant growth, flowering time, and reproductive ability to assess fitness as compared to a control group. All plants were maintained in otherwise identical conditions. Control groups received only deionized water. Based on our findings, we will be able to assess how plants akin to B. rapa respond to abnormally high concentrations of alternative road salts. Ultimately, the results of our study will make a significant contribution to the debate over the best alternative to NaCl road salt from an ecological perspective.

Poster - 62

Synthesis and Structural Analysis of New Mixed Valence Copper Cyanide Complexes

Emma Cleary, Julie Thoubboron, Alexander Sabatino, Zachary Mattes, Natalie Sturgeon, Peter Corfield*

Chemistry, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill, English, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*

This project is working on designing, creating and analyzing new polymers based on mixed-valence copper cyanide complexes. Cyanide ions strongly coordinate monovalent copper, Cu(I), but are prone to reducing divalent copper, Cu(II), to Cu(I). To overcome this tendency to reduce Cu(II), we incorporate bidentate amine ligands, which will coordinate to Cu(II) and stabilize the +II oxidation state. With the stabilized +II oxidation state, Cu(II) will be able to coordinate to cyanide. Syntheses occurred through one of two main systems. The first is air oxidation of monovalent copper, cyanide and the amine ligand mixtures. The second route is through partial reduction of the cyanide, divalent copper ion and amine ligand mixtures. Slow evaporation over several days garnered crystalline products. To analyze the crystals, infra-red spectroscopy and crystal densities were obtained. Single crystal X-ray data was collected on the Fordham Chemistry Department's CAD4 diffractometer in order to determine crystal structures. Polymerization in these systems can occur because the cyanide ion, CN⁻, is able to bond to more than one copper atom. Products obtained so far include binuclear monomers, as well as one-, two-, and three-dimensional structures, depending on the amine base that was used. We are attempting to direct the syntheses towards more complex structures by a) incorporation of non-bonding anions and b) incorporation of hydrogen-bonding entities such as the guanidinium ion.

Poster - 63

Gentrification in the Garden: Health, Community, and Environmental (In)justice in New York City's Transitional Neighborhoods

Maris Cuddeback, Kimberly Consroe*

Anthropology, Fordham College at Rose Hill, Anthropology, Fordham College at Rose Hill*

In New York City, urban gardens offer opportunities for physical activity, spaces for civic engagement, and sources of food security. The need for these benefits is urgent, particularly in neighborhoods with a diverse, low-

income population; however, greening interventions risk inadvertently spurring gentrification. This project is an ongoing study of gardens in "transitional neighborhoods," with a focus on how new and extant residents' experiences of community, wellness, and sense of place are shaped by participation in urban agriculture. The research objective is to generate culturally relative, empirically informed solutions to the problem of how to increase the prevalence of urban gardens, and improve existing ones, in ways that will enrich and support extant communities. To that end, I produced an ethnographic account of a community agricultural project in Red Hook, Brooklyn, where an influx of affluent residents in a previously low-income area has created a new socio-spatial mix. This study incorporates participant-observation, spatial analysis, and archival research in order to approach an understanding of how urban gardens can function as forces of health, integration, and solidarity in transitional neighborhoods.

Poster - 64

Uncovering the Ecology and Behavior of Rats as a Result of Food Waste in Underground Subway Stations

Lauren Cook, Christina Ferneini, Cora Ianiro, Matthew Combs*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Rats are rodents that thrive in urban environments, but there is little information about their ecology and behavior in cities. These abundant rodents create serious economic damage and spread infectious diseases to humans, and underground they are the cause of electric-cable breaks and even some fires. Rats inhabit human-dominated landscapes and are successful at scavenging human food waste. Subway stations may be havens for rats because of the food waste and garbage accumulated throughout the day. Our hypothesis is that there will be a positive correlation between the abundance of rats observed and the concentration of food waste seen on platforms and tracks in New York City underground subway stations. We chose several subway stations in the Bronx and Manhattan with similar size and layout to carry out our observational experiment, where we recorded the concentration of food waste and abundance of rats observed at each location. With better knowledge of how rats choose their habitat and their behavior in New York City subway stations, officials can implement effective prevention methods to produce a cleaner and healthier environment.

Poster - 65

NMR study of syn-, anti- isomerism in 2,4-dinitrophenylhydrazones of ketones.

Rita Orazi, Donald Clarke*

Chemistry, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*

2,4-Dinitrophenylhydrazones of unsymmetrical ketones can exist as syn and anti isomers. These are not easily isolated. These derivatives for symmetrical ketones do not have separable isomers. However the anisotropy of the dinitrophenyl group causes magnetic nonequivalence of the previously symmetric groups. Acetone has equivalent methyl groups. NMR spectra of its 2,4-dinitrophenylhydrazone derivative show nonequivalence of its methyl groups both for 1H and 13C NMR spectra. Diisopropylketone [2,4-dimethylpentanone-3]-2,4-dinitrophenylhydrazone shows similar nonequivalence of its methyl groups in both 1H and 13C NMR spectra. However ChemNMR fails to predict this. For methylisopropylketone [3-methyl-2-butanone], an unsymmetrical ketone, one can estimate the ratio of syn to anti isomers in its DNP derivative in their 1H and 13C NMR spectra without prior isolation of these isomers.

Poster - 66

Reducing Bird-Glass Collisions: Testing Patterned Glass in a Flight Tunnel

Robert Ciardullo, J. Alan Clark*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Millions of birds, particularly migratory birds, are killed each year, due to bird-glass collisions caused by individuals striking glass during flight. During flight, birds view the standard transparent, clear glass as open airspace. Due to the clarity of these windowpanes, an illusion is formed from either the reflection or transparency,

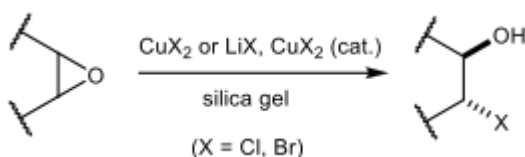
of what looks to be a navigable flight path. To prevent future bird-glass collisions, manufacturers are developing different glass and exterior patterns to be utilized in the field. To provide valuable information about the effectiveness of such patterned glass, each pattern must be tested with wild bird species. Our research goal is to test whether or not the newly developed glass is an effective method at deterring birds and reducing the number of bird-glass collisions. Located in the Bronx Zoo, our research station is the site where we capture wild birds, band them, record their physiological data, and then fly them through our flight tunnel. Utilizing virtually invisible mist nets, we catch birds flying at dawn when they are most active. These birds are crucial to determining if the patterned glass to be tested is indeed effective at deterring birds in flight. At the far end of the flight tunnel, two panes of glass hang behind a protective and virtually invisible net: one pane of glass is the control, transparent glass, and the other pane is the patterned glass to be tested. These experiments provide beneficial information on the usefulness of specific patterns and designs for bird-detering glass. These data are used to determine glass and patterns that are advantageous when reducing the number of bird-glass collisions, saving millions of avian lives.

Poster - 67

Solvent-Free, Silica Gel-Mediated Regioselective Ring Opening of Epoxides to Vicinal Halohydrins

Yolien Miranda, Anthony Santora, James Ciaccio*

Chemistry, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*



Epoxides are valued functional groups in synthetic organic chemistry since they can be ring opened with a variety of nucleophiles to prepare synthetically useful 1,2-difunctional molecules. Environmentally benign methods for epoxide ring opening have been described, including organic solvent-free reaction with lithium halides catalyzed by silica gel to afford vicinal halohydrins. We have recently found that halohydrins are cleanly afforded by solvent-free, silica-gel mediated reaction of epoxides with either CuX_2 or $\text{LiX} + \text{CuX}_2$ (cat.), with a significant rate enhancement for reactions with LiCl when run in the presence of catalytic CuCl_2 .

Poster - 68

Testing the Utility of the Massachusetts Youth Screening Instrument-2 (MAYSI-2) to Identify PTSD Symptom Clusters in Detained Youth

Genna Marcin, Keith Cruise*

Biological Sciences, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill*

Posttraumatic stress disorder, or PTSD, is a severe reaction that occurs for longer than one month subsequent to exposure to a traumatic event in response to this event. Historically, symptoms of PTSD fall into the three major clusters of symptoms: re-experiencing, avoidance, and hyperarousal. Recent studies have shown the prevalence of PTSD among youths in the juvenile detention centers to be three to four times higher than youth in community settings with active trauma symptoms being associated with negative outcomes (e.g., poor frustration tolerance, problems regulating emotions, and aggression). High PTSD prevalence and associated outcomes have reinforced the need for effective screening tools to identify youth experiencing current PTSD symptoms. This study utilized archival data from 1867 detained youth (416 girls and 1451 boys) to test predictive validity of the Traumatic Experiences (TE) scale of the Massachusetts Youth Screening Instrument (MAYSI-2), the most commonly used screening tool for mental health problems in justice-involved youth, to detect re-experiencing, avoidance, and hyperarousal symptoms. The number of boys and girls meeting diagnostic criteria for PTSD symptoms varied by cluster (re-experiencing = 34.3%/57.0%, avoidance = 11.4%/21.2%, hyperarousal = 25.4%/44.0%, respectively). Regression analyses indicated that gender specific MAYSI-2 TE scales significantly predicted PTSD symptom cluster classification for both boys and girls. However, the inclusion of additional MAYSI-2 scales (e.g., Depressed-Anxious, Suicide Ideation) enhanced overall classification within different PTSD symptom clusters. Implications for effective screening and optimized cut-scores are discussed.

Poster - 69

Effects of Dorsolateral Prefrontal Cortex Stimulation and Ketogenic Diet Plan on Body Mass Index

Kelly Becht, Brendan Flynn, Kristen Forlano, Kyle Mitchell, Usha Sankar*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Obesity is a growing public health concern in the United States, and overweight individuals may be at risk for developing serious health problems and life threatening ailments. These individuals may follow weight loss regimens and receive treatments that include combinations of diet, exercise, and weight loss drugs; however, many individuals may deviate from such plans due to food cravings. The dorsolateral prefrontal cortex (DLPFC) is a region of the brain involved in decision-making and the control of one's resulting behaviors. In our study, we will investigate the effectiveness of transcranial direct current stimulation (tDCS) of the DLPFC to suppress food cravings. Previous studies have shown that tDCS of the DLPFC strengthens the resistance to cravings altogether. We will monitor the subjects' changes in Body Mass Index (BMI) in comparison to the changes in BMI of subjects following a ketogenic diet plan, a diet demonstrated to be effective for rapid weight loss. We expect the subjects exposed to DLPFC activation to show the greatest BMI decrease over one year. Men and women are expected to show similar trends in BMI decrease in both the DLPFC activation group and the ketogenic diet group. Our study will help to promote new methods of weight loss for those at high risk of developing health problems due to obesity.

Poster - 70

Tpt1: Antifungal Applications

Craig Casazza, Paul Smith*

Chemistry, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*

Tpt1 is an underexplored phosphotransferase protein with potential antifungal applications. Tpt1 plays a critical role in tRNA splicing in yeasts where it is essential for proper tRNA function. Tpt1 works by transferring a 2' phosphate from the tRNA to make the tRNA functional in one of the last steps of development. Orthologs, which are homologous molecules that stem from a common evolutionary ancestor of Tpt1 exists in all forms of life, but at varying forms of importance. While Tpt1 is essential in yeast, it is likely to be expendable in bacteria and mammals, making inhibition of Tpt1 a possible means for antifungal applications. Currently, there exists no known substrate bound structure of Tpt1 or any known homologous proteins. Information about the substrate-bound structure of Tpt1 would aid in finding ways to target the inhibition of Tpt1 as an antifungal means. The research last summer was done to find the crystal structure of Tpt1 orthologs bound to substrate, and then use this information to help determine its possible mechanism, which in the future would be used to develop a means of inhibiting its function. Additionally, 3D homology modeling software was used to help ascertain a computerized image of the substrate-bound protein. Any idea of how this protein interacts with its substrates will ultimately be helpful in a drug design process.

Poster - 71

Factors Affecting Non-suicidal Self-injury Severity in a Non-clinical Sample

Dillon Gurciullo, Margaret Andover*

Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill*

Non-suicidal self-injury (NSSI) is a set of behaviors in which an individual harms oneself without the intent to die. Though there are a substantial amount of studies examining self-injury, little research has investigated factors that are related to medical severity of NSSI injuries. Additionally, a reliable and valid measure has not yet been created to classify the medical lethality of NSSI injuries. Expanding upon limitations of previous research, the principle investigator has created a measure to classify the medical severity of self-inflicted injuries while taking into account relevant anatomical and physiological factors. Using this measure, the present study aims to investigate psychological factors that contribute to NSSI severity among individuals in a college sample. For individuals without a history of self-injury, the severity of accidental injuries will be examined. It is hypothesized that individuals who self-injure will report injuries of greater severity compared to non-self-injurers. Participants with a history of self-injury completed the Inventory of Statements about Self-injury (ISAS) which identifies various functions of self-injury. It is hypothesized that individuals who identify strongly with negative functions of self-injury, such as those pertaining to physical harm, will report instances of greater injury severity.

Poster - 72

Protein Seeding Using Microglass Structures

Louis Moskovitz, Paul Smith*, Ipsita Banerjee*

Biological Sciences, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*, Chemistry, Fordham College at Rose Hill*

Protein crystallization is crucial to studying the structure of proteins, but it does not automatically happen in solution. X-ray methods are the best ways available for obtaining structural data on proteins, but it depends on formation of well ordered crystals. One way to promote crystallization is by crystal seeding and nucleation. To facilitate crystallization, people seed solutions by adding small protein crystals. This is problematic since it is imperfect and assumes some protein crystals have been attained. We are investigating the idea of seeding crystals by forming a porous, microglass structure for protein seeding. We are basing our solution on Naomi's Nucleant, a nucleant consisting of a porous glass molecular SiO₂ structure which potentially crystallizes proteins. We are trying different forms of this material by altering percentages of components to see whether the microglass surface structure is more jagged or smooth, and whether it contributes to protein crystallization. Candidate materials are synthesized using various starting materials, catalysts, and reaction conditions. Products are analyzed under a scanning electron microscope to study resulting protein structures. We are comparing these products to the known structure of Naomi's Nucleant to see where on the structure proteins would form. We are also trying Germanium in place of silicon in these products, making structures not previously studied in protein seeding. Our goal is to try to evaluate the effectiveness of these materials in crystal growth and explore further variants. Results can allow higher yields on protein crystallization and help make difficulty forming protein crystals.

Poster - 73

Unlocking the mystery of CRISPR-associated Csm6 protein through structural analysis

Megan Mandile, Paul Smith*

Chemistry, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*

Clusters of Regularly Interspaced Short Palindromic Repeats (CRISPRs) are a key genomic component of prokaryotic acquired immunity. In recent years, CRISPR systems have become a prominent area of research in terms of gene editing and biotechnology. The Csm6 protein, in particular, is a CRISPR-associated protein in the subtype III-a family. Although the research on the CRISPR system is extensive, the function and structure of this particular protein remains unclear. The Csm6 protein has been shown to be involved in the CRISPR targeting phase, however, there is little to no data on how this is accomplished. We know that the protein is 422 amino acid residues

long and shows very little structural homology to any other protein. And so, we were motivated to investigate it further. Our goal for this research is to crystallize the protein in order to obtain a structure for functional analysis. Although the original protein comes from Staphylococcus epidermis, through the use of Escherichia coli, we were able to express the SeCsm6 protein in various forms, including his-tagged and his-tagless, and subsequently purify for crystallization purposes. The protein was shown to be stable in solution and crystallized quite readily. We successfully crystallized the protein in both forms and obtained diffraction data. Our current resolution limit is not sufficient for structural analysis and future research goals include obtaining more refined crystals.

Poster - 74

Rebirth of Liquid Crystals as Environmental Sensors

John Murray, Madison Wenzlick, Anthony Tantillo, Petr Shibayev*

Engineering Physics, Fordham College at Rose Hill, Physics, Fordham College at Rose Hill, Physics, Fordham College at Rose Hill, Physics, Fordham College at Rose Hill*

Liquid crystalline films have been shown to be effective detectors of mechanical shearing stress, but their applicability stretches into other domains as well. Films and droplets of liquid crystals may soon become essential components of sensitive environmental sensors and detectors of volatile organic compounds (VOCs) in the air. The detection of VOCs relies on observation of each of the following effects, sequentially observed: i. Slight changes in the orientation and order parameter of the liquid crystal, ii. Formation of bubbles on the top of the liquid crystalline droplet, iii. Complete isotropisation of the liquid crystal. These three stages are easily observed by a video camera, spectroscopy, and/or optical microscopy. Detection limits corresponding to the first stage are typically 3-6 times lower than those corresponding to the isotropisation stage, so much effort has been dedicated to the observation of this earlier stage. It has been shown that by examining the shift in interference patterns of reflected light off the film/droplet, one may easily detect this first stage and infer that VOCs are present in the immediate vicinity. A qualitative model taking into account the re-orientation of liquid crystals and this shift in interference bands is presented to describe the observed optical changes. The VOCs used in this experiment included ethanol, acetone, tetrahydrofuran, and other similar solvents, all of which were successfully detected in small concentrations by this method.

Poster - 75

Mao's Mangoes: The Golden Age?

Rachel Goldner, Grace Shen*

History, Fordham College at Rose Hill, History, Fordham College at Rose Hill*

The image of the golden mango appeared in China in 1968 and represented a transition of power in the Cultural Revolution from students to the working class. To the people of China, the image of the mango symbolized Mao's love and generosity. The image of the golden mango spread like wildfire throughout China and images and wax replicas of mangoes were revered and worshiped across the country. The symbol of the mango and mango objects represent a unique and specific time in Chinese history. Through an examination of Mao era nostalgia and rising interest in Mao era items and propaganda, the symbol of the mango offers a unique perspective on Maoist propaganda and the ways that history is given new meanings over time.

Poster - 76

The Effects of Sleep Deprivation on Reaction Time

Stephen Crowley, Annelisa Tucker, Alexa Klink, Cora Ianiro, Usha Sankar*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

We are interested in exploring the effects of different diets on simple reaction time in sleep-deprived subjects. This is of interest because we want to see if eating a healthy or unhealthy meal or no meal can increase or decrease simple reaction time when subjects are affected by sleep deprivation. In previous research, we noted that a variety of tests analyzed the effects of sleep deprivation on mental functioning and that subjects had decreased reaction times. We also observed studies which analyzed the effect of diet and reaction times. However, the literature on the impact of both sleep deprivation on diet affecting reaction time is sparse. Therefore, we hope to investigate the possible impact of diet on reaction time in sleep-deprived subjects. We hypothesize that eating a healthy meal after being sleep deprived will improve reaction time when compared with no meal, and eating a non-healthy meal will improve reaction time when compared to no meal. We will first test a subject's reaction time on two different diets, and no meal when they are not sleep deprived. We will then administer reaction time tests on all three different diets after they have been sleep deprived and compare each of the subjects' reaction times to determine if our hypothesis is correct. We will also test the concentrations of macromolecules in the subjects' blood including glucose, lipids, sodium, and proteins, to determine their relationship with reaction time.

Poster - 77

Snf1-Regulated Transcription Factors are Required for Proteasome Mediated Lifespan Extension in *Saccharomyces cerevisiae*

Sonia Barakat, Marion Schmidt*

Biological Sciences, Fordham College at Rose Hill, Albert Einstein College of Medicine*

The AMPK pathway is highly conserved and plays a pivotal role in longevity and cellular response to caloric restriction. Our data demonstrates that proteasome mediated lifespan extension results in the deregulation of the AMPK/Snf1 signaling pathway causing an increase in respiratory capacity. We further propose an interconnected network containing the proteasome, Sir2, and AMPK/Hxk2 signaling that regulates lifespan in *Saccharomyces cerevisiae*. The switch from fermentation to respiration is controlled by AMPK/Snf1 signaling, Transcriptional regulators downstream of AMPK repress/activate genes in response to carbon source availability. A deregulation of the pathway leads to premature induction of respiration, increasing levels of ROS and affects aging. Increased respiration and oxidative stress induces the activity of proteolytic systems responsible for preventing the accumulation of aggregates that can lead to cell death. In aging cells, however, we find that the activity of the proteasome declines due to increased oxidative damage. We have shown previously that upregulation of proteasome activity in aging yeast cells has a beneficial effect on lifespan. This beneficial factor can be due to increased protein homeostasis or caused by increased degradation of a negative regulator of lifespan downstream of AMP-kinase, namely Mig1 and Hxk2. In this project we test the hypothesis that increased degradation of Mig1 might contribute to proteasome mediated effects on lifespan.

Poster - 78

Is Your Shampoo Killing Aquatic Life?

