FORDHAM COLLEGE AT ROSE HILL 12TH ANNUAL

UNDERGRADUATE RESEARCH SYMPOSIUM

AN INTERDISCIPLINARY CELEBRATION OF OUR STUDENTS AND MENTORS

FORDHAM UNIVERSITY
THE JESUIT UNIVERSITY OF NEW YORK

WEDNESDAY, APRIL 10, 2019
NOON—5 P.M. | MCGINLEY CENTER | ROSE HILL CAMPUS

The Twelfth Annual Fordham College at Rose Hill Undergraduate Research Symposium

April 10, 2019 | McGinley Center | Rose Hill Campus

Welcome to the 12th Annual Fordham College at Rose Hill Undergraduate Research Symposium! This year, the Symposium is part of Fordham's first-ever Undergraduate Research Week, celebrating undergraduate research in Fordham College at Rose Hill, Fordham College at Lincoln Center, and the Gabelli School of Business. And there is a lot to celebrate! Today's Symposium showcases the accomplishments of over 300 undergraduate students who are working with faculty mentors to push the boundaries of knowledge across the disciplines, ranging from Anthropology to Chemistry to Physics to Theology. Today also marks the official release of the ninth volume of the student-run *Fordham Undergraduate Research Journal (FURJ)*, which publishes impactful articles written, reviewed, and edited by Fordham students. In response to increasing student participation in undergraduate research, *FURJ* will publish a second issue this coming fall.

Undergraduate research in FCRH has grown tremendously over the past 12 years. The inaugural Symposium featured the work of about 30 students. Since then, participation in undergraduate research – and the Symposium – has increased substantially; generous donor support has provided over $1.5 million in funding for students and faculty; over 150 students have been first or second authors on external conference presentations; students have co-authored over 100 publications with their faculty mentors; and FCRH piloted a new seminar this year, "Foundations in Research Engagement" (look for the work of the 36 students at today's event). FCRH students are presenting their work across the country and around the world, most recently in France, Germany and Spain. On campus, students are now part of a community bonded by a deep interest in big questions and the restless pursuit of knowledge. This is a Fordham education at its best!

Today's Symposium would not be possible without the dedication of so many people. We are profoundly grateful to our generous alumni donors and to the Fordham College Alumni Association, who have provided financial support for the FCRH undergraduate research program. We would like to extend our tremendous appreciation to our presenters, co-authors, and faculty mentors, as well as faculty and staff, family, friends, alumni, and guests. Special thanks are due to our dear colleagues who work behind the scenes in support of undergraduate research: Susan Legnini, Miriam Milazzo, Abigail Kedik, Grace Little, and Sarah Duncan from the FCRH Dean's Office; the FCRH Undergraduate Research Grant Reviewers, which includes fifty (!!) faculty members and two alumni; the FCRH Undergraduate Research Advisory Council (Professors Christopher Aubin, Orit Avishai-Bentovim, Edward Dubrovsky, Lewis Freeman, Sarah Grey, Olena Nikolayenko, and Melani Shahin); and Seth Knight from Duplicating Services.

We hope you enjoy this day and that you learn something new! Thanks again for joining us in this amazing celebration.

Dr. Maura B. Mast
Dean
Fordham College at Rose Hill

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

The Twelfth Annual Fordham College at Rose Hill
Undergraduate Research Symposium
April 10, 2019 | McGinley Center | Rose Hill Campus

Schedule of Events

11:00am	**Registration Opens for Symposium Participants**
12pm-3pm	**Oral Presentations** *Lunch Served in McGinley 237*
3:00pm	**Celebratory Remarks** Maura Mast, Ph.D. *Dean, Fordham College at Rose Hill* Jonathan Crystal, Ph.D. *Interim Provost, Fordham University* The Reverend Joseph M. McShane, S.J. *President of Fordham University* Mark J. Hyland, Esq., FCRH '77, LAW '80, PAR *Special Guest Speaker*
3:20pm	**Presentation of Fordham Undergraduate Research Faculty Mentor Awards**
3:30pm-5pm	**Poster Presentations** **McGinley Ballroom and McGinley Lounge**

WITH GRATITUDE TO OUR ALUMNI DONORS WHOSE SUPPORT FUNDS UNDERGRADUATE RESEARCH AND FELLOWSHIPS WITHIN FORDHAM COLLEGE AT ROSE HILL