Mithi Hossain, Brandon Mogrovejo, Jordan Alexander, Evon Hekkala*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Chemicals found in everyday products can adversely affect aquatic wildlife and habitat. Continued use of pharmaceuticals and personal care products (PPCPS) without attention to how much of those products enter water sources through our drains results in toxic concentrations entering waterways with potential to kill or damage

aquatic animals. In our study, we examined the effects of varied concentrations of common PPCPs such as sudsy shampoo and an organic all natural soap on controlled aquatic populations of *Daphnia magna*, a common water flea. *Daphnia magna* are regularly used in water quality studies and, more importantly, serve as food source for many larger aquatic species and thus contribute to ecosystem health and balance. We recorded and analyzed *Daphnia magna* population growth and survival rates in relation to the concentration of the PPCP introduced. We also monitored *Daphnia magna* heartbeat rates as additional indicators of our experimental aquatic conditions. This study is important to help understand the effects of PPCPs on our local water sources including ponds, rivers, and lakes, which may ultimately affect larger bodies of water. Our results can clarify the effects of these chemicals on aquatic life and implications of our everyday actions such as showering, washing our hands, and other hygienic practices on nature.

Poster - 79

The Effect of Exercise on Blood Glucose Levels in African American Middle Aged Men

Alina Gandrabur, Simratjit Lehal, Amina Bhatti, Aleksander Richards, Usha Sankar*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Patients with Type II Diabetes Mellitus (T2DM) who participate in a consistent exercise regimen can improve their glucose intake function at the cellular level. With exercise, GLUT-4 transporters, membrane proteins that are responsible for glucose transport, become more sensitive to insulin, leading them to intake glucose and therefore lower blood glucose levels. Research has been done where glucose and insulin levels were recorded in patients with T2DM who participate in consistent exercise regimens. Rarely has research on this subject matter solely involved the African American demographic who make up a fourth of the total population who suffer from T2DM. Our research proposal involves recording glucose levels in African American males who participate in consistent exercise regimens. The control group does not suffer from T2DM while the experimental group does. All the members of the experiment would be middle aged, as diabetes is most common in the middle aged population. With the data we compile, we hope to give health care professionals who have African American patients a better understanding of how, in what time frame, and at what capacity the glucose levels of their patients would improve through a consistent exercise regimen.

Poster - 80

The Physiological Effects of Artistic Gymnastics on the Growing Female

Kelsey Donlon, Natalie Cheung, Altina Kukaj, Anastasia Tzanides, Usha Sankar*

Psychology, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Elite female artistic gymnasts, ranging from ages 6-16, train intensely for an average total of 10 to 30 hours a week to compete in uneven bars, balance beam, floor exercise, and vault events. We wanted to explore this high intensity sport because of its potential effects on the female body. We noticed the gap in the research on cortisol levels and artistic gymnasts. We will study 400 females between the ages of 6 and 16 and monitor their bone mass density, body fat percentage measurements, onset of puberty, traditional blood tests, as well as height and weight for statistical analysis. We hypothesize that artistic gymnasts who train for an average of 10-30 hours per week will have higher bone density, a later onset of puberty and menstruation, lower body fat percentage, higher cortisol and progesterone levels, and lower levels of Growth hormone, Insulin-Like Growth Factor (IGF-1), Gonadotropin-Releasing Hormone (GnRH), Luteinizing Hormone (LH), Estrogen and Follicle-Stimulating Hormone (FSH) than average females in that same age bracket. Artistic gymnasts have lower levels of progesterone, lower body fat percentage, significantly lower levels of GnRH, LH, FSH, and GH, a higher rate of amenorrhea and delayed menarche, higher bone mass density and higher levels of cortisol compared to the control group. Future applications of this study include implementing safer standards for young female gymnasts to reduce adverse effects that may affect their future development.

Poster - 81

The Impacts of Electronic Cigarettes on *S. aureus* in Mice Trachea

Alexandra Brown, Hannah Kelly, Diana Tsukalas, Grant Knoll, Usha Sankar*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

As electronic cigarettes are becoming increasingly common in today's society, it is important to understand how these devices are affecting the human body. Though electronic cigarettes have been marketed as healthy alternatives to normal cigarettes, there is still uncertainty and concern in the effects that electronic cigarettes pose on human health. We plan to examine the impact of high voltage electronic cigarette aerosol contents on the rate that the bacteria *S. aureus* mutates into a methicillin resistant *S. aureus* (MRSA) infection in the respiratory system. We hypothesize that as the voltage in electronic cigarettes increases, the more PBP2a, a mutant version of the normal PBP2 gene normally found in *S. aureus*, will be present in the trachea of mice. We inoculate groups of mice with a strain of *S. aureus* and will expose experimental groups to electronic cigarette aerosol with varying voltage settings. We will run a MRSA Latex test to detect PBP2a to determine the presence of MRSA and a sandwich ELISA to determine the relative amount of PBP2a present. The group that will have no exposure to electronic cigarette aerosol is expected to be negative for MRSA, while the group that will be exposed to the aerosol is expected to have increasing amounts of MRSA, corresponding to increasing voltage. Thus, our results will show that electronic cigarettes do have a negative health impact in the respiratory system.

Poster - 82

Impact on Varying Glycemic Index Meals on Metabolic Function During Exercise

Margarita Abella, Alison Biltz, Alyssa Christoforou, Genna Marcin, Usha Sankar*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

We are interested in assessing the impact of dietary carbohydrate intake on metabolic function during exercise. We hope to ascertain how meals of high (HGI) and low-glycemic index (LGI) values affect the metabolic function of individuals during exercise. Though many studies have shown that eating before prolonged exercise can enhance performance by allowing blood glucose levels to be maintained, results have varied significantly. Several studies have found evidence that consuming LGI meals before exercise allows for the maintenance of blood glucose levels during long periods of exercise, which may slightly improve performance via enhancing endurance. However, these studies have only studied cyclists and have seen varied results. We hypothesize that college male cross-country athletes (ages 18-21) who consume LGI meals 90 minutes prior to a 60-minute run would demonstrate more prolonged metabolic function during the run in comparison to athletes who consume HGI meals or no meals prior to the run. For the athletes consuming LGI meals, we expect slowly and gradually increasing blood glucose levels in the post-meal period and slowly and gradually decreasing blood glucose levels in the exercise period, lower and gradually increasing blood lactate levels during exercise, high blood fatty acid levels and fat oxidation rates during exercise, high oxygen consumption and carbon dioxide production rates, and no significant variation in respiratory exchange ratios and exercise heart rates. We also expect that these athletes would claim the lowest levels of exhaustion during the run.

Poster - 83

Positively Affecting Memory Through Music in Alzheimer's Disease

Briana Cadzin, Audrey Trainor, Usha Sankar*

Psychology, Fordham College at Rose Hill, Biological Sciences, Graduated, Biological Sciences, Fordham College at Rose Hill*

This poster explores the positive effect of music on Alzheimer's disease. Alzheimer's disease is the sixth leading cause of death in the United States. The primary age group that it effects is 65 and older. Only about 5 percent of those with Alzheimer's have symptoms between the ages of 40 and 50. It is a progressive disease of the brain that destroys memory and cognition, making most daily processes extremely difficult. Music has had long-term positive effects on the body, especially the brain. For Alzheimer's patients, music has been shown to increase attention span and short-term memory. We will be looking at the recall and retention of words when participants listen to different types of music. This will assess short-term memory capacity. We will be using 60 participants from age 75 to 85. The participants will listen to different types of music in order to predict which types of music enhance brain activity the most for Alzheimer's patients. Our predicted results are that classical music, over different genres, such as rock and pop, would be better used for memory therapy in Alzheimer's patients.

Poster - 84

Medical Marijuana Affects Pain Relief of Endometriosis Patients

Brianna Cali, Elaine Danielczyk, Samari Khalife, Usha Sankar*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Endometriosis is a common debilitating condition of the reproductive system; the most identifiable symptom associated with endometriosis is pain in the abdomen, which is often reported as chronic pelvic pain. As a result, the most common forms of treatment are over the counter non-steroidal anti-inflammatory drugs, such as ibuprofen or naproxen. While these medications may provide temporary pain relief, there are alternate routes that could possibly alleviate pain for longer periods of time in these patients. Recent studies have shown that cannabinoids are an effective pain management tool that often significantly reduces the pain of a patient. To test for this, 150 females between the ages 25-35 with endometriosis will be split into 3 groups and each administered placebo, Ibuprofen and Marinol, an oral cannabinoid. The aim of our experiment is to investigate the effects of cannabinoids comparatively to non-steroidal anti-inflammatory drugs (NSAIDs) on endometriosis patients. We aim to establish a method for endometriosis patients to alleviate and manage their pain to improve their quality of life for longer periods of time. We hypothesize that patients using medical marijuana during their periods as a method of maintaining pain relief will report less pain on the pain scale than patients using over the counter non-steroidal anti-inflammatory drugs.

Poster - 85

Phenotypic Selection and Evolution in *Brassica rapa*

Aleksandar Popovic, Sandra Zajac, Naiem Habib, Michael Sekor*, Steven Franks*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

When a population is introduced to a novel environment, the mismatch between the traits of the organism and the environmental conditions can result in strong selective pressures and rapid evolution. In order to examine selection and rapid evolution as it occurs, a population of the annual plant field mustard (*Brassica rapa*) was introduced from Southern California to New York in May 2011. Following the third year of growth, the original California population (ancestors) and the introduced New York population (descendants) were grown in a common garden in the introduced environment as an assessment of phenotypic evolution. Due to the differences in climate, including water availability, as well as insect herbivore communities between California and New York, the magnitude of herbivory, integrated water use efficiency ($\delta^{13}C$), and specific leaf area (leaf thickness) were investigated. The study did not find a significant difference between ancestors and descendants in these three traits, though there was a trend towards the evolution of increased specific leaf area (thinner leaves). However, an examination of the morphology of these plants demonstrated the evolution of smaller overall size and shorter duration of reproduction in the descendants. This suggests that the introduced population rapidly evolved changes in morphology and phenology, rather than physiology or herbivore defense, to survive and reproduce in the introduced environment.

Poster - 86

The Effect of Road Salt on Surrounding Plant Populations

Jessica Lajoie, Colette Berg, Sean Keegan, Eric Xiupeng*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Environmental Science, Fordham College at Rose Hill*

Despite the apparent widespread use of this product, there has been a fair amount of research conducted to show the harmful effects road salt has on the surrounding environment. The active ingredient in the road rock salt was even registered as an effective herbicide in 2013 (Seigel 1997). Salt harmed surrounding vegetation and trees for nearly two decades. To test the effect of road salt on the growth of Wisconsin Fast Plants (*Brassica rapa*), we grew plants in four different treatments: A control group which was watered with deionized water, a group with road salt in the soil and watered with a 5 g/L solution of road salt in water, a group with road salt in the soil and watered with a 50 g/L solution of road salt in water, a group with no initial salt in the soil and watered with the 5 g/L solution, and a group with no initial salt in the soil watered with 50 g/L of road salt in water. We watered the plants daily and monitored their growth every day for eight weeks. Finally, the growth of plants under different treatment within the experimental period was evaluated by measuring these variables: leaf width, height, number of flowers, number of sprouting plants, and time to germination. The results of this experiment will be used to show those in charge of road salt distribution how detrimental road salt is to the environment, and how it is necessary to find a different method to de-ice roadways.

Poster - 87

Presence of Coliforms and Heterotrophic Bacteria in Four Water Types: An Unregulated River, A Water Supply Reservoir, and Tap and Well Water

Elizabeth Scott, Christina Errichiello, Shannon Keane, Christine Zolnik*

Biological Sciences, Post-Baccalaureate Pre-Med/Pre-Health Program, General Science, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Water quality is critical to public safety; as heavy metals, toxins and water-borne pathogens can be harmful to citizens. Due to time and resource constraints, coupled with the abundance of waterborne pathogenic microbial species, bacteriological water quality tests for indicator species of contaminated waste is an efficient way to test for pathogens. One approach is to test for bacterial indicators of fecal contamination in water, which may suggest the presence of serious pathogens that could be prognostic of disease-causing conditions. Coliform bacteria (e.g., *Escherichia coli*) are a good indicator of fecal contamination as they are found in the intestines of humans and other warm-blooded animals. We used an abridged confirmatory system to indicate water quality as a function of the number of coliforms in water samples. We also tested samples for heterotrophic bacteria as an indicator of the amount of overall bacterial growth. We tested the Hudson River; a regulated reservoir that provides water to Tarrytown and New York City; and tap water from both a public city water source and a private well. Because the Hudson River contains run-off from numerous sites and hosts extensive wildlife activity, we hypothesized that there would be high levels of coliforms and bacteria there. We hypothesized that we may find some coliform and bacterial activity in the reservoir that is exposed to run-off from entering streams. Finally, we hypothesized that there would be no coliform units and little bacterial growth in the public and private drinking water.

Poster - 88

Comparing the Effectiveness of Different Antiseptic and Disinfectant Wipes on Various Gym Equipment

Diana Tsukalas, Michael Congiusta, Kimberly Garvey, Kayla Giampaolo, Christine Zolnik*

Psychology, Fordham College at Rose Hill, General Science, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

According to the Centers for Disease Control, 80% of infectious diseases are transferred through human contact. Therefore, proper cleaning of heavily used surfaces, such as gym equipment, is essential to decrease bacterial numbers and contact with potential pathogens. For this study, we tested the effectiveness of “Advantage Sanitizing Wipes,” used at the gym at Fordham College, Rose Hill, and “Clorox Disinfecting Wipes.” Clorox Wipes were chosen because they are a common household disinfectant. The “Advantage Sanitizing Wipes” contains Benzalkonium Chloride 0.12% while Clorox Wipes contain: n-Alkyl C12,14,16,18 Dimethylbenzyl Ammonium-Chloride, n-Alkyl C12,C14 Dimethyl Ethylbenzyl Ammonium-Chloride. In order to see which wipe is more effective, we swabbed a range of gym equipment; an elliptical machine, a treadmill, a weight bar, and a dumbbell before and after cleaning with each type of wipe. The equipment tested differs in levels of contact with human skin during regular use. We plated the samples on nutrient agar to test for a wide range of bacteria, and on Mannitol Salt agar to select for halotolerant bacteria (i.e. those that would colonize human skin). We calculated the percent reduction of bacteria from each piece of gym equipment after cleaning with each type of wipe. We hypothesize that “Clorox Disinfecting Wipes”, are more effective at inhibiting growth and/or killing bacteria present on gym equipment than the “Advantage Sanitizing Wipes”, and that there will be more bacteria on gym equipment that requires more human contact during use.

Poster - 89

Validity of the Five-Second Rule

George Nikoloudakis, William Chen, Christine Zolnik*

Biological Sciences, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

The five-second rule is a belief that if food is dropped on an unsanitary surface, but is picked up within five seconds, it may not be too contaminated to consume. Foodborne bacteria are the cause of many illnesses so it is important to know if this belief is sound. The purpose of this study was to determine if bacteria accumulated on food samples after a five second exposure to the ground. We swabbed four food items (apples, bananas, bread, and cookies) chosen due to differences in moisture levels. The food items were cut into equal surface areas and were sampled with a moist swab before and after being dropped on the floor. The influence of where the food item is dropped was determined by dropping the different foods at two different sites: a bathroom and hallway floor. As a baseline we also swabbed an equal area of each floor. Each sample was streaked onto nutrient agar and incubated at 37°C for 24 hours, to isolate bacteria that would optimally grow at human body temperature. We determined the percent change in bacterial colonies before and after dropping the foods on the floor. We hypothesized that the banana and apple samples would be more likely to pick up bacteria when dropped on the floor since these contain more moisture on their surfaces, which would aid bacteria adherence. We also hypothesized that there would be more bacteria collected from the hallway compared to the bathroom floor due to increased human traffic.

Poster - 90

Effects of Different Toothpastes on the Reduction of Microorganisms on the Human Tongue

Erica DePalma, Dana Kusak, Geena George, Joseph Lynch, Christine Zolnik*

Environmental Science, Fordham College at Rose Hill, Environmental Science, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Dental hygiene is important because the build-up of microorganisms in the mouth can lead to the loss of enamel, receding gum lines, and gingivitis. Although there are many different ways to practice good dental health, knowing the best method should improve the health of a person's teeth and gums. This study examined four different types of toothpaste to determine which is the most effective in eliminating bacteria in the mouth. As a preliminary test, four undergraduate students each made a lawn of bacteria by swabbing his or her tongue and swabbing it onto nutrient agar. We used a modified Kirby-Bauer method, in which filter discs were submerged in diluted versions of each toothpaste brand. Each disc was placed onto each student's bacterial lawn. The plates were incubated at 37°C for 24 hours (representative of oral temperature) to allow for optimal growth. After incubation, we measured zones of inhibition for each toothpaste brand. From these, we selected the toothpaste with the largest zone of inhibition that was consistent for the most students. Then, we had each undergraduate student plate tongue swabs before and after teeth brushing with said chosen toothpaste. We determined a percent reduction in bacterial colonies on the agar plates from the before and after brushing samples. In terms of toothpaste, only one brand contained a combination of both toothpaste and mouthwash in the tube. Our hypothesis is that the toothpaste brand with mouthwash as an active ingredient (Crest Complete) will be the most effective in bacterial inhibition.

Poster - 91

An Analysis of the Effects of Various Topical Cleansers on Common Face Bacteria

Melissa Ingala, Matt Perrotta, Cassandra Pinkerous, Connor Regan, Christine Zolnik*

Environmental Science, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Every year, Americans spend millions of dollars on topical remedies for acne vulgaris, more commonly known as pimples. The causes of acne are largely unknown, but some proposed factors include genetics, diet, and bacterial growth. For this study, we examined the effect of topical cleansers on skin bacteria. Bacterial samples were collected from the face and neck of four undergraduate students and plated on a selective media, Mannitol Salt agar (MSA). Individual colonies of non-pathogenic *Staphylococcus epidermidis* that grew on the MSA were then isolated and plated as a lawn on nutrient agar. We used a modified Kirby-Bauer method, by adding discs infused with various topical cleansers including; Proactiv (2.5% benzoyl peroxide), Neutrogena (2.0% salicylic acid) and Clearasil (2.0% resorcinol), to each bacterial lawn. All of these treatments are marketed for acne and/or as a general facial cleanser. We hypothesized that the cleanser with benzoyl peroxide would have the greatest zone of inhibition as this chemical is specifically bactericidal, while resorcinol and salicylic acid may only be bacteriostatic at the concentrations that are found in these cleansers. This may be because salicylic acid and resorcinol are aimed at exfoliation of dead skin cells rather than bacterial inhibition. Benzoyl peroxide, on the other hand, kills bacteria by acting as an oxidizing agent, which irritates bacteria and interferes with nutrient acquisition. The results of this study may help suggest which cleansers are most effective at reducing the bacteria found on the skin, and potentially the bacteria that influence acne.

Poster - 92

Psychopathology of Blast-induced Traumatic Brain Injury in Veterans of the Global War on Terror

Adam Zamorek, Molly Zimmerman*

Integrative Neuroscience, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill*

During the conflicts of the Global War on Terror, which are Operation Enduring Freedom (OEF) in Afghanistan and Operation Iraqi Freedom (OIF) in Iraq, there have been over a quarter of a million diagnosed cases of traumatic brain injury (TBI). The vast majority are due exposure to explosive blasts from Improvised Explosive Devices (IED's). Because blast-induced TBI (bTBI) is a relatively new form of brain injury, not much is known about either the mechanism through which these blasts affect the brain or the specific deficits that they cause. bTBI is also difficult to diagnose due to many overlapping symptoms with Post Traumatic Stress Disorder. In this study, we examine the possible psychological deficits of bTBI by analyzing the neuropsychological and psychosocial function of 20 veteran subjects using similar-age family members of the veterans as controls. Both subjects and controls performed neuropsychological tests of visual/verbal learning, attention, and delayed memory. Their psychosocial behavior was also analyzed using depression, anxiety, and stress scales as well as the Post Traumatic Stress Checklist. Using paired T-tests to compare the subjects and controls, our results indicate that the veterans have a significant deficit in delayed memory and attention. We also found that the veterans have significantly greater psychosocial disturbances and they are also positive for both civilian and military PTSD.

Poster - 93

Telomeres and Aging

Brixhild Llapa, Joseph Rapp, Christopher Reggio, Peter Tricarico, Varuni Jamburuthugoda*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, General Science, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Telomeres are regions at the ends of DNA molecules that serve in preventing the loss of essential genomic information. They are crucial to cells because the replication machinery of DNA cannot originally replicate the 3' end of DNA since the lagging strand synthesis requires primers for initiation. Therefore, this leaves a stranded, or 3' overhang, tip of the template strand, and in each subsequent replication, the resulting strands would continue to become shortened. Eventually, this would result in the loss of important coding sequence. Fortunately, telomeres provide a mechanism of preventing this loss of coding sequence by using telomerase enzyme, which adds a short repeated sequence at the 3' end of the DNA sequence. Telomerase uses a RNA template strand and reverse transcriptase to add the repeated sequence. The repeated sequence allows a primer to connect, so polymerase can replicate the coding sequence. Therefore, there would be a loss of the repeating sequence rather than a loss of the coding sequence. However, somatic cells produce little to no telomerase, which leads to the shortening of the chromosomes after each cell division. This is believed to be the cause of aging. Scientists have discovered that individuals who suffer from Werner syndrome, which is a disease resulting from a mutation that causes shorter telomeres than normal, experience premature aging. From this finding, as well as other research, scientists have hypothesized a correlation between aging and telomeres.

Poster - 94

Cyanobacteria and Bioremediation

John Tracey, Wendy Zencheck*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

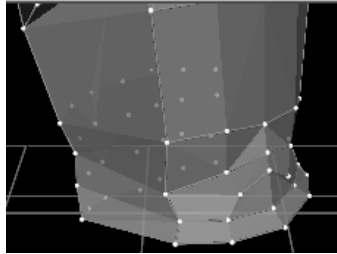
As shown by numerous studies, human-caused climate change will be a major problem of this century. Many scientists have demonstrated that since the beginning of the Industrial Revolution humans have raised atmospheric carbon dioxide (CO₂) levels, and that this increase in CO₂ will cause sea level rises, species extinctions, and global climate change. One option to stave off future disaster is to develop technologies to absorb the CO₂ emitted by fossil fuel combustion. A promising option is the use of photosynthetic organisms, or organisms that transform CO₂, light, and water into oxygen (O₂) and sugars. All plants are photosynthetic, but these organisms also include types of alga, phytoplankton, and cyanobacteria. Researches have extensively investigated unicellular microalgae for use as CO₂ absorbers, but cyanobacteria have not been as extensively investigated. Research will begin by bringing *Anabaena* sp. ATCC 33047, a cyanobacteria used in previous bioremediation experiments into culture. After establishing *Anabaena* sp. cultures, a fraction of a culture will be exposed to a gas mixture similar to power plant exhaust in an airtight container for various durations. Before, during, and after exposure temperature will be controlled and CO₂ and O₂ concentrations will be measured. If after exposure, CO₂ concentrations decline as O₂ concentrations rise, then *Anabaena* sp. has successfully absorbed CO₂ from a flue gas source.

Poster - 95

Re-Examining the Geometry of Opto-Electronic Plethysmography

Jeremy Fague, David Swinarski*

Mathematics, Fordham College at Rose Hill, Mathematics, Fordham College at Lincoln Center*



Opto-Electronic Plethysmography (OEP) is the use of motion capture technology to compute changes in lung volume over time in human subjects. Infrared cameras record the positions of 89 markers placed on a subject's chest and back, and the changes in the volume of the region described by these markers is used to approximate the volume of air that is breathed in or out. OEP measurements have shown to agree well with other methods of lung volume measurement, and thus OEP shows promise as a low-cost, non-invasive tool for pulmonary testing. We propose two ways of modifying the volume-computing algorithms of OEP. First, we will design and develop software for measuring changes in lung volume of each lung individually and test our software for accuracy. Second, the current software used for OEP is designed to work for only one configuration of markers corresponding to a subject with normal lung function; we will design and develop software to allow alternative configurations of markers on the thoraco-abdominal region (designed in coordination with Columbia University Medical Center researchers) that will be more appropriately placed for post-surgical patients. For each of these modifications, we will build digital and physical models of the markers to help us visualize ways to break the thoraco-abdominal region into smaller regions for volume computation, and program the volume computation in Visual Basic in Microsoft Excel. We will then use free, open-source packages based on the Python language to display the results graphically.

Poster - 96

Attenuated Psychosis Syndrome: A Treatment Analysis

Danielle Mahon, Frederick Wertz*

Integrative Neuroscience, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill*

Attenuated Psychosis Syndrome is characterized by sub-clinical features of psychotic disorders. However, one of the key criteria for APS is that the individual must still be relatively in touch with reality, as to distinguish this disorder from schizophrenia or full-blown psychosis. In the current edition of the Diagnostic and Statistical Manual of Mental Disorders, APS is not listed as a diagnosable disorder, but rather appears in the appendix as a diagnosis recommended for further study. This study examines four participants with APS symptoms in order to determine the diagnosable quality of this syndrome as well as whether treatment is necessary. PRIME screening tests were given to determine eligibility for this study. Both historical and SIPS interviews were then conducted in order to allow participants to speak of their experiences, symptoms, and what they personally believe to be causative agents. Results indicated that the diagnosable quality of APS is not of outstanding quality, yet by no means insignificant and that treatment specifically administered for APS may not be required. Additionally, analysis of the interviews showed a high comorbidity between APS and other DSM diagnoses, such as anxiety and depression. This has implications that treatment for APS may be treating the related anxiety or depression.

Poster - 97

Phosphorylation of Nonmuscle Myosin II-Interacting Guanine Nucleotide Exchange Factor (MYOGEF) by Aurora Kinase A

Alexander Mold, Matthew Challman, Qize Wei*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Dysregulation of cell migration contributes to tumor progression. As key regulators of cell migration, Rho GTPase proteins such as RhoA, Rac1, and Cdc42 are largely activated by guanine nucleotide exchange factors (GEFs). We have found that nonmuscle myosin II-interacting guanine nucleotide exchange factor (MYOGEF) is implicated in promoting breast cancer cell invasion through activation of RhoA and RhoC. MYOGEF contains a Dbl-homology (DH) domain and a pleckstrin homology (PH) domain. We have further demonstrated that intramolecular interactions between the DH domain and the carboxyl-terminal region of MYOGEF act as an autoinhibitory mechanism to regulate MYOGEF activation. An objective of our current research is to identify the upstream regulatory signals that can activate MYOGEF through relief of the autoinhibitory intramolecular interactions of MYOGEF. A line of evidence has demonstrated that aurora kinase A can promote tumor invasion and metastasis. Importantly, we have found that aurora kinase A can phosphorylate the carboxyl-terminal region of MYOGEF. The goal of this study is to understand how aurora A-mediated phosphorylation of MYOGEF contributes to the regulation of MYOGEF activation during breast cancer cell migration and invasion.

Poster - 98

Characterization of the interaction between myosin II-interacting guanine nucleotide exchange factor (MYOGEF) and PDLIM7

Christopher Sollecito, Alexander Mold, Qize Wei*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

The actomyosin cytoskeleton plays a critical role in the regulation of many biological processes such as cell migration and cytokinesis. Previous studies from our laboratory have demonstrated that myosin II-interacting guanine nucleotide exchange factor (MYOGEF) can promote breast cancer cell migration and invasion through modulation of the actomyosin cytoskeleton. In addition, a yeast two-hybrid screening has shown that MYOGEF can bind to PDLIM7, which contains one PDZ domain at the amino-terminal region and three LIM domains at the carboxyl-terminal region. The PDZ and LIM domains are conserved protein domains present in a wide variety of proteins. One of the central regulatory roles for PDZ and LIM domains is to regulate the organization of the actomyosin cytoskeleton. In particular, not only can PDLIM7 be anchored to the actomyosin cytoskeleton through its PDZ domain, but it can also be associated with various signaling molecules through its LIM domains. In this study, we have demonstrated that MYOGEF interacts with the carboxyl-terminal region of PDLIM7. Our findings suggest that the LIM domains of PDLIM7 can bind and tether MYOGEF to the actomyosin cytoskeleton.

Poster - 99

Return of the Streetcar

Dylan Cepeda, Rosemary Wakeman*

Urban Studies, Fordham College at Rose Hill, Urban Studies, Fordham College at Rose Hill*

In the late 19th and early 20th century streetcars provided mass transportation in nearly every significant city and town throughout the United States. However by mid-century most systems had been dismantled. In recent years, cities are once again looking at this technology to provide transportation for their residents. This essay examines benefits and drawbacks of streetcar transportation. The author uses news articles, research articles, and interviews with Robert Diamond, local transit expert, and Paul Gawkowski, former MTA director for Surface Transit in Queens and Brooklyn. This paper suggests that the streetcar will provide a multitude of benefits for the cities.

Poster - 100

Community Gardens in the Lower East Side

Jillian Walsh, Rosemary Wakeman*

Urban Studies, Fordham College at Rose Hill, Urban Studies, Fordham College at Rose Hill*

The purpose of this project is to gain a better understanding of the relationship between the City of New York and its community gardens in the Lower East Side. The study focuses on the shifting attitudes towards community gardens as the Lower East Side gentrified and the methods used to both destroy and protect the gardens. Four gardens will be used as case studies: La Plaza Cultural de Armando Perez, The Garden of Eden, Siempre Verde Community Garden, and Esperanza Community Garden. The study concludes with a discussion of current efforts to create two community gardens in the Lower East Side.

Poster - 101

A Whole New 3D Printed World: Exploring Potential Environmental Effects of Additive Manufacturing

Valerie Meyer, John van Buren*

Environmental Studies, Fordham College at Rose Hill, Environmental Studies, Fordham College at Rose Hill*

Addressing the environmental issues currently and potentially involved with 3D printing involves interdisciplinary research. By addressing the top companies involved with additive manufacturing, their mission statements bring into the vision behind the Maker Movement and its likely future. After fully analysing the Maker Movement and where its potential environmental issues are prioritised, the environmental issues can be properly introduced. Comparing additive manufacturing to traditional manufacturing is the first step in analysing the environmental issues. Understanding waste management, pollution, and the carbon footprint of both forms is important to put additive manufacturing in perspective. Besides perspective purposes, the political science on traditional manufacturing gives information on what policies ought to be implemented to soften the disruptiveness 3D printing could bring to our economy, environment, and health. Bio-printing, cuisine printing, and solar powered printing are just a few examples of the innovating projects involved with 3D printing today. A close look at how materials and the powers used in 3D printing gives us the necessary pieces of information to understand 3D printing through an environmental lens. When we have the complete picture of the environmental potential of 3D printing, the vital step is to address the issues involved with investors' resistance to regulation and policies on new technology. Attracting capital is essential for the continued growth of 3D printing, but addressing environmental concerns is just as necessary in protecting the long-term financial gain. After addressing the resistance between capital and environmentalism, what specific policies should be implemented can be considered so that the Maker Movement is not as environmentally disruptive as the Industrial Revolution.

Poster - 102

Identifying Phosphates and Sulfates in Protein Crystal Structure

Laurel Jones, Paul Smith*

Chemistry, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*

Although there are many computational tools available to analyze protein crystal structure electron density, there is no good tool to identify phosphates and sulfates despite their common occurrence in proteins. We have created an algorithm to accurately identify these often overlooked molecules in proteins by using known phosphates and sulfates in protein structures from the Protein Data Bank as models. Phosphates and sulfates have such similar structure that they can be modeled using the same computer program. Our method identifies small peaks in the protein crystal structure that have not yet been identified and places a sulfate or a phosphate there. Then a refinement is run on the sulfate or phosphate to find the best possible fit in the electron density. It is possible to distinguish phosphate or sulfate peaks from water molecules (which have similarly-sized electron density) using correlation coefficients, for sulfates yield high correlation upon refinement, and density peaks belonging to water molecules yield lower correlation. There is, however, a gray area in which the correlation coefficient values of sulfates and water molecules overlap. We have yet to determine a method for identifying whether a molecule with correlation in the gray area is a phosphate or sulfate or a water molecule. Once we have perfected our algorithm for finding phosphates and sulfates, we plan to run it on the entire Protein Data Bank to identify unknown phosphates and sulfates in published proteins, as well as use this tool to analyze new crystal structures.

Poster - 103

Effects of Light Exposure on Depression, Mood and Sleep Quality in Non-Demented Community Dwelling Older Adults

Thomas Spanarkel, Molly Zimmerman*

Integrative Neuroscience, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill*

The light/dark cycle is one of the most fundamental natural processes that humans are exposed to on a daily basis. Light exposure is known to affect the circadian rhythms that regulate sleep patterns as well as the experience of deregulated mood. Older adults frequently report difficulties in both sleep and depressed mood. This study aims to examine the relationship between light exposure, sleep quality, and mood in non-demented older adults. A cross sectional sample of 32 ethnically diverse participants over the age of 70 residing in the Bronx, NY were drawn from the Einstein Aging Study. Sleep (total sleep time, wake after sleep onset, sleep efficiency, onset latency) and light exposure (lux) were measured using actigraphy (Actiwatch-2, Respironics, Inc.). Depressive symptoms were measured using the 15-item Geriatric Depression Scale (GDS). Due to the small sample size and non-normality of the data, nonparametric Spearman correlations were used to examine relationships among the primary variables of interest and demographics as well as relationships among light exposure, sleep quality, and mood. The results indicated that as individuals grow older, they are exposed to less light ($r=-0.37$, $p=0.03$) and that individuals with higher education took longer to fall asleep ($r=-0.50$, $p=0.004$). In addition, older adults with less exposure to light reported greater depressive symptoms ($r=-0.43$, $p=0.01$). These findings provide support for the negative effects of a lack of light exposure on mood and suggest remediable intervention targets for the alleviation of depressed mood in non-demented older adults.

Poster - 104

Russian Aggression in the Post Soviet Block

Zachary Insani, Olena Nikolayenko*

Philosophy, Fordham College at Rose Hill, Political Science, Fordham College at Rose Hill*

Russia's continued military aggression in Ukraine and other ex-Soviet satellite nations presents international policy makers with complex problems and ambiguous solutions to deter this aggression. This study examines how Russian defense reforms affected its military employment in the post-soviet region. It will examine the Russian defense policies associated with military operations in Georgia and Ukraine. The study finds a pattern of

military escalation associated with these policies. Additionally, these findings identify the challenges before current international diplomatic policy makers. This study seeks to contribute to international relations literature by investigating the use of hard power in modern-day Europe.

Poster - 105

Effects of pH and Surface Oxidation Speed on a Photocatalytic Fuel Cell

William Chen, Lukasz Sztaberek, John J. McMahon*

Chemistry, Fordham College at Rose Hill, New York City College of Technology, Brooklyn, Chemistry, Fordham College at Rose Hill*

A fuel cell is an environmentally friendly energy source typically catalyzed by platinum. However, platinum's high cost keeps fuel cells from becoming ubiquitous. In search of a cheaper and more efficient alternative, we observed the oxygen reduction reaction catalyzed at a silver/silver iodide (Ag/AgI) cathode. Photo-initiated electron transfer from the silver cathode to the AgI film provides a ready source of electrons for oxygen reduction and defeats the activation overvoltage normally associated with oxygen reduction at platinum. Here we report the effects of pH and surface oxidation speed on the photocurrent density. Previous preparations of the fuel cells were done using slow surface oxidation. Evidence from SEM images showed that seeding took effect, which led to poor film coverage of the cathode and lower photo response. Transitioning to fast surface oxidation, we now observe much greater coverage of the electrode and open cell potential measurements display as much as a ten-fold increase in photocurrent. For the photocatalytic fuel cell's dependence on pH, it was originally assumed that the cathodic equilibrium was a pH-independent iodine (I₂) reduction reaction at all pH values. However, open circuit cell potential measurements showed a decreasing trend in photocurrent density at increasingly alkaline pHs, indicating pH dependence at the Ag/AgI cathode.

Poster - 106

Varying Reinforcement on One Alternative of a Concurrent Schedule

Mary Kate Crenny, James MacDonall*

Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill*

The stay/switch model presents choice as a function of the reinforcers obtained by staying at or switching from each alternative (MacDonall, 2009). In contrast, the generalized matching equation suggests that the ratio of reinforcement at the two alternatives determines choice behavior. As such, changing the reinforcers at one alternative would change the behavior at the other alternative. The changes accounted for by the matching equation resembles behavioral contrast where changing the schedule of reinforcement in one component changes responding in the other, unchanged, or constant component (Reynolds, 1961). The stay/switch model makes the strong prediction that the schedules of reinforcement at the two alternatives do not interact and that they are independent. The primary purpose of the present experiment was to assess whether the two sets of choices, one set on each alternative, interact. Six experimentally naive rats were trained to lever press in six operant conditioning chambers. For all six rats, the schedule on the variable alternative varied between extinction and reinforcement. By looking only at performance on the constant alternative, we determined whether or not changing the amount of reinforcement at the variable alternative affected responding at the constant alternative. There were no consistent changes in the run lengths or visit durations at the constant alternative as contingencies at the other alternative were either reinforcement to extinction. This pattern suggests that changes to the variable alternative were not affecting responding at the constant alternative, i.e. they did not interact. This study lends further support to the stay/switch model.

Poster - 107

Thorough Robotic Exploration of Complex Environments with a Space-Based Potential Field

Alina Kenealy, Nicholas Primiano, Alexander Keyes, Damian Lyons*

Computer and Information Science, Fordham College at Rose Hill, Computer and Information Science, Fordham College at Lincoln Center, Computer and Information Science, Fordham College at Lincoln Center, Computer and Information Science, Fordham College at Rose Hill*

Robotic exploration, for the purposes of search and rescue or explosive device detection, can be improved by using a team of robots. Potential field navigation methods offer natural and efficient distributed exploration algorithms in which team members are mutually repelled to spread out and cover the area. However, they also suffer from field minima issues. Liu and Lyons proposed a Space-Based Potential Field (SBPF) algorithm that disperses robots efficiently and also ensures they are driven in a distributed fashion to cover complex geometry. In this paper, the approach is modified to handle two problems with the original SBPF method: fast exploration of enclosed spaces, and fast navigation of convex obstacles. Firstly, a “gate-sensing” function was implemented. The function draws the robot to narrow openings, such as doors or corridors that it might otherwise pass by, to ensure every room can be explored. Secondly, an improved obstacle field “conveyor belt” function was developed, which allows the robot to avoid walls and barriers while using their surface as a motion guide to avoid being trapped. Simulation results, where the modified SPBF program controls the MobileSim Pioneer 3-AT simulator program, are presented for a selection of maps that contain difficult geometries. Physical robot results are also presented, where a team of Pioneer 3-AT robots is controlled by the modified SBPF program. Data collected prior to the improvements, new simulation results, and robot experiments are presented as evidence of performance improvements.

Poster - 108

Evaluating an Approach to Improving Communication on Wireless Networks for Robotic Search and Rescue Teams

Joseph LeRoy, Damian Lyons*

Computer and Information Science, PCS, Computer and Information Science, Fordham College at Rose Hill*

It is important for teams of search-and-rescue robots to rapidly map and search a disaster scene so that first responders can quickly and safely care for victims. Using a team of robots means improved search speed because team members can be deployed to map and search in parallel. However, such teams can produce a communication bottleneck at the network router due to the large amount of search and mapping data each robot sends during its specified transfer time. The objective of this research is to eliminate the communication bottleneck, in turn, allowing search-and-rescue robot teams to quickly collect data with less bandwidth consumption on the network. The following approach to robot team data communication is proposed for evaluation in this paper. When members of the team collect sensory data, they first exchange this data with their teammates closest to them, carrying out a set of fusion operations to combine their data. This subgroup selection and combination can occur in parallel among team members and with low bandwidth requirements. These subgroups then exchange information, and so on, hierarchically. The candidate set of subgroup selection and combination operations designed are presented, as well as a set of experimental scenarios and performance evaluation criteria.

Poster - 109

Urban Green Roofs: Environmental Conditions on Growth in *Amaranthus tuberculatus*

Olivia Wilkins, James Lewis*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Green roofs are an innovative technology that provides many ecosystem services, including reducing sound pollution and increasing energy and water conservation, particularly in urban environments. These roofs also provide habitat for urban flora and fauna. However, because green roof gardens are a unique habitat type, it is not clear whether these species grow as they do in less-urbanized habitats. This study compared the growth patterns of *Amaranthus tuberculatus* plants grown on an experimental green roof located on the parking garage at Fordham

University's Bronx (NY) campus with *A. tuberculatus* grown at Fordham's research station, the Louis Calder Center (Armonk, NY). This study was conducted for 12 weeks (July – October 2014) as a part of a larger study on plant reproduction and gene flow. Growth was assessed through weekly measurements of plant height, stem length, inflorescence length, and number of inflorescences. In addition to growth, I assessed plant allometry, through comparisons such as the relationship between inflorescence number and plant height, and the relationship between inflorescence number and inflorescence length were made. I observed differences between the two sites in plant growth and allometry. These results are consistent with the hypothesis that there is a difference in growth between a green roof in a highly-urbanized area and a ground level site in a less-urbanized area. Accordingly, these results suggest that plants may grow differently on urban roofs, compared with plants in a ground habitat, and these differences may be due to the unique characteristics of green roofs in urban areas.

Poster - 110

To Beat or Not to Beat a Tick: Comparison of DNA Extraction Methods from Ticks (*Ixodes scapularis*)

Alyssa Ammazalorso, Sergios-Orestis Kolokotronis*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Blacklegged ticks (*Ixodes scapularis*) are important disease vectors in the United States, known to transmit a variety of pathogens to humans, including bacteria, protozoa, and viruses. Their importance as a disease vector necessitates reliable and comparable methods for extracting microbial DNA from ticks. Furthermore, to explore the population genetics or genomics of this tick, appropriate DNA extraction techniques are needed for the vector and its microbes. Although a few studies have investigated different methods of DNA isolation from ticks, they are limited in the number and types of DNA extraction and lack species-specific quantification of DNA yield. We determined the most efficient and consistent method of DNA extraction from two different developmental stages of *I. scapularis* – nymph and adult – that are the most important for disease transmission. We used various methods of physical disruption of the hard, chitinous exoskeleton, as well as commercial and non-commercial DNA isolation kits. To gauge these methods' effectiveness, we quantified the DNA yield and confirmed the DNA quality via PCR of both tick and microbial genetic material. DNA extraction using the Thermo GeneJET Genomic DNA Purification kit resulted in the highest DNA yields and the strongest, most consistent PCR amplification. We also found that physical disruption of the tick exoskeleton was most effective using cross-sectional cutting compared to any type of bead-beating matrices used. Storing ticks at -80°C resulted in considerably higher DNA yields than those from ticks stored in ethanol.

Poster - 111

Computational Interpretation of fMRI Brain Data

Catarina Araujo, Daniel Leeds*

Computer and Information Science, Fordham College at Rose Hill, Computer and Information Science, Fordham College at Rose Hill*

Understanding the process of visual object recognition in the brain requires knowledge in the interdisciplinary field of math, computer science, and neuroscience. The goal of this research project is to combine these areas of study and enable more effective analyses and interpretations of the brain data. In order to overcome challenges in interpreting brain data, rather than focusing on individual neurons, we look at brain regions (made up of 2mm x 2mm x 2mm cubes called “voxels”) using functional Magnetic Resonance Imaging (fMRI). This semester I will continue the work I started with Dr. Leeds over the summer, where I used MATLAB software as a tool to determine optimal brain regions to focus on in order to minimize background noise (which is largely present in brain data), and perform an expanded analysis of data from these brain regions. After establishing the relevant regions to focus on, we wish to establish the relevant data from these regions. We will use a method previously designed by Dr. Leeds to identify stimuli that evoke “maximal” response for each region. We will also use representational dissimilarity matrices (RDMs) to compare computer vision models that determine similarity between pairs of images to picture-similarity groups from brain data.

Poster - 112

The Effect of Avian Hemoparasitic Infection upon Fitness Levels of *Turdus Migratorius*

Sarah Voor, Sergios-Orestis Kolokotronis*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

In the Northeastern U.S., prevalence of hemoparasites in avian populations averages a thirty (30) percent infection rate. Infection by hemoparasites can result in disease and negative fitness effects; these vary by bird species but typically manifest as reduced body condition, reduced return rates, and reduced immune response. In the Northeastern U.S. *Plasmodium* sp. have been identified as the primary cause of Avian Malarial infection and its resulting negative fitness effects may affect population sizes of the avian hosts. In Blue tits, different plasmodium lineages have simultaneously been present within a single breeding population. The research question is built upon these findings: Do different plasmodium lineages have different negative effects upon their hosts? Using the American Robin as my model organism, sampling will be conducted at one site, Queens County Farm Museum, along the Atlantic flyway during the Spring 2015 season. American Robins will be caught via mist netting. Indices of body composition will be measured and statistically tested using the Principal Component Analysis (PCA) utilized by Dawson et al, 2000, to determine if infections infer reduced body fitness within the host birds. Blood samples taken will be screened using the protocol of Hellgren et al, 2004, involving a nested-PCR assay to test for the presence of hemoparasites. Hemoparasites can then be sequenced to determine lineage. The results of this investigation can provide valuable insight into understanding how different lineages of pathogens can affect avian species. This may be important in conservation efforts of rare or declining avian species.

Poster - 113

Site-directed mutagenesis on R2 of non-LTR retrotransposon to study RNA binding

Elaina Weber, Varuni Jamburuthugoda*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Among the most abundant mobile genetic elements in eukaryotes are the non-long terminal repeat (LTR) retrotransposons. The most extensively studied non-LTR retrotransposable element is known as R2, which inserts itself into a specific site in the 28S rRNA in a variety of animal phyla. R2 encodes a single polypeptide with reverse transcriptase (RT), endonuclease, and nucleic acid-binding domains. While the enzymatic and DNA binding domains of the R2 protein have been characterized, little is known of the locations or number of the RNA binding domains. The R2 protein from *Bombyx mori* is used to study the target primed reverse transcription (TPRT) mechanism by which R2 integrates via separate cleavage of the two target sites of DNA. After cleavage, the released 3' ends are used as primers for DNA synthesis. Notably, the R2 protein binds specifically to 3' and 5' regions of the R2 RNA, which makes the study of R2 RNA binding domains important, especially because TPRT is estimated to account for 40% of the human genome. In this study, we plan to use site-directed mutagenesis in the potential RNA binding regions to help locate these RNA binding motifs and to study how R2 protein binds to 3' and 5' RNA in the TPRT mechanism. Two possible R2 RNA-binding regions were chosen for mutation based on phylogenetic studies.

Poster - 114

Chromosomal Abnormalities

Maliha Gul, Marisa Vomvos, Alyson Ferrante, Adair Boudreaux, Varuni Jamburuthugoda*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Chromosomes are densely packed structures that can be found in the nucleus of eukaryotic organisms. Made of protein and DNA, chromosomes carry the genetic information of cells in the form of genes, which code for different proteins as well as carry out regulatory functions essential to the survival of the cell. A human body cell

contains a total of 46 chromosomes - 23 from each parent. These chromosomes not only have a set number, but also a set structure that is vital to their function. For this reason, the two main categories of chromosomal mutations are numerical abnormalities, in which there are too many or missing chromosomes in a pair, and structural abnormalities, such as deletions, duplications, translocations, and more. Abnormalities in the number of chromosomes can lead to genetic disorders like Down Syndrome and Turner Syndrome. Structural abnormalities, on the other hand, can lead autoimmune disorders, skeletal abnormalities and even learning disabilities to name a few. Some causes of chromosomal abnormalities include issues occurring during mitosis or meiosis, maternal age, and environmental factors. While most abnormalities themselves are not treatable or curable, often times the side effects stemming from them are. Genetic counseling and gene therapy are other available resources that are currently advancing.

Poster - 115

Rebirth of Liquid Crystals as Environmental Sensors

John Murray, Petr Shibayev*

Engineering Physics, Fordham College at Rose Hill, Physics, Fordham College at Rose Hill*

Liquid crystalline films have been shown to be effective detectors of mechanical shearing stress, but their applicability stretches into other domains as well. Films and droplets of liquid crystals may soon become essential components of sensitive environmental sensors and detectors of volatile organic compounds (VOCs) in the air. The detection of VOCs relies on observation of each of the following effects, sequentially observed: i. Slight changes in the orientation and order parameter of the liquid crystal, ii. Formation of bubbles on the top of a liquid crystalline droplet, iii. Complete isotropisation of the liquid crystal. These three stages are easily observed by a video camera and/or optical microscopy. Detection limits corresponding to the first stage are typically 3-6 times lower than those corresponding to the isotropisation stage, so much effort has been dedicated to the observation of this earlier stage. It has been shown that by examining the shift in interference patterns of reflected light off the film, one may easily detect this first stage and infer that VOCs are present in the immediate vicinity. A qualitative model taking into account the re-orientation of liquid crystals and this shift in interference bands is presented to describe the observed changes. The VOCs used in this experiment included ethanol, acetone, tetrahydrofuran, and other similar solvents, all of which were successfully detected in small concentrations by this method.

Poster - 116

Elevated Hormone Levels and the Effect On Memory

Samuel Verzino, Cameron Smith, Robert Frerich, Usha Sankar*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

It is well known that under times of stress, people's memories are negatively affected. Through experimentation, we want to better understand how one's sex hormone levels could combine with the elevated cortisol levels that accompany stress to impact memory. (In an article entitled "Variations in memory and sex steroid hormones across the menstrual cycle" published in the Elsevier Journal of Psychoneuroendocrinology in 1992, results) An earlier study suggested that changes in memory test performance may be associated with sex steroid levels. In our experiment we will employ 160 lab rats (80 male and 80 female) of varying hormone levels and put them through a Morris Water Maze. Our experimental group will include males with both high and low levels of testosterone and females in each of the four stages of the estrous cycle. We hope to examine the impact that cortisol and sex hormones have on memory. By doing so, we plan to determine the steroids' combined level of memory impairment, which particular hormone causes greater memory impairment, and any differences between the sexes. In doing so, we hope to support our hypothesis which states that both sex steroids and cortisol will impair memory, but elevated cortisol will make a greater impact.

Poster - 117

Formulas for weight diagrams for the Lie algebra $sp(4)$

Ruiju Wang, Katherine Lee, Shuyao Lu, David Swinarski*

Mathematics, Fordham College at Rose Hill, Mathematics, Fordham College at Lincoln Center, Mathematics, Fordham College at Lincoln Center, Mathematics, Fordham College at Lincoln Center*

We obtain polynomial formulas for the multiplicities in weight diagrams for the Lie algebra $sp(4)$. Our approach was to split the weight diagram into different regions where we observed patterns in the multiplicities, and then to use these patterns to interpolate polynomial formulas for the multiplicities. Finally, we proved our formulas by showing that they match the description of the multiplicities given by a theorem of Dehy.

Poster - 118

The Comparison of functional Magnetic Resonance Imaging and Magnetoencephalography While Studying the Perception of Objects with Focus On Semantics

Anthony Matus, Daniel Leeds*

Integrative Neuroscience, Fordham College at Rose Hill, Computer and Information Science, Fordham College at Rose Hill*

Visual object perception that occurs via a complex cortical network within the brain is understood to from a hierarchical viewpoint (Leeds et al, 2013). The intermediate levels in between basic features to that of whole images are not completely understood. Research has been conducted to find neural coding of semantic and perceptual features in viewing objects using Magnetoencephalography(MEG), which is a technique that uses magnetic fields to measure a small range of brain activity. My study has been to compare patient's brain activity while they were shown sixty real life objects from different categories of semantic properties with that of expected activity for the specific semantic property of, would you find it in an office? The passive-viewing conditions differed from the research conducted with MEG, since we used fMRI, a technique that measures brain activity with a greater spatial resolution than MEG. We made our comparison using dissimilarity matrices for a specific measured amount of brain region. This was done using a searchlight sphere that was comprised of voxels for hundreds of regions in the brain. This research provided support that specific regions in the brain code for certain semantic features in perceiving images, most notably the central temporal cortex.

Poster - 119

Dialectical Behavioral Therapy and Pre-Performance Anxiety in Sports: An Approach for Self-Control of Neuro-Chemical Arousal

Matthew Lejeune, Aurel Frangaj, Megi Zeku, Usha Sankar*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

A dualistic approach to the mind and body has been replaced in contemporary medical, psychological and physiological research with a dynamic model of mind-body relationship and interaction. Physiological functioning and well-being are often examined within the context of emotion, cognition and person-ality. The present study will examine the effectiveness of dialectic behavioral therapy (DBT) on reducing or controlling pre-performance anxiety for athletes, with specific physiological variables of neurochemical changes associated with stress and anxiety, such as vagal tone (heart rate, respiratory sinus arrhythmia), GSR, salivary alpha amylase, salivary cortisol and blood analysis catechola-mines. In this study, twenty athletes will be trained in DBT and compared to their control group counterparts. It is expected that the athletes trained in DBT will exhibit greater control of pre-performance anxiety in sports, and that there will be statistically significant differences in the physiological measures.

Poster - 120

Effects of LED light exposure during exercise

Marisa Stockdale, Amy Caffrey, Giuliano Pichini, James Potts, Usha Sankar*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Technology is increasingly present in every day life. With this increase in technology comes an increase in the exposure to Light Emitting Diodes or LED lights. Previous research has shown that LED lights negatively affect sleep but has not investigated the immediate effect of LED light exposure on physical activity. LED light exposure alters circadian rhythms and thus reduces the evening rise of melatonin release from the pineal gland, alters wakefulness and alertness at night, and increases attention and memory associated with cognitive performance. Some research has implied that calculated and timed exposure can improve daily performance and sleep cycles because of this increased cognitive activity. In this study we will test the effects of LED exposure on subjects running on a treadmill using a within group design, either with LED lit monitor in front of the subject or without, and using V02 max to test the volume of oxygen the body can consume while exercising at maximum capacity. We will perform this experiment ten times per treatment with a group of forty, twenty-year old males and average the results. We hypothesize that when the subjects are exposure to LED light during exercise they will perform better on the V02 max measure of aerobic fitness. If our hypothesis is supported, further research could be done to use LED lights in order to improve exercise and thus weight loss combating the obesity epidemic.

Poster - 121

Research and Development of a Multi-Layer Epoxy-Based Anti-Reflection Coating

Samantha Walker, Albert Kamau Wandui, Chao-Lin Kuo*, Keith L. Thompson*, Ki Won Yoon*

Physics, Fordham College at Rose Hill, Physics, Stanford University, Physics, Stanford University *, Physics, Stanford University *, Physics, Stanford University *

This past summer, I worked on the research and development of a multi-layer epoxy-based anti-reflection (AR) coating of alumina ceramic lenses for future ground-based cosmic microwave background (CMB) experiments such as SPT-3G in Professor Kuo's laboratory at Stanford University. In these experiments, high dielectric constant materials, such as alumina or silicon, are used because they enable the creation of thin lenses. However, they allow an unacceptable amount of light to reflect. In addition, more commonly used single AR coatings for alumina or silicon lenses are only optimized for a single frequency of light and so currently only offer limited optical bandwidth capabilities. We produced three types of epoxy mixed in different ratios by mass or doped with strontium titanate powder to obtain the necessary dielectric constants for minimizing the fraction of incoming light reflected when layered together. We then tested these coatings for transmission and reflection properties using a Fourier transform spectrometer (FTS) to see if this were the case.

Poster - 122

Mating Season Behavior of Captive Female Ring-Tailed Lemurs (*Lemur catta*)

Ansel Hoang, Connor Regan, Amelia Wright, Kaitlyn Parkins*

Environmental Science, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill,
Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

The study of female ring-tailed lemur social behavior during the mating season can contribute to the overall understanding of primate social interactions. We observed female lemurs in captivity at the Bronx Zoo. All of the ring-tailed lemurs at the Bronx Zoo are female. We studied whether or not the presence of male ring-tailed lemurs affects the aggressive behaviors generally seen in female lemurs during mating season. We hypothesized that as the mating season approached we would see an increase in stress and/or dominance behaviors such as territoriality and fighting regardless of the presence of males. For our results, we compared the control behavior (before mating season) and behavior during mating season. We then compiled this data and compared the differences in behavioral frequency for each time period. The results of this study can help scientists better understand ring-tailed lemur mating behavior and lemur social hierarchical structure.

Poster - 123

Assessing the Effects of Media on Self Esteem and Body Image in Homosexual and Heterosexual Men

Nicholas Lopresto, Amy Roy*

Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill*

The purpose of the research is to assess the effects of media on body satisfaction, self-esteem, and social anxiety in two groups: homosexual and heterosexual men. To do this, various questionnaires will be implemented along with the use of FACES software in order to capture facial action units while the participant is looking at various body images. The hypothesis is that homosexual men will show more sadness and frustration in response to idealized male images and will report less body satisfaction and lower self esteem than their heterosexual counterparts. The second hypothesis is that homosexual men will show greater social anxiety than their heterosexual counterparts. The research is still being conducted and analysis will be completed in April 2015.

Poster - 124

The Role of Parental Anger and Self-Efficacy in Utilizing Routine Changes to Manage Child Disruptive Behavior

Diana Kwon, Nicholas Lopresto, Amy Roy*

Integrative Neuroscience, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology,
Fordham College at Rose Hill*

Children with disruptive behavior disorders, including ADHD, exhibit significant impairment in multiple domains: school performance, social interactions, and family relationships. Parenting these children can be challenging and parents resort to a number of strategies to mitigate their child's emotional dysregulation. Avoidance of situations that will cause frustration or conflict is commonly used. However, little is known about parent or child characteristics that predict the use of such strategies. Understanding how parental emotion regulation and specifically, anger, impacts the use of such strategies has significant implications for the development of effective parenting interventions. Currently, young children (ages 5-9) are being recruited for a larger research study examining emotion regulation in three groups: children with temper outbursts, most of whom have ADHD, a psychiatric control group of children with ADHD without outbursts, and a non-ill comparison group. Among other measures, parents complete the Parent Anger Scale (PAS), Parenting Sense of Competence Scale (PSCS), and the Temper Tantrum Questionnaire. Data collection is ongoing. For the purposes of these analyses, we included only children in the temper outburst and ADHD comparison groups (N = 81). Across both groups, the number of routines changed to avoid tantrums was positively correlated with PAS scores ($r = .43, p < 0.001$). Further, parental efficacy was negatively correlated with the PAS scores ($r = -0.60, p < 0.001$). These results indicate that the angrier the parent is with their child, the more likely they are to alter their routines in order to avoid temper outbursts. Furthermore,

greater levels of anger are associated with a decreased sense of effectiveness as a parenting figure. These initial results have possible implications for the treatment of children with disruptive behavior disorders. For example, instead of helping their child learn to manage their own emotions, parents who express more anger and feel less effective may resort to changing daily routines. Thus, effective treatment may need to focus on the emotions of the parent in regards to their child, while also working on increasing self-efficacy, in order to induce change.

Poster - 125

Analyzing the Validity of the Frustrative Emotion Task for Children

Diana Kwon, Amy Roy*

Integrative Neuroscience, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill*

Perlman, Luna, Hein, and Huppert designed a task entitled the Frustrative Emotion Task for Children that aimed to induce negative mood, specifically frustration, to assess children's ER (2014). In 2014, Perlman and colleagues utilized this paradigm in conjunction with infrared spectroscopy (fNIRS) in efforts to measure prefrontal correlates of frustration in children who did not fit well for typical neuroimaging techniques. In that study, Statistical analyses of the results showed that the lateral prefrontal cortex increased in activity when the child was engaging in frustrating tasks. Furthermore, the results indicated that the middle prefrontal cortex increased in activity when the child was engaging in a non-frustrative, winning portion of the task. Thus, Perlman et al. (2014) found that the lateral prefrontal cortex was a positive region of the brain that supported the emotion regulation of frustration. The aim of the present study was to assess the validity of Perlman's et al.'s Frustrative Emotion Task for Children. In this study, video recordings of children between the ages of 4 and 9 years old were taken while they played the Frustrative Emotion Task for Children (FETCH). These video recordings were analyzed through Attention Tool Software, which recognized real-time facial expressions (Attention Tool-Facial Expressions, 2014). In doing this, we were able to measure the amount of frustration induced by the FETCH task, which allowed us to measure the validity of Perlman et al.'s frustration task.

Poster - 126

Latina Representation on Primetime Television Today

Catherine Carrejo, Mary Rothschild*

Communication and Media Studies, Fordham College at Rose Hill, Communication and Media Studies, Fordham College at Rose Hill*

Frequency of Latina exposure on television has increased significantly in recent years; in the 2002 primetime television season, Latinos comprised only 3.9% of all characters, while in the 2010 - 2013 seasons, Latinas constituted 11.8% of female supporting roles on television (Mastro 2005) (Negrón-Muntaner). In addition to a general increase in representation, Latinas are now starring in some of today's most popular shows, including ABC's "Modern Family" and "Once Upon a Time", The CW's "Jane the Virgin", and Fox's "Glee". Apart from portraying characters, Latina actresses have made strides in the television industry; Gina Rodriguez became the second Latina to ever win a Golden Globe award for Best Actress, and Sofia Vergara is the highest paid actress on television. While these strides toward equal and fair representation should not be discounted or ignored, an examination of Latina characters across primetime network television quite clearly shows that the quality of representation has not improved proportionate to the increase in quantity. Even shows such as "Jane the Virgin" and ABC's "Cristela", both of which feature a writing staff that include a much higher proportion of Latinos when compared to the rest of the television industry (Fernandez) (Negrón-Muntaner), have problematic representation of Latina characters. Latina representation on television still overwhelmingly relies on three main stereotypes: oversexualization as the mamacita, low socioeconomic status as the pobrecita and alienation as the immigrant. This paper explores the uses of these stereotypes in constructing Latina characters and how they limit Latina representation on television.

Poster - 127

Public Health System of Colombia: Management of Diseases and Health Care Services

Wajiha Khan, Hifza Ishtiaq, Gabrielle Robertson, Carla Romney*

Anthropology, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

In recent years, Cali, Colombia has become a site known for its medical tourism. While foreigners flock to the city for the vast array of medical procedures available to them, this research project aims to examine how issues of public health, which are affecting the local residents of Colombia, are targeted. The goal is to understand the nuances of the public health system in Colombia and to appreciate the different ways physicians and government officials aim to prevent and manage diseases. Public health policies also identify specific needs of the population in regards to health care services. The study investigates how the residents of Colombia from various social strata gain access to health care and the ways in which health care policies remain sensitive to the beliefs and health care needs of both the indigenous and underprivileged populations. Some areas of focus for this study also include the social perception of diseases such as AIDS and the effect of current communal issues, such as the drug wars, on the Colombian health system. Public health policies play a major role in contributing to the improvement of the population's overall health conditions but the Colombian Social Health System, much like the health system of any country, is not entirely perfect. This study outlines the benefits, strengths, and difficulties of public health practices in Colombia.

Poster - 128

A Vaccine Prepared with Inactivated HIV and Bacterial Adjuvant May Suppress HIV Progression in Human Trial

Silvana Morra, Sigmund McDonald, Justin Pool*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Lincoln Center, Biological Sciences, Fordham College at Rose Hill*

Human Immunodeficiency Virus (HIV) targets the cells of the immune system, specifically CD4+ T-cells, and compromises the body's ability to fight infection. Unfortunately, a successful vaccine for this virus has yet to be discovered. Research on Simian Immunodeficiency Virus, the virus found in non-human primates, has been conducted on rhesus macaque monkeys. Researchers recently administered a vaccination composed of inactivated SIV (iSIV) and a bacterial adjuvant to rhesus macaques. The combination of iSIV and bacteria induced the activity of a previously unknown type of CD8+ T-regulatory cells, which suppressed the activation of SIV infected CD4+ T-cells, blocked reverse transcription of CD4+ cells, and prevented viral replication of SIV. All orally vaccinated macaques were immune to the virus. A parallel study in human subjects could have a tremendous impact on HIV research. We hypothesize that a vaccine composed of inactivated HIV and *Lactobacillus rhamnosus* (LR) administered orally to HIV positive human subjects will prevent further viral replication and proliferation. Over a four-month period, 100 subjects would be used—50 HIV+ who would receive their usual antiretroviral therapy, and 50 HIV+ who would receive a vaccination composed of inactivated HIV (iHIV) and LR. We predict that the majority of subjects receiving the vaccine would exhibit increased CD8+ T-cell production and decreased CD4+ activation and viral replication. The success of this vaccine would contribute to the management of HIV in positive patients as well as prevent HIV and the acquired immune deficiency syndrome (AIDS).

Poster - 129

Working Mothers

Alexandra Carlin, Amelia Aubuchon, Kerry Rota, Alyssa Mayer, Alissa Pellegrino, Samantha Steimle, Mary Procidano*

Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill*

Examined the structure of meaning in personal narratives of working mothers, to identify characteristics of resilient development, or family-work synergy. Adulthood is uniquely associated with realizing “generativity” (Erikson, 1998): working mothers’ (and fathers’) central developmental task is to engage in generative behavior both at home and in the workplace. Despite the high prevalence of working mothers in the US, family and industrial/occupational literature (on women and men) show researchers’ almost exclusive focus on negative implications of working and parenting (e.g., mood spillover, role overload, and marital tension). In structured interviews, a group of approximately 40 demographically diverse women (age 26-60), describe one or more high point, low point and turning point in their experience of combining working and mothering. Interviews were transcribed, and, in qualitative and quantitative analyses, examined for meaning valence (positive or negative) and for 7 domains of personal meaning: social relations, mood, self-image, roles and responsibilities, sense of freedom versus constriction, outlook on life, and personal growth (Galette & Procidano, 2006). As expected, ostensibly positive (high point) and negative experiences showed both positive and negative meanings. The pattern of correlations among the meaning domains within each episode represents the episode’s “meaning structure.” We suggest that the convergence of multiple positive meanings, particularly in the construction of low- and turning-points represents “resilient development.” Results are discussed with recommendations that psychological interventions be designed with attention to the complex ways that people, including working mothers, construct and reconstruct significant life experiences that over time become self-defining memories.

Poster - 130

Effects and quality of cancer survivors’ relationships with healthcare providers

Ellen Zoe Sanders, Ava Gagliardi, Dakota Hernandez, Matthew Manzione, Tessa Santarpia, Emily Sullivan, Mary Procidano*

Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill*

This study of young-adult survivors of cancer investigated the importance of the quality of survivors’ relationships with healthcare providers. Previous research has demonstrated that cancer, even in remission, has lifelong impacts on survivors—not only through the “late effects” of treatments themselves, but also through processes such as disruptions of social networks and identity formation. In particular, research also has demonstrated that the quality of patients’ relationships with their doctors influences their receptivity and adherence to treatment. Approximately 90 young-adult cancer survivors were interviewed about their personal “cancer stories,” including several “self-defining memories” such as high point, a low point, a turning point, a vivid memory, and memories of important episodes of interpersonal support and non-support. They also completed online questionnaires. We examined spontaneously described memories related to medical caregivers, hypothesizing that a) survivors’ positive memories of their doctors and hospitals, would be associated with their attribution of positive meanings elsewhere in their cancer narratives; and that b) survivors’ negative memories of their doctors and hospitals would be associated with their attribution of negative meanings to their cancer experiences. These data are expected to provide constructive suggestions for ways that healthcare providers can help create more positive environments and experiences for cancer patients.

Poster - 131

Effects of Time Perspective on Academic Performance and Emotion in Immigrant Students

Caroline Silva, Mary Procidano*

Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill*

Describes a proposal for an investigation of the effect of “time-orientation acculturation” on children’s academic adjustment. Effects of acculturative stress on parents’ and children’s adjustment in a host culture have been demonstrated. According to Avnet and Sellier (2011), cultures vary in time orientation, in which clock time refers to –cultures that allow the clock to dictate their behavior, using objective units to determine when events should begin and end, while event time refers to cultures that take a more domineering role in relation to time, thinking of events as in relation to each other, rather than to time, both of which have implications for past, present, and future orientations. Some studies show that these differences present difficulties in the business world, but there is little to no research on how these differences effect the school environment and academic performance. Thus, this proposed study examines possible difficulties brought on when families immigrate to the United States with different time perspectives based on culture. Participants would include children who have immigrated to the United States within the past year. Children will complete a demographic survey including country of origin and time since immigration; and then the Zimbardo Time Perspective Inventory (TPI), which assesses culturally based beliefs about time; an integratedness survey, which measures individually-based views of connections among present, past, and future; and a measure of academic emotions. Information about grades also will be collected. Hypotheses: Both time Perspective (TPI) and time integratedness will predict GPA and academic emotion (which is shown to be very important to school success); however the magnitudes of the TPI relationships is expected to be significantly larger. Immigrants from clock-time cultures are expected to score higher in positive academic emotions than their event-time culture counterparts.

Poster-132

Say it Ain't So: Discovering why the Brooklyn Dodgers and New York Giants Left New York, and How Their Departure Mirrored a National Westward Migration in the Post-WWII Era

Dominic Kearns, History, Daniel Soyer*

History, Fordham College at Rose Hill, History, Fordham College at Rose Hill*

Business reigned supreme when the Brooklyn Dodgers and New York Giants left for California in 1957. New Yorkers are still bitter about the move, but it was a sound fiscal decision for Walter O’Malley and Henry Stoneham. The Giants lost money in 4 of their final 10 seasons in New York. Stoneham clearly said they would leave without a publicly funded stadium. So when Robert Moses refused to comply, the Giants prepared to leave. By contrast, the Dodgers were the highest grossing team in the National League, and garnered excellent fan support. O’Malley knew he could amass greater profits with a 50,000+ seat stadium in Brooklyn. But with Robert Moses controlling New York City planning, the Dodgers could not build a new stadium easily. Moses consistently undermined O’Malley’s efforts. Eventually Walter tired of the opposition and turned west. By the 1950s, San Francisco and Los Angeles had everything except professional baseball. With support from Republican mayors Norris Poulson and George Christopher, each city proved willing and able to find land for 50,000 seat stadiums. California was in the midst of massive population growth after World War II as the aerospace, manufacturing, and naval trade industries all moved in. For baseball to remain the national pastime, it also needed to move. From a financial standpoint, the decision to move west became quite simple for O’Malley and Stoneham. The Dodgers and Giants were simply two high-profile businesses that participated in a national westward migration.

Oral - 1

Gauging Success: The United Nations Mission in the Central African Republic

Kayla Robinson, Melissa Labonte*

Political Science, Fordham College at Rose Hill, Political Science, Fordham College at Rose Hill*

African peace and security is a perpetual issue on the Security Council docket. The mission in the Central African Republic (MINUSCA) is a prime example of the United Nations working to maintain and protect a very fragile peace. In December 2012 Muslim Sèlèka rebels launched a coup that overthrew President François Bozizé and targeted attacks against the Christian majority in the country. The Central African Republic is often referred to as a ghost state because it has never been able to establish a steady, stable structured government. Violence and political coups are not new to the country but the overwhelming sectarian violence is. It has placed the country and the United Nations in a “sink or swim” position. The current conflict in CAR has often been compared to the situation in Rwanda that led to their horrific genocide. The United Nations failed Rwanda and its people with UNAMIR; the current situation in CAR will test whether the UN and the Security Council learned from its mistakes and can take control of the failing nation. As missions and their mandates have evolved throughout generations from observation to the use of force it has become increasingly difficult to understand whether or not a mission will be or has been successful in fulfilling its mandate. In my research, I look at the situational difficulty facing the mission and the country, the actions taken by the Security Council and finally the operational function and dysfunction to gauge the current and future success of MINUSCA.

Oral - 2

Marginalized Women in Central American and Mexican LGBTQ Movements

Carlos Salazar, Oswaldo Hugo Benavides*

Physics, Fordham College at Rose Hill, Anthropology, Fordham College at Rose Hill*

Social movements in Central America and Mexico that focus on expanding rights and ending violence against sexual minorities have managed to achieve considerable political gains in the last thirty years. Several of these countries, such as Costa Rica and Mexico, recognize to some degree same-sex marriage and host impressive annual “gay pride parades.” However, these movements are still male dominated, both in terms of the images and goals of their campaigns. Women across the region organize in different ways to overcome these discriminations and to fight for their own liberties. The scope of this paper is to analyze how women navigate this space to voice their concerns and demands in a patriarchal society while analyzing the factors that contribute to gender-discrimination within these progressive social movements. Understanding how women overcome these obstacles of exclusion and prejudice is vital to gaining a holistic understanding of sexual and gender relations in Central America and Mexico. It is important to understand how social and cultural norms, stemming from historical legacies, permeate even into these movements attempting to eradicate these oppressive forces. This knowledge can then be used to learn how women overcome discriminatory practices and what methods can be fortified to further eliminate these sexist attitudes.

Oral - 3

Opera alla Francese: Nationalist Responses to Verdi's Les vêpres siciliennes

Katherine Delaney, Matthew Gelbart*

Music, Fordham College at Rose Hill, Art History and Music, Fordham College at Rose Hill*

Italian opera composer Giuseppe Verdi has long been considered the musical force behind the Risorgimento, owing almost entirely to aspiring Italian nationalists' adoption of his chorus "Va, pensiero" as a rallying cry. Verdi the man, however, had a much more varied and nuanced political history. Save one opera, his body of work demonstrates a marked concern not for political and nationalist themes, but rather cohesion throughout an individual work. Verdi's opera *Les vêpres siciliennes*, penned in Paris for the Opéra, provides an opportunity to examine the divide between Verdi's own politics and those of his audience. This study considers not just Verdi's own choices of what "Italian" and "French" aspects to use, but more importantly the reactions of Italian audiences and critics, both at home and abroad. The result was reactionary nationalism from all parties, usually tailored to benefit the nation of the reviewer. Audiences and reviewers were not so much concerned with the intention of the composer, but instead chose to impart their own interpretations and sentiments onto the work. My research on Verdi began with a focus on the disconnect between the Romantic artist and his audience in terms of genre perception, an idea proposed by my advisor, Matthew Gelbart, in his essay "Speaking of Music in the Romantic Era: Dynamic and Resistant Aspects of Musical Genre." This project emerged as a result of that research; my focus shifted naturally away from genre as I uncovered a markedly nationalist bent in the reviews I could not ignore.

Oral - 4

"I'm not thriving. I'm dying here": Globalization and Rootedness in Jamaica in Margaret Cezair-Thompson's "The True History of Paradise"

David Buchanan, Julie Kim*

English, Fordham College at Rose Hill, English, Fordham College at Rose Hill*

A major area of focus for critics of the International Monetary Fund has been an examination of the way in which the introduction of the IMF to Jamaica has led to a mourning of the loss of respect for and autonomy of the local land and how these losses have strengthened a literal and figurative valorization of roots. In this essay, I investigate how Margaret Cezair-Thompson's "The True History of Paradise" confronts this recent fetishization of local food and land that is propagated by critics of globalization by challenging traditional concepts of rootedness. The novel challenges the position that unwavering attachment to the local environment and local agricultural production are solutions to the problems posed by globalization. Conversely, Cezair-Thompson's novel indicates that one solution to the abuses of globalization lies in global migration, which inherently involves the cutting of physical local roots and the formation of new international networks. In conclusion, I will explore the reasons why Cezair-Thompson's own emigration from Jamaica was integral to the creation of "The True History of Paradise" and how her actions and her novel articulate a radically different definition of modern Jamaicanness.

Oral - 5

br00t: Detecting and preventing web-deployed botnet attacks

Aaron DeVera, Jack Andersen, Akash Bhatia, Jackson Brietzke, Ian Granger, Trevor Haskell, Andrew Hunt, Matt Hurley, Nicole Kucik, Elana Tee, Frank Hsu*

Economics, Fordham College at Rose Hill, Mathematics, Fordham College at Rose Hill, Finance, Gabelli School of Business, Business Administration, Gabelli School of Business, Computer and Information Science, Fordham College at Rose Hill, Computer and Information Science, Fordham College at Lincoln Center, Computer and Information Science, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill, Computer and Information Science, Fordham College at Lincoln Center, Computer and Information Science, Fordham College at Lincoln Center, Computer and Information Science, Fordham College at Rose Hill*

The attack vectors that hackers use to compromise computers are becoming increasingly more inconspicuous. Hackers use sophisticated tools such as botnets to command and control multiple computers, and

passwords can be hacked using mathematical deduction. A simple webpage visit can facilitate these attacks. In this paper, we present the design of a web server capable of botnet enumeration, as well as advanced multi-vector attacks on external machines over the web. This server hijacks the computing resources of the computers, or clients, visiting its website. With these additional resources, the server launches an attack on a predetermined target machine over SSH. The attack payloads feature brute-force password-cracking algorithms as well as dictionary-based guessing. The server divides or “chunks” the payloads and distributes them amongst the clients connected to the server’s webpage. The distributed workload of the attack payloads increase the power and speed of the attack, as well as disguise the server’s culpability in the attack. Performance data on distinct attack scenarios are analyzed. Obstacles that minimize the server’s efficacy are discussed, as well as suggestions on protecting against such an attack.

Oral - 6

Human Foot Traffic and its Impact on Arthropod Richness and Abundance

John Turner, Grant Knoll, Giuliano Pichini, Evon Hekkala*

Environmental Science, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill,
Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

As cities continue to expand in response to the growing human population, many species have been influenced by their new surrounding ecosystems. These new environmental pressures have a profound impact on the existing biodiversity and population dynamics. There has been emerging scientific interest in arthropod populations as a bioindicator of species richness and abundance within fragmented urban habitats. We plan to examine the impact of human foot traffic on arthropod diversity. We hypothesize that increased levels of human foot traffic will lead to lower levels of arthropod richness and abundance. Conversely, areas that have the least amount of human foot traffic will have the highest levels of arthropod richness and abundance. We combined random sampling of soil plots with pitfall and other traps to analyze arthropod demographics of green spaces on Fordham’s campus; focusing on areas which are frequented by students in addition to areas that are rarely contacted. We also measured the bulk density of each of our soil plots along with measuring the amount of pedestrians. We expect to collect bulk density data, arthropod richness and abundance, and the frequency of pedestrian traffic. Our results could potentially corroborate with other research findings that suggest human beings influence the shape and structure of urban communities of species

Oral - 7

Building Berlin's Identity on the Boulevard: Unter den Linden and the Kurfürstendamm on the Forefront of a Cultural Cold War

Richard Bordelon, David Hamlin*

History, Fordham College at Rose Hill, History, Fordham College at Rose Hill*

Almost every major European capital has a grand boulevard. Berlin has two: the Kurfürstendamm and Unter den Linden. In the aftermath of the Second World War, both boulevards had an incredible amount of damage from Allied bombing raids and street fighting during the Battle for Berlin. However, this damage created an opportunity for Berlin to re-define itself architecturally. Forming this new architectural identity would hopefully, in the minds of the East and West German governments, lead to a distinct and unified cultural and political identity that could help bolster support for each side’s mission in the Cold War. The two governments seized this opportunity to promote ideology, both cultural and political, through what was, essentially, a blank canvas. These two boulevards in particular provided a large canvas for the architects to fill. Streets were the centers of the planning of postwar Berlin. Unter den Linden and the Kurfürstendamm became the hubs of East and West Berlin, respectively, as a result of the plans crafted by each city’s government. In part using primary sources from the State of Berlin Archives, this paper, which focuses on the period 1945-1961 (when the Berlin Wall was constructed), explores how three separate actors: the state, business interests, and the people themselves influenced the reconstruction of these boulevards, the creation of Berlin’s new urban fabric, and the formation of a new identity for the city of Berlin and its people.

Oral - 8

Anti-Dumping Duties and the WTO Dispute Settlement Mechanism

Anthoula Vasiliou, Shushanik Hakobyan*

International Political Economy, Fordham College at Rose Hill, Economics, Fordham College at Rose Hill*

Dumping occurs when goods are sold in a foreign market below the normal market price and is universally considered an unfair trade practice. If a country finds that it is importing dumped goods, it may implement anti-dumping duties, a form of taxation, on the goods to counteract negative effects. The use of such duties is sometimes contested and many trade disputes have been filed on this issue with the World Trade Organization (WTO). This research study aims to determine what factors are most likely to lead a country that is targeted by an anti-dumping duty to file a trade dispute with the WTO. Data has been gathered and statistically analyzed from the WTO's trade dispute database, the World Bank's Global Anti-dumping Database, and government agencies from 1995 through 2013. The factors that are considered include the size of countries, the importance of the targeted product in total trade, the size of the duty, and the presence of free trade agreements. The use of anti-dumping duties and the filing of anti-dumping trade disputes have significantly increased in recent years. While this has spurred thorough studies of anti-dumping duties, there is still much work to be done in examining anti-dumping disputes. This study expands on the existing literature by extending the examined time period to include the most current data, while also exhaustively considering all countries that have been involved with the implementation of anti-dumping duties and the filing of anti-dumping related trade disputes to provide a thorough analysis.

Oral - 9

Emotions to Ethics: A New Interpretation of Motivation in Vegetarians

Margaret Desmond, Kathryn Krasinski*

Anthropology, Fordham College at Rose Hill, Anthropology, Fordham College at Rose Hill*

This paper addresses the tendency in both informal and scholarly dialogue when speaking about vegetarian motivation to consider two main reasons: ethics and health. This binary system overlooks the important motivational factor, emotion. Often ethics is a secondary factor for sustaining an emotional choice rather than a motivating factor. This research is based on ethnographic interviews with vegetarian college students seeking to understand why vegetarianism is such a widespread ethical choice. A number of vegetarians acknowledged that their primary motivation for ceasing to consume meat was based in feeling or emotion rather than ethics. This was later followed by a better understanding of the ethical arguments for and health benefits of a meatless diet, regardless, for many, not eating meat became a habit that sustained their vegetarianism rather than active ethical choice. In a Kantian sense, these individuals are not motivated by ethics; however, there is the chance that they switch to a more duty-based ethical decision process. This research has revealed a need to consider vegetarianism through this progression from an emotional choice to a more ethically aware decision or habit forming behavior in order to better understand human nature and morality. Emotional urges are not to be confused with ethics, as has occurred in many previous studies of vegetarians, but are a unique category as motivation. I argue that more precise language is necessary when discussing vegetarians as the motivating and sustaining causes may completely differ from one another in an individual and this has an effect on interpretations of human nature.

Oral - 10

Feminist Theory and the Chick Flick: Can women have it all?

Molly Shilo, Lewis Freeman*

Communication and Media Studies, Fordham College at Rose Hill, Communication and Media Studies, Fordham College at Rose Hill*

With the rise of neofeminism in the late 1990s into the 2000s, the film industry has seen a departure from its previous portrayals of women to the formation of what it means to be a modern woman. Despite this progress, the film industry continues to perpetuate traditional gender stereotypes by isolating women in domestic roles and hyper-

Oral Presentations

sexualizing them. Within the chick flick genre, a conundrum has emerged where women are either portrayed as super-feminine or non-feminine, creating a perceived imbalance in women's femininity. The genre's depictions are teaching women that they need to conform to societal expectations of femininity and womanhood. The issue of women's conformity in the workplace to meet the expectations of men are explored through the film *Legally Blonde* and *Miss Congeniality*. These films present the double-bind for women where they are treated as a "token" for being too feminine and disliked if they are too masculine. Ultimately, the modern chick flick, in its simultaneous representation of the new career woman and that of the traditional domesticated woman, has prompted women to wonder if they can have it all. Though pushing the boundaries of media representations, chick flicks are nevertheless negatively influencing women's perception of themselves.

Oral - 11

Christ's Humanity and Divinity in the Tokali Kilise: A Theological Approach to Understanding Cappadocian Cave Paintings

Elizabeth Zanghi, George Demacopoulos*

Art History and Music, Fordham College at Rose Hill, Theology, Fordham College at Rose Hill*

It is important when studying art found in the cave churches of Cappadocia to consider the Cappadocian Fathers and their theologies because of their long-lasting impact on Christianity throughout the region. Though one cannot conclude the methodologies of artists, it is still possible to approach the paintings historically and use other resources such as other authors' writings to help understand them. Since the paintings in the Cappadocian cave churches and monasteries were so religiously centered, it is important to use this approach to understand the theological significance tied to the artwork. This paper will use St. Basil's theological homily "On the Origin of Humanity" to explain the key differences between two depictions of Christ found in the Tokali Kilise, one of the cave churches located in the Göreme valley of Cappadocia.

Oral - 12

Synthesis and Characterization of Pyrazoline-Derived Dendrimers for the Encapsulation of Organic Pollutants Present in Water

Daniel Brauer, Amy Balija*

Chemistry, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*

Access to clean water is of utmost importance for all living creatures. The presence of organic pollutants in water, such as persistent organic pollutants (POPs) can cause serious health implications. Such pollutants are not degraded in environmentally or biologically, and thus must be removed via alternative means. Dendrimer encapsulation is one promising method of water purification due to the presence of large internal cavities in dendrimers that may entrap small molecules. While preliminary research into dendrimers has shown their efficacy at pollutant removal, the synthesis of such dendrimers has required multiple steps and tedious purification processes. This presentation presents a novel dendrimer synthesis pathway based on the preparation of substituted pyrazoline monomers. The proposed synthesis requires only three steps and eliminates the need for purification techniques such as column chromatography. The structures and properties of the resulting dendrimers will be discussed. Further, fluorescence studies will be used to evaluate the ability of the corresponding monomers and dendrimers to remove pyrene, a model organic pollutant, from aqueous environments.

Oral - 13

The Rivers and Stones of Oraioakastro

Jonathan Rooke, Mark Caldwell*

English, Fordham College at Rose Hill, English, Fordham College at Rose Hill*

The Rivers and Stones of Oraioakastro, a work of fiction, tells the story of the Tsarides, a family in the isolated village in northwest Greece of Oraioakastro in the late nineteenth-century. Stathis Tsarides, an old and childless shepherd, steals a neighbor's sheep. While slaughtering it, he discovers a newborn child inside her body. He adopts the child despite his supernaturally-gifted wife Eudocia's protests, naming it for Stathis' father, Panagiotis, a hero of the Greek War of Independence 1821-1832. As a child, Panagiotis begins to see the ghosts of his grandfather, the war hero and his great-grandfather, a stonemason who helped found Oraioakastro. As he approaches adulthood, a group of amateur soldiers pressure him to take up his grandfather's mantle and fight for Greece's freedom from the Turks. Stathis resists, wanting Panagiotis to inherit his role as shepherd of the flock. Tensions grow between Stathis, the soldiers, and the other villagers leading to the slaughter of the Tsarides flock and the murder of Stathis. Panagiotis's plan of vengeance fails, and Eudocia advises him to leave the village, sending him on an uncertain journey away from home and family.

Oral - 14

Listening to the Deaf: An Examination of Advice on Raising Deaf Children

Katherine Lease, Micki McGee*, Leonard Cassuto*

American Studies, Fordham College at Rose Hill, American Catholic Studies, Fordham College at Rose Hill*,
English, Fordham College at Lincoln Center*

While advice from experts, most often hearing, in the medical, educational and parental communities is valuable and worthwhile to consider, there is something missing. Why don't parents rely on the Deaf community themselves for advice? Parents of newly identified deaf children should deeply consider advice and insight from those within the Deaf community. By taking advice from Deaf adults, the long-term effects of parental decisions on deaf children can be applied to advise future parents who are faced with a multitude of decisions when raising a deaf child. Parents therefore need to abandon the disability and deficit model of deafness. Deaf adults, who are immersed in Deaf culture, are the best experts and authorities on giving advice to parents of deaf children. It is evident through advice from predominately hearing doctors, parents and educators that most literature in this field has focused on an outside perspective of deafness, coming from professionals in the normative sphere who think they have the best knowledge. It is much more valuable to focus on the perspective of those on the inside of the Deaf community who have the most accurate insight on what life in a hearing world is like. One valuable facet of advice comes from deaf young adults themselves; I collected this advice from my research study in which I interviewed 20 college-aged students, who provided telling advice on how they would instruct parents of deaf children. Through analyzing advice given to parents, there is a clear imbalance that favors the normative, hearing establishment. The hearing world exerts highly persuasive influence over hearing parents. Therefore, we need more Deaf advocates providing parents with genuine, realistic, and truthful advice. It is only then, that hearing parents can make properly informed decisions with accurate expectations of success.

Oral - 15

Development of Nanoscale Drug Delivery Systems to Target Breast Cancer Cells

Alexandra Brown, Yoliem Miranda, Ipsita Banerjee*

Biological Sciences, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*

Many chemotherapeutic drugs are well known for the treatment of breast cancer. Although effective, these drugs also damage noncancerous cells. Encapsulating these drugs into nanoscale drug delivery vehicles has the potential to reduce side effects and allow for targeted delivery. We have developed new nanoscale drug delivery systems that were loaded with the antitumorogenic drug Tamoxifen to specifically target breast cancer cells. The

Oral Presentations

drug delivery vehicles (DDVs) were developed by conjugation of boc-protected amino acids with polymers such as PEG or PEO followed by functionalization with gold nanoparticles and folate or with specific estrogen binding peptides to target overexpressed folate or estrogen receptors respectively. The attachment of each layer was assessed by FTIR spectroscopy as well as electron microscopy. The thermal properties of the vehicles were examined by DSC analysis. The nanoscale DDVs successfully encapsulated Tamoxifen and showed sustained release over a period of time. Cell proliferation studies showed that the DDVs themselves were not cytotoxic but when loaded with Tamoxifen, the cytotoxicity was significantly increased indicating the release of the drug into the cells. The binding interactions of the DDVs with the cells was also studied by surface plasmon resonance (SPR) studies. SPR imaging showed a clear difference in binding interactions between normal cells and cells with over-expressed folate.

Oral - 16

Synthesis and Characterization of Di-Substituted Pyrazoline Monomers and Dendrimers

Cara McDavitt, Amy Balijs*

Chemistry, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*

Presently, hazardous compounds continue to pollute valuable water resources with increasing frequency. Current methods of water purification lack the efficacy necessary to completely remove small molecule pollutants. New means of water purification must be developed. Dendrimers are known to be particularly useful for encapsulation because of their internal cavities. Past research has indicated that dendrimers possess the ability to remove impurities from aqueous solutions. However, novel dendrimer families need to be developed to examine how varying the composition impacts the effectivity of the corresponding dendrimer. This research project focuses on designing dendrimers from readily prepared or commercially available starting materials to create low-cost and environmentally sustainable organic materials able to remove small molecule pollutants from aqueous resources. In particular, this research focuses on the creation of di-substituted pyrazolines as monomers for novel dendrimers. The synthesis and characterization of these monomers and corresponding dendrimers will be discussed.

Oral - 17

Self-Esteem, Sleep, Physical Activity, and Academic Performance among Minority Adolescents

Hadley Brochu, Tiffany Yip*

Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill*

Self-esteem, sleep, and physical activity have all been shown to relate to academic performance in adolescent populations. However, there are several approaches to the study of sleep and physical activity. Often, research focusing on sleep and academic outcomes focuses on sleep duration; however, the current study expands upon this and examines sleep efficiency and sleep quality. Additionally, two facets of physical activity—total activity and total high intensity activity are examined. The current study examines if physical activity and sleep influence the association between self-esteem and academic achievement in adolescents of racial/ethnic minority groups. The findings of this study could have major implications for the programs and policies implemented to improve academic achievement in minority groups. Participants were 50 males from a private New York City high school, grades 9-12, who completed a two-week study. As part of this study, participants wore FitBit Flexes, which are wristbands that monitor objective health data, including sleep duration and efficiency, as well as physical activity levels. They also completed pre- and post-study surveys that assessed several variables, including self-esteem, sleep quality, and health behaviors. Regression analyses indicated that there was a significant main effect of both high intensity activity, as well as total activity, for academic achievement. This finding indicates that both the amount and type of physical activity that an adolescent engages in has the potential to impact their academic achievement. This finding supports the promotion of physical activity in adolescents, as a means of not only addressing health concerns, but academic as well.

Oral - 18

An Investigation of Portrayals of Christianity on Reality TV

Marissa Dow, Kimberly Casteline*

Communication and Media Studies, Fordham College at Rose Hill, Communication and Media Studies, Fordham College at Rose Hill*

There have been many investigations on reality television, some of which have peripherally discussed the influence of religion on reality programs' overall impact. In Engstrom and Semic's "Portrayal of Religion in Reality TV Programming: Hegemony and the Contemporary American Wedding" the authors investigate the portrayal of religion in The Learning Channel's show A Wedding Story. The authors express that A Wedding Story "offers a ready source of examining the way in which media treats, albeit through edited portrayals, religion as a narrative element in reality television" (Engstrom and Semic, 145) concluding that religion is presented in the most non-threatening hegemonic manner. However, since Engstrom and Semic published their research, religion has become ubiquitous on reality television. There has been a remarkable evolution of the presentation of religion on reality television programs that deserves further investigation due its growing complexity. Popular programs like Dog the Bounty Hunter show their protagonists praying; Amish in the City followed Amish youth in a Real World format; and God or the Girl tracked four men debating entering priesthood. Whereas religion was previously a marginalized element, it has now taken a central focus in various television programs on main stream reality networks. This project looks at several contemporary programs that specifically deal with life within Christian families: Preachers of LA, Preachers Daughters, Preacher's Exes, Mary Mary, and Match Made In Heaven. This project will use a combination of content analysis and online ethnography to examine views of Christianity within the context of reality TV.

Oral - 19

More Than Medication: Understanding the Relationship Between Colombian Indigenous Medical Practices and the Colombian People

Margaret Desmond, Brandon Mogrovejo, Paul Supple, Tasnima Elahi, Carla Romney*

Anthropology, Fordham College at Rose Hill, African Studies, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

This project considers the relationship between non-Western medical practices and the populations of Colombia, as well as the attitudes of current allopathic medical students to this issue. There are two major populations in Colombia that use non-Western medical practices, Afro-Colombians and indigenous peoples. Race and class are tightly connected in Colombia and there seems to be a direct correlation between members of the lower class and the use of non-Western medicine, as many members of these populations find themselves struggling with current health care options. Though indigenous practices are not widely integrated with Western medicine in Colombia, medical students recognize the value of learning more about them, as expressed in interviews conducted at Pontificia Universidad Javeriana in Cali, Colombia in March, 2015. At present, they have few opportunities to learn about these practices. However, the medical students' interest was based in the possibility that they would treat indigenous patients rather than a desire to use indigenous practices for all patients. This response, as well as information on indigenous medicine practices and rituals and the different types of herbal medicines that are used to treat common human illnesses, indicates that there is potential for greater usage of herbal medicine in medical treatment. In conclusion, the relationship between indigenous medicine and modern medicine in Colombia is only beginning the process of integration due to a history of cultural divisions between those who practice or have access to Western medicine and those who are part of indigenous or Afro-Colombian cultures. As cultural barriers continue to break down, the integration of Western and indigenous medicine is likely to increase for the benefit of all members of Colombian society.

Oral - 20

Synthesis and Characterization of Novel Poly(delta-decalactone-L-lactide) Block Copolymers for the Encapsulation of Organic Pollutants

Erica DePalma, Amy Baliija*

Environmental Science, Fordham College at Rose Hill, Chemistry, Fordham College at Rose Hill*

Water is vital for all living organisms on Earth. The removal of contaminants and toxins from water has become a goal for many chemists looking to provide usable water for the growing human population. Current methods to remove organic pollutants from water are becoming ineffective and thus new approaches to extracting pollutants from aqueous environments must be developed. One alternative is the use of polymers which contain hydrophobic sections which can remove hydrophobic compounds from water. In this research, a series of poly(delta-decalactone-L-lactide) block copolymers have been synthesized using differing molar ratios of environmentally benign delta-decalactone and L-lactide monomers. The poly(delta-decalactone) portion is proposed to facilitate removal of organic pollutants due to the hydrophobic carbon sidechain. In this presentation, the synthesis and characterization of various polymer composition by modifying the amount of L-lactide will be presented. Experimental data will be presented how effective these polymers are in removing photochromic dyes from aqueous environments.

Oral - 21

Training Cost Optimization-Based Cost-Sensitive Learning

Jessica Timko, Gary Weiss*

Computer and Information Science, Fordham College at Rose Hill, Computer and Information Science, Fordham College at Rose Hill*

In most real-world settings, the misclassification costs between classes are not equal. For example, in domains such as medical diagnosis the cost of a false negative is usually many times that of a false positive. When these misclassification costs are known it is generally believed that supplying the actual cost information to cost-sensitive classifiers will produce the best results. This research explores the relationship between the supplied cost information and classifier performance. Surprisingly, the results indicate that the best classifier performance is often not achieved when the actual (i.e. true) cost information is used. The Training Cost Optimization (TCO) method developed in this research exploits this result by dynamically determining this best cost information to use during the cost-sensitive learning process (a hold-out set ensures that the parameter tuning process does not unfairly bias the results). Experiments are conducted using fourteen data sets, six classification algorithms, and 11 different “actual” costs and the results indicate that the TCO method outperforms the standard strategy of always using the true cost information by more than two-to-one and yields an average reduction in total cost of nearly 5%. The TCO method shows great promise in improving cost-sensitive learning performance.

Oral - 22

Gait Abnormality Detection Using Smartdevice Sensor Data

Isaac Ronan, Julia Getsos, Gary Weiss*

Computer and Information Science, Fordham College at Rose Hill, Computer and Information Science, Fordham College at Rose Hill, Computer and Information Science, Fordham College at Rose Hill*

The Wireless Sensor Data Mining (WISDM) Lab focuses primarily on the use of mobile device sensor data in a variety of contexts. These include successful applications in activity recognition and biometric identification. The most recent endeavor employs the use of smartphone and smartwatch sensor data as a means of understanding and detecting gait abnormalities in humans. Accelerometer and gyroscope sensors are continuously sampled from the devices while a subject walks. The resulting signals are then subjected to several preprocessing techniques, including signal smoothing via a low pass filter and frequency manipulation using Fourier Analysis. These processed signals are then analyzed heuristically in an effort to identify those attributes that are common across the data sets corresponding to a given abnormality, yet also sufficiently unique to separate them from different abnormalities. Such observations are then quantified and transformed into features using a variety of statistical measures and distance metrics, rendering them usable in the context of data mining. These features can be used to build classifiers and models, which facilitate the comprehension of various abnormalities from a quantitative standpoint, as well as assist in their detection and identification. These low-overhead methods can be implemented in a smartphone and smartwatch app that simply and effectively aids medical professionals in their diagnoses of patients' disorders.

Oral - 23

Smartwatch-based Biometrics via Gait Analytics

Andrew Johnston, Gary Weiss*

Computer and Information Science, Fordham College at Rose Hill, Computer and Information Science, Fordham College at Rose Hill*

The recent creation of smartwatches has added another dimension to mobile-based biometric solutions. With the inclusion of accelerometers, gyroscopes, and other sensors typically found in smartphones, the smartwatch introduces new possibilities for biometric authentication. It has already been established that a smartphone placed in a person's pocket can be used to create a gait-based signature against which samples can be compared for authentication. We demonstrate that this type of signature generation is also possible with smartwatches via similar techniques. To implement our system we collected walking data from participants from both accelerometer and gyroscope sensors, and bin the samples into a 43-feature tuple which represents one half-second of data. For identification, we build a classifier that predicts the identity of a user from the entire set using these samples. Similarly, for authentication, we build a classifier based of a specific user's data as well as two other random users for counterexamples. This work is notable because it offers an unobtrusive way of managing biometric-based authentication that does not have the orientation-related problems phone-based systems have. Additionally, we discuss the applications of this work as it pertains to cybersecurity, specifically its role in a delegated authentication system.

Oral - 24

Fordham Road: The Road Less Traveled?

Rebecca McSween, Troy Tassier*, Jason Barr*

Economics, Fordham College at Rose Hill, Economics, Fordham College at Rose Hill*, Economics, Rutgers University*

Directly outside Fordham's gates is one of the largest commercial districts in New York City, the Fordham Road shopping corridor. While Fordham Road's outdoor mall enjoys high foot traffic and ease of access to public transportation, it is not patronized by all who live and work nearby. A 2014 consumer study by consultant JGSC Group suggests that Fordham Road loses \$86 million in shopping revenue and \$36 million in dining revenue per

Oral Presentations

year from residents, students, workers, and other groups. In response to these findings, the current investigation explores how Fordham Road's business owners and community leaders can address the substantial unmet demand. Are there differences in household income between those who are already satisfied patrons and others who are dissatisfied with Fordham Road's restaurants and stores? Do the shopping and eating preferences of satisfied and dissatisfied individuals differ? While significant differences were expected between the incomes and preferences of satisfied and dissatisfied individuals, preliminary results indicate that the groups are similar. Therefore, if Fordham Road responds to the appetite of shoppers for full-service restaurants and higher quality merchandise, existing satisfied shoppers will likely patronize those new establishments as well.

Oral - 25

New Amsterdam, New York: A Transatlantic Social History

Peter Lacerenza, Daniel Soyer*

History, Fordham College at Rose Hill, History, Fordham College at Rose Hill*

In "New Amsterdam, New York: A Transatlantic Social History," I explored the complicated social history of late 17th and early 18th century New York during the periods of Dutch and English colonial rule. Focusing mainly on ethno-religious relations between groups like Lutherans, Catholics, Jews and members of other protestant sects like the Dutch Reformed Church, I used recent scholarly work on Dutch and English social history of the Early Modern era to provide a greater context for how these groups interacted in the mother countries. For the Dutch, strong traditions of religious connivance and tolerance were restricted in the formative years of the colony. For the British, quite the opposite was true: the volcanic tensions of the Reformation, Civil War and Revolution had created a divisive religious climate at home, only to procure a pluralistic colonial enterprise in North America. Given the complications of these narratives—which were largely shaped by localized policy, prolonged transatlantic communication, and political shockwaves in both the eastern and western hemispheres—I worked to reevaluate the colony's various instances of religious confrontation with consideration of the colony's more intimate social interactions and day-to-day happenings. Ultimately, the aim of my project is to understand how early New Yorkers operated amongst the various, transplanted communities that were essential to the city's establishment as "The Melting Pot."

Oral - 26

Activity Recognition using Smartwatch Data Sensors

Andrew Schreiber, Catherine Gallagher, Gary Weiss*

Computer and Information Science, Fordham College at Rose Hill, Computer and Information Science, Fordham College at Rose Hill, Computer and Information Science, Fordham College at Rose Hill*

Can we identify the activities one is doing through use of their smart phone and smart watch? This is the general question of Fordham's WISDM (Wireless Sensor Data Mining) Lab. We attempted to answer this question by integrating smart watches into the WISDM project. We used both smart phones and smart watches to collect data from approximately twenty subjects. Through the use of standard and novel data mining algorithms, we found patterns and correlations in the data that will allow us recognize what the user is doing with reasonable accuracy. Currently the performance of the WISDM lab is 98.7 percent using only personal models (models made using only the users labeled data) and 75 percent using impersonal models (models created using other peoples labeled data). Our work was mainly intended to improve the impersonal models. The research is important because through the use of accurate activity monitorization, we can provide health and lifestyle information that the user will then be able to use to improve their own life. Some of this information includes calories burned and time spent doing certain activities, calculated in a more accurate fashion than other available health tracking devices. This information, directly at the user's fingertips, will help fight obesity and help create a healthier country.

Oral - 27

Modeling of Lipid Bilayer Fusion

Brigid Mulroe, Rolf Ryham*, Jay Hineman*

Mathematics, Fordham College at Rose Hill, Mathematics, Fordham College at Rose Hill*, Mathematics, Fordham College at Rose Hill*

The objective of this research was to devise a mathematical model to simulate the process of fusion between two lipid bilayer membranes. In membrane fusion, a tunnel, called a “pore,” forms between two parallel membranes and opens up to bridge the two spaces. There are currently no precise measurements of the dynamics this process, and one would like to quantify the energies involved in fusion to be able to understand how proteins facilitate fusion in biological cells. The two main mathematical challenges in modeling fusion are dealing with the topological change that occurs when two membranes fuse and tracking the lipid orientations along the deforming membrane surface. To address these two challenges, we introduced a phase field variable representing the shape of the surface and an argument field representing the alignment of individual lipids. The parameters were discretized using finite differences so that we could work with them numerically. We were interested in minimizing the Helfrich energy of membrane shapes, which was novel because energy depended on both the membrane curvature (the splay of the individual lipids), and the alignment or “tilt” of the lipids relative to the membrane surface. To calculate and minimize energy using steepest descent techniques and Newton’s method, we wrote a program in C, which we first implemented to minimize splay and tilt energy for topologically spheroidal and toroidal shapes. Later, we added additional energy functionals to impose volume and surface area constraints.

Oral - 28

New Atheism: Nonbelievers on Offense

Canton Winer, Micki McGee*

American Studies, Fordham College at Rose Hill, American Studies, Fordham College at Rose Hill*

Since the height of the Cold War, atheists have been one of the United States’ least-trusted groups. Exclusionary attitudes toward atheists are strong, often outpacing prejudices held against Muslims, possibly America’s next least trusted group. Polling shows that Americans were more likely to say they would not vote for an atheist than any other group. Atheophobia (fear of or intolerance toward atheists) is a widespread and acceptable prejudice in much of American public life. A slew of factors has contributed to atheists’ failure to gain acceptance from the American public. The reasons are not simply lack of numbers, the United States’ status as a so-called “Christian Nation,” or even a legal code biased against nonbelievers. Instead, these factors — and others — contribute to one larger cause: the absence of an identity-oriented atheist movement in the United States. But this movement may be emerging — and “New Atheism,” a fledgling social movement that favors an overtly confrontational brand of atheism and secularism, may be planting the seeds.

Oral - 29

The Determinants of Youth Protest: A Case Study on Ukraine and the United States

Fawziyah Siddiqui, Olena Nikolayenko*

International Political Economy, Fordham College at Rose Hill, Political Science, Fordham College at Rose Hill*

Protest activity is a central medium of youth political expression. Although the literature on youth protest is expansive, there are few comparative studies on the determinants and impediments of youth protest in democratic and transitional states. Moreover, there is little consensus in the literature as to why some nations have a greater protest culture than others. While most scholars agree on the influence of secondary education, socioeconomic status, and age, there is a significant gap in the literature linking the interplay of national-level and individual-level determinants of protest. Thus, this research seeks to explain the phenomenon of youth protest on both a national and individual level using the case studies of Ukraine and the United States. The findings suggest that the determinants of youth protest are strongly associated with a politically conscious upbringing, quality of governance, and the degree of state centralization.

Oral - 30

From the Military Base to the College: Veteran Students' Choice of a Major

Famim Huq, Olena Nikolayenko*

Political Science, Fordham College at Lincoln Center, Political Science, Fordham College at Rose Hill*

This study examines how military service influences veteran students' choice of a college major. Previous research has shown that veterans tend to have a higher sense of civic duty than the average citizen. One outcome of this might be a higher rate of veterans' political participation. Another consequence of a heightened sense of civic duty might be veterans' choice of a social science major. The pursuit of a social science major might empower veteran students to tackle real-world social problems and embark upon a meaningful career upon graduation. To date, however, most empirical research has focused on veterans' political behavior and under-studied their pursuit of college education. This project hypothesizes that veteran students are more likely to choose a social science major than a business or a science major. The data for this research come from in-depth interviews with twelve veteran students attending Fordham University Lincoln Center. The sample is split into two groups: half of respondents major in social sciences and the remainder of respondents major in other disciplines. This research seeks to contribute to scholarship on sociology of education by analyzing an understudied population. It is important to understand how military experience shapes veterans' thinking about their career paths and their engagement in public affairs.

Oral - 31

Facing Down The Leviathan: Political Themes in Andrey Zvyagintsev's Award Winning Film

Andrew Mark, Olena Nikolayenko*

Political Science, Fordham College at Rose Hill, Political Science, Fordham College at Rose Hill*

This study examines the inherent struggle of the individual against the overwhelming power of the state depicted in the Russian film Leviathan. It is named for and philosophically rooted in the book Leviathan by Thomas Hobbes. The film also refers to the Bible's book of Job and analyzes the relationship between religion and politics. Directed by Andrey Zvyagintsev, this film won best foreign language film at the 2015 Golden Globes and has attracted significant media attention in Russia and abroad. The political significance of this film lies in the fact that it is well endowed with symbolism and metaphors which illustrate the complexity of state-society relations. Set in Russia's far north, the film creates a stark existential climate in which a corrupt mayor unjustly deprives a hardworking mechanic of his property. It is a film concerning not only the Russian people but also individuals everywhere who confront indifferent political systems whether they are authoritarian or democratic. Upon the analysis of symbolism and imagery presented in this film, this study concludes that a dilemma exists between whether the individual should risk adherence to a government and be deprived of a great number of freedoms or whether it is better to strive for a return to the state of nature and risk having their freedoms deprived by other individuals instead. This analysis contributes to the ongoing philosophical debate concerning how much power the citizenry can entrust to the state before it becomes a palpable detriment to the liberty of the individual.

Oral - 32

Women's Use of Direct Action Tactics in Ukrainian Protests

Maria DeCasper, Olena Nikolayenko*

Philosophy, Fordham College at Rose Hill, Political Science, Fordham College at Rose Hill*

This study examines why women participated in the EuroMaidan movement, a protest movement in Ukraine against the corrupt Yanukovych regime in the winter of 2013-2014. Traditionally, women in Ukraine enjoy limited gender equality, do not serve in the army, and rarely partake in violent altercations. However, a women's squad called « Zhinocha Sotnya » was created during the EuroMaidan. The organization was comprised of women who went beyond the traditional roles of volunteers and nurses. Instead these women were ready for direct, sometimes violent action. This study uses original data collected from in-depth interviews with former movement participants, along with statistical data compiled by the United Nations and Ukraine's Department of Youth. The results of the study suggest that female activists joined the woman's squad to reassert their presence on the protest site and place gender issues on the public agenda. Women's involvement in the EuroMaidan signifies a new trend in protests. Interviewed members of "Zhinocha Sotnya" joined the women's squad despite their marital status, which is often cited as a hindering element in women's involvement in protests. The study suggests not only a greater involvement of women in direct action protests, but also a growing political awareness among women. The study contributes to our understanding of civil society, gender and politics in Eastern Europe.

Oral - 33

After the Bridge: Gullah Resistance to Development on Hilton Head Island

Daniel Matthews, Mark Naison*

History, Fordham College at Rose Hill, African Studies, Fordham College at Rose Hill*

This thesis aims to examine the development of Hilton Head Island since the 1950s and how the response of Gullah communities has both facilitated and opposed these economic and cultural incursions. As a result, it will explore the culture of Gullah land ownership where it is most threatened, namely Hilton Head, and the multifaceted movement to preserve Gullah culture and agency in the face of outside development and intrusion. The construction of a bridge in 1953 marked the first permanent and reliable connection between the island and mainland South Carolina, and investors and real estate developers have proceeded to turn the Southern half of the island into a profitable resort location, forcing Gullah people to the North. This project will include investigation into the movement of Gullah people to maintain ownership of their land through Limited Liability Companies as well as the more politically-minded movements to preserve Gullah culture through education, political activism, and historically-minded tourism. The analysis will focus on the individual motivations and local context behind these different movements, using Hilton Head as a case study. This will provide insight into the effect that displacement is having on the Gullah community, and help connect this displacement story to that of people of color throughout the United States.

Oral - 34

"So Old it Looks Like New": Catholic Worker Movement Uses of Scripture as a Model for Activism

Kaitlyn Flanagan, Brenna Moore*

Theology, Fordham College at Rose Hill, Theology, Fordham College at Rose Hill*

This project investigates how the Catholic Worker Movement's founders, Dorothy Day and Peter Maurin, used scripture as a model for activism. Although Maurin is typically remembered as the primary ideological force behind the movement, Day's use of the scriptures in her own writings was instrumental in forming the ideological framework for the movement. The difference in Day's and Maurin's uses of scripture becomes apparent in studying both their personal writings, and their writings in the Catholic Worker newspaper. Dorothy Day's contribution primarily takes shape in the form of direct references to biblical passages that emphasize personalistic ideas of justice and love of neighbor. In contrast, Peter Maurin tends to indirectly make reference to biblical passages (like the Sermon on the Mount) in his own "easy essays"—original poetry that critiques oppressive social structures and

Oral Presentations

outlines his ideas for change. Where Dorothy Day's writing often explicitly makes use of the biblical text, Maurin's use of Scripture is subtler and consequently serves as a background for the ideas he presents for the philosophy behind the movement. In my research, I found that the ways in which Peter Maurin and Dorothy Day used and interpreted Scripture in their own writings set the stage for the ways that the Catholic Worker movement has continued to make use of the Bible as both an inspiration and model for activist efforts against poverty, hunger, and injustice since the movement's inception.

Oral - 35

The Role of the Highly Conserved Isoleucine–Leucine Motif of Human Papillomavirus Minor Capsid Protein L2 in Infection and Intercellular Trafficking

Fenizia Maffucci, Patricio Meneses*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Human papillomavirus (HPV) is a small, non-enveloped deoxyribonucleic acid (DNA) virus that infects skin or mucosal cells. The viral capsid consists of two virally encoded capsid proteins, major capsid protein L1 and minor capsid protein L2. Much is known about the role of the major capsid protein L1 compared to what is known of the role of the L2 protein. Minor capsid protein L2 appears to play a role in the translocation of the viral DNA to the nucleus. L2 has been seen to interact with cellular molecule Syntaxin 18, an endoplasmic reticulum (ER)-localized SNARE protein that directs the fusion of vesicles that are retrograde transported from the Golgi apparatus. L2 residues 40-44 (DQILQ in HPV16) are highly conserved, and replacement of this 5 amino acid stretch with an EcoR1 site results in a virus particle that does not interact with Syntaxin 18, does not traffic to the endoplasmic reticulum, and is not infectious. I performed site-directed mutagenesis to create three different mutant HPV16 pseudoviruses: I to A, L to A, and IL to AA. HPV16 pseudoviruses with following mutations in L2 are not infectious. This finding underscores the significance of the isoleucine-leucine motif in intracellular trafficking. By identifying the mechanism by which L2 and auxiliary cellular molecules direct the entry, sorting and trafficking of HPV, targeted and innovative approaches to prevent infection by many or most HPV genotypes can be developed.

Oral - 36

Faith and Rebellion: Existentialism in the Works of Dostoevski

Bruno Cassara, Philip Sicker*

Comparative Literature, Fordham College at Rose Hill, Comparative Literature, Fordham College at Rose Hill*

Dostoevski is frequently cited as one of the foremost existentialists, and yet existentialism has always been nebulous. In my presentation I will argue that the struggle between faith in the Christian God and a rebellion against the absurdity of the universe is the existential aspect of Dostoevski's oeuvre. My analysis will focus on two works: "Notes from Underground" and "Crime and Punishment," which will be compared to one another as well as to Albert Camus' "The Myth of Sisyphus" and several of Nietzsche's works. I will ultimately argue that while several of Dostoevski's themes line up with traditionally existentialist concepts such as Camus' absurdism and Nietzsche's "ubermensch," Christian faith, which in Dostoevski's works frequently begins with the encounter with a woman, adds a dimension that Camus and Nietzsche cannot take into account.

Poster-133

Roles of phosphatidylinositol signaling in the regulation of MYOGEF activation and localization

Kevin Jimenez-Cowell, Dougan McGrath, Qize Wei*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Rho GTPase signaling plays a central role in the regulation of tumor cell migration and invasion. As key components of Rho GTPase signaling, Rho GTPase proteins such as RhoA, Rac1, and Cdc42 are largely activated by guanine nucleotide exchange factors (GEFs). We have found that nonmuscle myosin II-interacting guanine nucleotide exchange factor (MYOGEF) is implicated in promoting breast cancer cell invasion through activation of RhoA and RhoC. MYOGEF contains a Dbl-homology (DH) domain and a pleckstrin homology (PH) domain. It has been further demonstrated that intramolecular interactions between the DH domain and the carboxyl-terminal region of MYOGEF act as an autoinhibitory mechanism to regulate MYOGEF activation. An objective of our current research is to identify the upstream regulatory signals that can activate MYOGEF through relief of the autoinhibitory intramolecular interactions between the PH domain and the carboxyl-terminal region of MYOGEF. It has been well established that the PH domain can bind to phospholipids and participate in protein-protein interactions, thus leading to the activation of GEFs through targeting GEFs to proper subcellular locations such as the cell membrane and cytoskeleton. The goal of this study is to understand how the binding of phospholipids to the PH domain of MYOGEF contributes to the regulation of MYOGEF activation and localization during breast cancer cell migration and invasion.

Poster-134

Diversity of mhc class I alleles between avian malaria-infected passerines and non-infected passerines

Gloria Siclari, Sergios-Orestis Kolokotronis*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Major histocompatibility complex (Mhc) genes are known to play integral roles in pathogen resistance. Many studies have investigated the association between Mhc class I alleles and the prevalence of blood parasites in different passerine species. These studies also used different primer sets to amplify the coding sequence of a particular Mhc gene, but there is limited research done that evaluates which primer sets are more effective at capturing the desired Mhc gene. This study assesses how successful different primer sets are at amplifying the third exon (~274 bp) of Mhc class I genes, which encodes the peptide-binding region of the Mhc molecule. We investigated Mhc genes from blood samples of six avian malaria-infected birds and six non-infected birds in two different passerine species, European Starling (*Sturnus vulgaris*) and Field Sparrow (*Spizella pusilla*), previously collected in urban and rural areas in New York, New Jersey and Pennsylvania. The total sample size will thus be 24 birds. Subsequent comparisons will be made between infected and non-infected passerines to assess whether certain Mhc class I alleles are associated with parasite resistance. The results of this study will contribute to my senior thesis, building on my prior work completed under the guidance of Ph. D candidate Dawn Fariello, student of Fordham University Graduate School of Arts and Sciences.

Poster-135

Untitled: Amanda Pell Stand-up Comedy Thesis Project

Amanda Pell, Kerri Walsh*

American Studies, Fordham College at Rose Hill, English, Fordham College at Rose Hill*

Over the course of my experiences at *The Daily Show with Jon Stewart* and *The Colbert Report*, as well as my own individual experiences as a stand-up comedian, I have come to understand the specific potential that stand-up comedy holds as a vehicle for “speaking truth to power,” that is, comedy’s unique ability to illuminate realities

in ways that are both clearer and more powerful than the straight delivery of facts and analyses. This thesis seeks to apply this principle, by converting lessons and concepts learned throughout my college education into a stand-up comedy format to be written, fully produced, performed for a real audience, filmed, and edited into a professional-quality stand-up special. My subgoal is to apply and/or defy the findings of my fall thesis (a theoretical analysis of the effects of gender politics and sexual threats on female stand-up comedians) first-hand as a female performer. Ultimately, I plan to prove my ability to convert high-minded, intellectual concepts into accessible, understandable and genuinely funny stand-up material that transcends historically gendered stereotypes for stand-up comedians.

Poster-136

The Economic Impact of El Nino on Commodity Investment

Christopher Steinacker, Giacomo Santagelo*

Economics, Fordham College at Rose Hill, Economics, Fordham College at Rose Hill*

The El Nino Southern Oscillation (ENSO) weather system across the Pacific Ocean impacts commodity production and prices around the world. The purpose of this study is to determine the impact El Nino has on an evenly weighted portfolio of commodities for investment purposes. A multiple regression analysis will be used to determine the statistical significance of El Nino on the monthly spot price returns of the portfolio for each decade from 1960 through the most recent El Nino event ending in 2010. Multiple regression analysis is a study on the relationship between one dependent variable and more than one independent variable, in this case the portfolio's real monthly return being the dependent variable. In addition to El Niño events, additional explanatory variables include historical crop yields, world GDP, interest rates, the inflation rate, US dollar index and oil prices. Through this analysis, this paper will address El Niño's direct impact on a portfolio of commodity prices.

Poster-137

Ecology and Genetics of Sunfish Nesting in Calder Lake

Patrick Alford, Evon Hekkala*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Hybridization and backcrossing are processes of genetic exchange that are significant contributors to evolution in natural environments (Costedoat, 2007). As a result of nearly identical reproductive behavior between two species of sunfish, it has been suggested that these sunfish have increased hybridization potential. *Lepomis auratus* (Redbreast Sunfish) and *Lepomis gibbosus* (Pumpkinseed Sunfish) have historically cohabitated in Calder Lake, and have mating seasons that overlap during June and July; *Lepomis auratus* mating throughout June, with *Lepomis gibbosus* mating in July (Thorp, 1988). Males of these species utilize this time to construct and guard nests within which females will deposit eggs for fertilization (Thorp, 1988). For the nest-building males, this method of reproduction has been thought to possibly result in hybridization via sneak copulation (DeWoody, 2001). Competition for nest sites within the lake during times of draught may increase the likelihood of hybridization either through mechanisms associated with water clarity, or through closer nest proximity. Both species of sunfish build or inhabit previously built nests distributed along the perimeter of Calder Lake (Thorp, 1988). Previous studies have investigated the temporal and spatial relationship between sunfish nesting behavior in Calder Lake and potential for hybridization. Additionally, there have also been microsatellite analyses performed aimed at assessing whether or not hybridization has occurred. Utilizing this past data, I intend to obtain additional microsatellite evidence and compare all genetic evidence as well as temporal and spatial distribution records in order to expand and conclude the understanding of the coexistence of these two species.

Poster-138

What's New: A Categorical News App

Anisah Assim, Anne Marie Bogar, Honggong Zhang*

Political Science, Fordham College at Rose Hill, Computer Science, Fordham College at Rose Hill, Computer Science, Fordham College at Rose Hill*

Is it possible to provide quality, in-depth information on current events in an age where news media are expected to yield instant gratification? With the advent of online media, the public has shifted from perusing long form journalism to skimming breaking news headlines on mobile apps. The problem with this switch in news consumption is that people are not receiving the background information, leading to an isolation of the event to a specific time or region, when most of the time issues escalate gradually. Our solution is a mobile application that combines easy-to-access news with the in-depth context long form journalism provides. The app will collect articles from credible news sources and sort them into currently trending issues (e.g. ISIS, Ebola, Secret Service). The articles will relate to the issue, but will differ from each other in content, source, or focus. Additionally, each issue will have a list of related issues (e.g. United Nations and Climate Change, ISIS, Feminism) that link the issue with other current issues. Each issue will also contain a short synopsis of background information to give the reader a better understanding of the topic (e.g. where did ISIS come from, what does it stand for, how long has it been around). Our hypothesis concludes that sorting the news in a way in which every event has a timeline, history, and a connection to other events will allow people adjusted to modern trends in news consumption to gain a better understanding of what they are reading.

Poster-139

L2 Capsid Protein on Cell Viability

Brooke Mastrogiacomo, Patricio Meneses*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Human papillomaviruses (HPVs) infect epithelial cells, namely keratinocytes, and can lead to many cancers including cervical cancer, head and neck squamous carcinoma, and anal cancer (Doorbar). HPV is a pertinent concern because it contributes to approximately 99% of cervical cancers in women, and contributes to types of throat and anal cancer in men. The effects of HPV infection have been identified, as well as methods with which to treat them, such as vaccines. However, there is limited understanding of the mechanisms of the infection, which in turn limits the abilities of treatments. The vaccines that are commonly administered only target HPV 6, 11, 16, and 18, which are only a select few of the many types of HPVs (CDC). The goal of this project is to further examine the role of the capsid protein L2 in infection and determine its effects on cell viability. The L2 proteins are highly conserved among the various types of HPVs, so they could provide a more universal and promising approach to HPV treatment (Breitburd). This research will be done with the assistance of Xinwei An, a graduate student at Fordham University, and under the principle investigator Patricio Meneses.

Poster-140

**Sherlock's Ace Detectives:
Inspecting Asexual Narrative Structure and Representation in Sherlock Fan Fiction**

Kara Kratcha, Moshe Golde*

English, Fordham College at Rose Hill, English, Fordham College at Rose Hill*

This project seeks to understand ways in which we might understand narrative and the knowledge narrative produces beyond a metaphor of sexuality and sexual production. The first part demonstrates how asexual representation in *Sherlock* fan fiction undermines Judith Roof's idea of narrative structures with clear beginnings, middles, and ends as inherently heteronormative by showing ways in which three particular fan fiction pieces challenge heteronormative ideology. The second part discusses how, in a digital fan context, the structure of these fan fiction narratives includes elements beyond the stories' apparent beginnings, middles, and ends. The project concludes with a consideration of how considering narrative in this way leads to new ways of thinking about sexuality and queerness.

Poster-141

Landscape genetics of VKORC1 Mutants and Warfarin Resistance

Matthew Wolman, Jason Munshi-South*

Biological Sciences, Fordham College at Rose Hill, Biological Sciences, Fordham College at Rose Hill*

Urban rat populations have always experienced strong selective pressures from humans, due to them being seen as pests. This project will examine the effects anti-coagulant rodenticides, namely Warfarin, have had on New York City rat population genomes. Warfarin is an anti-coagulant that inhibits a small transmembrane protein which is synthesized by the VKORC1 gene, which is crucial for the post-translational modifications of blood coagulation factors. The extensive use of Warfarin has resulted in 23 missense mutations of VKORC1 found in populations around the world, some of which provide resistance to the rodenticide. This project will focus on gathering hundreds of specimens from several New York City rat populations, and sequencing each sample's VKORC1 gene in order to find these mutations, and compare it to known mutated alleles found around the world. Since rat populations in New York City are relatively separate from each other, we will also test how ecological variables, such as the extent of rodenticides used against that population has led to differing mutant alleles of VKORC1. This will be done to test the hypothesis that spatial variation of rodenticide use has created locally-adapted clusters of wild type versus mutant VKORC1 rats in New York City. Data gathered from this project will allow us to compare New York City selected alleles with that of global populations, as well as giving us insight into genetic variations that have been forced onto rats by human development.

Poster-142**Tooth Identification: Metric and Non Metric Dental Traits**

Samantha Lubrano, Joseph Guarnaccia, Kimberly Consroe*

Anthropology, Fordham College at Rose Hill, Anthropology, Fordham College at Rose Hill, Anthropology,
Fordham College at Rose Hill*

Dental Anthropology studies the morphology, metrics, evolution, and growth of human teeth. Teeth are extremely durable, especially over long periods of time, which is helpful to Dental Anthropologist when examining past cultures (Scott & Turner 1988). There are four types of teeth located in a dental arch of a human: incisors, canines, premolar, and molar (Bass 1995). These teeth possess qualities that are valuable for the study of mankind, such as resilience, adaptability, and genetic influence; all of these are representative of behavior, ecology, and diet (Scott & Turner 1988). Aspects of human dentition are largely based on environment and genetic makeup, which correlates with ethnicity and affinity. As such, one of the more practical uses for dental anthropology in the present study is its ability to help discriminate among major geographic races based on the size and shape of tooth crowns (Scott & Turner 1988). In fact, dental traits can be useful in discriminating among groups as specific as tribes and local races (Scott & Turner 1988). The specimens that are used in the discipline of dental anthropology serve as a good biological indicator of history, which is more reliable than written or material history. We will be collecting data from Middle Eastern teeth, which are thousands of years old, recently excavated at an archaeological site. In our research, we will be looking at the non-metric as well as metric parameters of the teeth. There are four main ways that you can measure a tooth metrically, which include tooth height, mesiodistal diameter, buccolingual diameter, and crown module (Bass 1995). Crown module is the expression of the relative crown mass and is computed by averaging the mesiodistal and buccolingual diameters (Bass 1995). Recording the tooth height is sometimes omitted in archaeological specimens because of tooth wear and the overall condition of a tooth once excavated. As shown in this poster, we will also be using non-metric dental traits as outlined by the Arizona State University dental anthropology system (ASUDAS), which are descriptions and characteristics of each tooth that designates them into a specific tooth class, such as incisor or premolar and upper or lower teeth (Scott and Turner 1997). By studying the metric and non-metric aspects of these teeth, we hope to gain further knowledge of the biological and behavioral practices of the people living within this past culture.

Poster-143**Informed Consent: Understanding the Neuroscience Behind Decision-Making**

Amanda Simms, Adam Fried*

Integrative Neuroscience, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill*

Informed consent is a fundamental requirement in clinical research and treatment involving human subjects. The informed consent process ensures that participants are afforded necessary protections and rights and that they understand both key study information as well as the voluntarily nature of their participation. However, while obtaining informed consent may seem straightforward in many types of research, it may be a far more complicated process in research involving persons with cognitive impairments and mental disabilities who may not be able to rationally comprehend relevant information, weigh the risks and benefits as they apply to their personal situations, communicate a decision, or provide a rationale for their decision. When capacity to provide informed consent to research or treatment is difficult to determine, such as in individuals with cognitive deficits, researchers and physicians must develop methods to guarantee that consent is informed, voluntary, and rational throughout the duration of the study. There are several important neuropsychological components – mainly dependent on the condition of a person's prefrontal cortex – to decision-making with respect to research and treatment participation, including perspective taking, learning, memory, and emotion in making decisions. The literature on decision-making in persons with dementia may highlight areas of future study and intervention to possibly improve consent capacity. A comprehensive review of the relevant literature in the intertwined fields of neuroscience and ethics will illustrate both the critical nature of informed consent in ensuring that research with individuals with cognitive disorders is conducted with the highest scientific and ethical standards, as well as areas for future study in enhancing consent capacity among vulnerable populations.

Poster-144

Non-athlete Student Perceptions of Student-Athlete Academic Success and Integrity

Tecla DiFrancesco, Adam Fried*

Psychology, Fordham College at Rose Hill, Psychology, Fordham College at Rose Hill*

Student-athletes are required to balance academic and athletic responsibilities in order to remain eligible to compete for their academic institution. Previous research suggests that student-athletes may be perceived as having lower academic abilities, held to lower academic standards by faculty and administration, and allowed to engage in behaviors that threaten academic integrity (such as earning academic credit without attending classes or submitting work). These perceptions contribute to persistent stereotypes and stigmas about the academic ability of student-athletes, especially by non-student-athletes. Little research, however, has empirically investigated the perceptions of academic ability, success and integrity of student-athletes from the perspective of non-student-athletes. This quantitative study uses empirically informed measures to investigate the perceptions of student-athlete's academic success, performance and academic integrity.

INDEX

*Please turn to page number to view the poster or oral presentation number

Margarita Abella, 40
Alexandra Agins, 11
Patrick Alford, 79
Alyssa Ammazalorso, 11, 53
John Andersen, 9, 64
Margaret Andover*, 27, 36
Rachel Annunziato*, 26, 27
Catarina Araujo, 53
Nicole Arrato, 26
Anisah Assim, 80
Amelia Aubuchon, 61
Orit Avishai*, 8, 13, 21, 22, 24, 25, 28
Madiha Baig, 12
Antonios Balassis*, 23
Amy Balija*, 22, 23, 67, 69, 71
Ipsita Banerjee*, 22, 31, 36, 68
Sonia Barakat, 38
Kelly Becht, 35
Christopher Bender*, 24
Colette Berg, 29, 42
Akash Bhatia, 64
Amina Bhatti, 13, 39
Colleen Biemer, 15, 20
Alison Biltz, 40
Anne marie Bogar, 80
Richard Bordelon, 6, 65
Jessica Bowser*, 25
Adair Boudreaux, 54
Daniel Brauer, 5, 67
Jackson Brietzke, 64
Russell Broaddus*, 25
Hadley Brochu, 5, 69
Alexandra Brown, 6, 40, 68
David Buchanan, 7, 64
Ayelen Bulloj*, 30
Kayla Bushweiler, 9
Briana Cadzin, 41
Amy Caffrey, 18, 57
Nina Cafone, 24
Mark Caldwell*, 68
Brianna Cali, 22, 41
Laura Calisi, 16
Kathryn Callahan, 10
Bianca Campagna, 27
Alexandra Carlin, 61
Catherine Carrejo, 59
Kevin Carroll, 17
Francesco Caruana, 24
John Caruso III, 22
Craig Casazza, 35
Bruno Cassara, 5, 77
Leonard Cassuto*, 68
Kimberly Casteline*, 70
Dylan Cepeda, 48
Matthew Challman, 48
William Chen, 44, 51
Natalie Cheung, 39
Alyssa Christoforou, 40
Casey Chun, 15
James Ciaccio*, 34
Robert Ciardullo, 24, 33
J. Alan Clark*, 33
Donald Clarke*, 33
Emma Cleary, 32
Matthew Combs*, 33
Michael Congiusta, 43
Kimberly Consroe*, 32, 82
Lauren Cook, 33
Peter Corfield*, 32
Olivia Cortellini, 13
Elaine Crane*, 31
Stephen Crowley, 38
Keith Cruise*, 34
Maris Cuddeback, 32 Emily
D'Adamo, 21 Brendan
Dagher, 25
Elaine Danielczyk, 41
Samuel Davey, 15
Frairee De La Fuente, 14,
20 Maria DeCasper, 6, 76
Katherine Delaney, 7, 64
George Demacopoulos*, 67
Erica DePalma, 5, 44, 71
Margaret Desmond, 6, 66,
70 Aaron DeVera, 7, 64
Tecla DiFrancesco, 83
Alexa Di Silvio, 16
Gabriel Diaz, 29
Christie DiPietrantonio, 26
Alyssa Dolan, 24
Kelsey Donlon, 11, 39
Marissa Dow, 7, 70
Claire Droumbakis, 18
Danielle Drummond, 14
Edrina Dushaj, 8
Elizabeth Eisenhardt, 10
Tasnima Elahi, 70
Christina Errichiello, 13, 42
Jeremy Fague, 47
Zhefu Fang, 13
Philip Feibusch, 23
Christina Ferneini, 33
Alyson Ferrante, 54
Silvia Finnemann*, 30
Kaitlyn Flanagan, 5, 76

INDEX

- Marisa Fleming, 14
Brendan Flynn, 35
Dominic Fogarasi, 15
Kristen Forlano, 35
Megan Foster, 24
Samantha Fraembs, 16
Aurel Frangaj, 56
Steven Franks*, 29, 42
Christina Frare*, 20
Lewis Freeman*, 18, 28, 66
Robert Frerich, 55
Adam Fried*, 8, 13, 22, 24, 25, 82, 83
Jon Friedrich*, 8, 10, 11, 12
Ava Gagliardi, 61
Elizabeth Galici, 26
Catherine Gallagher, 73
Alina Gandrabur, 39
Kimberly Garvey, 8, 43
Matthew Gelbart*, 64
Nicholas Genovese, 29
Geena George, 44
Julia Getsos, 72
Kayla Giampaolo, 8, 43
Stephanie Giordano, 10
David Glenwick*, 14
James Goehl, 32
Rachel Goldner, 37
Moshe Golde*, 81
Jasun Gong*, 9
Xiaoyang Gong, 13
Reiko Goodwin*, 9, 28
Ian Granger, 64
Maliha Gul, 54
Joseph, Guarnaccia, 82
Dillon Gurciullo, 36
Naiem Habib, 42
Shushanik Hakobyan*, 66
David Hamlin*, 65
Grant Hammerschlag, 8
Trevor Haskell, 64
Taviare Hawkins*, 9
Brooke Hefe, 8
Adele Heib, 21
Evon Hekkala*, 8, 10, 17, 19, 20, 32, 38, 65, 79
Dakota Hernandez, 61
Jeannine Hill Fletcher*, 19
Jay Hineman*, 74
Ansel Hoang, 58
Stephen Holler*, 18
Mithi Hossain, 38
Frank Hsu*, 64
Nora Hudec, 13
Caitlin Hufnagle, 9, 28
Oswaldo Hugo Benavides*, 63
Andrew Hunt, 64
Famim Huq, 5, 75
Matt Hurley, 64
Jeremiah Hyslip, 8
Cora Ianiro, 33, 38
Leah Ibrahim Puri, 21
Christopher Indudhara, 13
Melissa Ingala, 44
Zachary Insani, 50
Hifza Ishtiaq, 60
Anthony Iuso, 17
John J. McMahon*, 51
Varuni Jamburuthugoda*, 13, 14, 15, 16, 17, 18, 21, 46, 54
Patrick Janeczko, 15
Alexander Jing, 8
Kevin Jimenez Cowell, 78
Andrew Johnston, 7, 72
Laurel Jones, 50
Zachary Jones, 15
Alexander Jordan, 38
Juli Kalaj, 13
Albert Kamau Wandui, 57
Steven Kassapidis, 16
Mary Kate Crenny, 51
Shannon Keane, 42
Dominic Kearns, 62
Sean Keegan, 42
Meagan Kelley, 27
Hannah Kelly, 40
Alina Kenealy, 52
Drake Kessler, 9
Alexander Keyes, 52
Samari Khalife, 41
Wajiha Khan, 9, 28, 60
Julie Kim*, 64
Joshua King, 17
Alexa Klink, 38
Grant Knoll, 22, 40, 65
Jenna Kocsis, 25
Mary Koke, 22
Sergios-Orestis Kolokotronis*, 53, 54, 78
Kathryn Krasinski*, 66
Kara Kratcha, 81
Nicole Kucik, 64
Altina Kukaj, 39
Chao-Lin Kuo*, 57
Dana Kusak, 44
Diana Kwon, 58, 59
Melissa Labonte*, 63
Peter Lacerenza, 5, 73
Lauren LaCorte, 22
Jessica Lajoie, 42
Rachel Lamy, 14
Michalina Lapinska, 26
Nina Le, 12
Katherine Lease, 5, 68
Danny Lee, 26
Katherine Lee, 56

INDEX

- Daniel Leeds*, 53, 56
Simratjit Lehal, 39
Matthew Lejeune, 8, 56
Patrick Lenihan, 8
Joseph LeRoy, 52
James Lewis*, 18, 52
Grace Lilly, 28
Brixhild Llapa, 12, 46
Nicholas Lopresto, 58
Shuyao Lu, 56
Samantha Lubrano, 82
Joseph Lynch, 44
Damian Lyons*, 52
James MacDonall*, 51
Fenizia Maffucci, 6, 19, 77
Danielle Mahon, 47
Alexandra Makara, 25
Megan Mandile, 36
Matthew Manzione, 61
Genna Marcin, 34, 40
Andrew Mark, 7, 75
Brooke Mastrogiacomio, 19,
80
Nadeen Matari, 18
Zachary Mattes, 32
Daniel Matthews, 6, 76
Anthony Matus, 56
Alyssa Mayer, 61
Cara McClane, 24
Cara McDavitt, 5, 69
Sigmund McDonald, 60
Micki McGee*, 68, 74
Dougan McGrath, 78
Megan McLaughlin, 31
Rebecca McSween, 5, 72
Patricio Meneses*, 77, 80
Yasmin Merchant, 28
Valerie Meyer, 49
Dana Miller*, 31
Jennifer Minerva, 21
Yolien Miranda, 34, 68
Kyle Mitchell, 11, 35
Sierra Mitchell, 24
Brandon Mogrovejo, 6, 38,
70
Alexander Mold, 48
Brenna Moore*, 76
Silvana Morra, 60
Glen Morrice, 21
Louis Moskovitz, 36
Ashley Mosquea, 24
Ryan Mucherino, 17
Brigid Mulroe, 6, 74
John Murray, 37, 55
Jason Munshi-S, 81
Mark Naison*, 76
Olena Nikolayenko*, 50, 74, 75, 76
George Nikoloudakis, 44
Nabilah Nishat, 12
Sarah O'Brien, 22
Kenneth Ochs, 30
Mickaela O'Neill, 17
Rita Orazi, 33
Kaitlyn Parkins*, 58
Dustin Partridge*, 14
Vasiliki Patsiogiannis, 8
Amanda Pell, 78
Alissa Pellegrino, 61
Natalie Perpepaj, 14
Matt Perrotta, 44
Matthew Perrotta, 14
Giuliano Pichini, 24, 57, 65
Cassandra Pinkerous, 44
Anthony Pizzolla Jr., 24
Justin Pool*, 60
Aleksandar Popovic, 42
Ailie Posillico, 26
James Potts, 57
Nicholas Primiano, 52
Mary Procidano*, 61, 62
Marie Rabadi, 15, 22
Robert Raffaele, 16, 17
Faria Rahman, 12
Joseph Rapp, 46
Connor Regan, 44, 58
Christopher Reggio, 46
Daisy Reinoso, 13
Alison Rembisz, 20
Aleksander Richards, 39
Gabrielle Robertson, 18
Kayla Robinson, 6, 63
Matthew Rogacki, 16
Steven Romanelli, 31
Carla Romney*, 60, 70
Isaac Ronan, 7, 72
Jonathan Rooke, 7, 68
Lauren Ross, 19
Kerry Rota, 61
Mary Rothschild*, 59
Matt Roveto, 23
Amy Roy*, 58, 59
Siobhan Rueda, 21
Elisa Russo, 19
Rolf Ryham*, 74
Alexander Sabatino, 32
Katherine Sadaniantz, 15
Christina Sailer, 13
Carlos Salazar, 5, 63
Ellen Zoe Sanders, 61
Usha Sankar*, 35, 38, 39, 40, 41, 55, 56, 57
Giacomo Santangelo, 79
Tessa Santarpia, 61
Anthony Santora, 34
Kathleen Schiaffino*, 27
Marion Schmidt*, 38
Andrew Schreiber, 7, 73
Elizabeth Scott, 42

INDEX

Michael Sekor*, 42
Alyssa Shannon, 12
Diana Shao, 31
Nicholas Sharkey, 17
Christina Sheedy, 12
Grace Shen*, 37
Petr Shibayev*, 37, 55
Molly Shilo, 6, 66
Philip Sicker*, 77
Gloria Siclari, 20, 78
Fawziyah Siddiqui, 6, 74
Victoria Sieverson, 21
Caroline Silva, 62
Amanda Simms, 82
Olivia Singler, 11
Paul Smith*, 35, 36, 50
Cameron Smith, 55
William Smith, 20
Christopher Sollecito, 48
Rachel Sortino, 16
Daniel Soyer*, 62, 73
Thomas Spanarkel, 50
Nicholas Spanos, 20, 30
Daniella Squillante, 8
Samantha Steimle, 61
Christopher Steinacker, 79
Marisa Stockdale, 8, 10, 29,
57
Lukasz Sztaberek, 51
Juliette Strasser, 11
Natalie Sturgeon, 32
Emily Sullivan, 61
Paul Supple, 17, 70
David Swinarski*, 47, 56
Kirstin Tamucci, 12
Anthony Tantillo, 37
Troy Tassier*, 72
Elana Tee, 64
Keith Thompson*, 57
Julie Thoubboron, 32
Elise Tigani, 16
Jessica Timko, 5, 71
Ian Tolmie, 14
Ray Tomlan, 21
John Tracey, 46
Audrey Trainor, 41
Peter Tricarico, 46
Diana Tsukalas, 40, 43
Annelisa Tucker, 38
John Turner, 6, 65
Anastasia Tzanides, 39
John van Buren*, 49
Anthoula Vasiliou, 6, 21, 66
Marnie Vaughan, 18
Diana Velasquez, 24
Samuel Verzino, 55
Marisa Vomvos, 54
Sarah Voor, 54
Rosemary Wakeman*, 48, 49
Samantha Walker, 24, 57
Jillian Walsh, 49
Kerri Walsh*, 78
Ruiju Wang, 56
Elaina Weber, 54
Qize Wei*, 48, 78
Gary Weiss*, 71, 72, 73
Madison Wenzlick, 37
Frederick Wertz*, 47
Olivia Wilkins, 20, 52
Stuart Wilson, 8
Canton Winer, 7, 74
Matthew Wolman, 81
Amelia Wright, 58
Robert Wurtz, 18
Eric Xiupeng*, 42
Kristen Yang, 11
Christopher Yiachos, 32
Tiffany Yip*, 69
Ki Won Yoon*, 57
Sandra Zajac, 42
Adam Zamorek, 45
Elizabeth Zanghi, 7, 67
Megi Zeku, 56
Wendy Zencheck*, 46
Lincoln Zernicke, 8
Honggang Zhang*, 80
Juin Zhou, 9
Molly Zimmerman*, 45, 50
Christine Zolnik*, 11, 42, 43,
44