Charles B. Anderson, PAR
Luis Arroyo, M.D., PAR
Richard J. Babaian, M.D., FCRH '68
William E. Banfield, Esq., FCRH '74
Charles G. Banino, Esq., FCRH '68, LAW '71, PAR
Howard C. Bedford, FCRH '51
Sally C. Benner, FCRH '84
Peggy S. Blitz, UGE '53
Xhemal Boga
Veronica Bonnet, FCRH '87 and Michael F. Bonnet, CBA '86
Noraleigh S. Brown, Esq., FCRH '87, PAR and
Stephen G. Brown, FCRH '86, GSE '87, PAR
Edward J. Burchianti, FCRH '66
Ralph J. Caccia, Esq., FCRH '83
Thomas J. Calabrese, Jr., FCRH '63
Leonard J. Cali, Esq., FCRH '82
Franz Calice, FCRH '56
Joseph A. Candio, M.D., FCRH '72
Margaret Cantwell, M.D., TMC '70 and
Joseph E. Cantwell, FCRH '70
John C. Canty
Robert W. Capece, FCRH '65
Salvatore T. Carbonetto, Ph.D., FCRH '68
Frank J. Carroll, FCRH '52
Michael P. Casey, M.D., FCRH '67
James J. Castner, M.D., FCRH '66
Francis P. Celano, FCRH '51
Richard A. Chiarello, M.D., FCRH '67
Mary F. Chisholm, M.D., FCRH '79, GSAS '81
Donald D. Clarke, Ph.D., FCRH '50, GSAS '56, FAC
Terrance P. Cleary, Ph.D., FCRH '67
Jon M. Conahan, FCRH '65, PAR
Robert P. Cronin, M.D., FCRH '65
Amy J. Cunningham, FCRH '96
Joseph F. Cusick, M.D., FCRH '61
Francis L. Daylor, Jr., FCRH '54
John D. DeCarlo, FCRH '70
Gregory P. DiCarlo, M.D., FCRH '67
James J. Dillon, Esq., FCRH '70
Gary N. Donovan, Esq., FCRH '77
John D. Draghi, Esq., FCRH '67
Dennis J. Drasco, Esq., FCRH '70
Thomas R. Duthie, II, CBA '76
James K. Fitzpatrick, FCRH '64, PAR
John E. Forrest, FCRH '55
Paul M. Frank, Esq., FCRH '60
George A. Fraser, FCRH '63
Paul E. Freiman, PHA '55
Fordham College Alumni Association Scholarship Fund
Julie Jarecke Gebauer, PAR and Davin J. Gebauer, PAR
Paul S. Gibson, FCRH '66
Julius A. Giglio, FCRH '51
Gaspar P. Giordano, GSAS '83, GSAS '84, PAR
Edwin J. Goss, FCRH '50
Carol E. Graf
Bronislaw E. Grala, Esq., FCRH '68
Ralph M. Greggs, FCRH '80
Robert M. Haddock, Esq., FCRH '67
Joseph Haggar
Dennis M. Hanratty, FCRH '72
Thomas P. Healy, FCRH '65
Katherine C. Hill-Miller, Ph.D., TMC '71
James M. Hock, FCRH '91
Robert J. Howley, FCRH '89
Joseph L. Hulseman, PAR
Christopher R. Iannuzzi, CBA '92
John J. Imparato, Jr., U.S.N., FCRH '66
Stephen J. Ippolito, FCRH '68
Joseph C. Iraci, M.D., FCRH '74
Patsy Jaganath, PAR
Patrick B. Jordan, FCRH '02
Michael Kansler, PAR
Eileen S. Kasten, FCRH '90
Katherine W. Kelly, TMC '69
Kevin Kerr, PAR
Dennis A. Klejna, Esq, FCRH '68, LAW '71
James R. Knickman, Ph.D., FCRH '72
Carol A. Kozeracki, FCRH '83
Michael A. Lalli, Esq., FCRH '76, LAW '79
John J. Leddy, M.D., FCRH '81
Brian P. Levack, Ph.D., FCRH '65
Dennis E. Logue, FCRH '64
Raphael S.F. Longobardi, M.D., FCRH '86, PAR
Daniel A. Lupiani, FCRH '68
Patrick Luzzi, CBA '83, GBA '99
Agatino J. Maccarrone, FCRH '61
John D. Mackin, GBA '95
Matthew J. Mancini, Ph.D., FCRH '69

Amanda Manning, PAR
Philip D. Marella, Jr. Esq., LAW '87
Edmund D. Marinucci, M.D., FCRH '41
Patricia A. Mazurek, FCRH '91
James B. McCaffrey, FCRH '63, PAR
James McCauley, FCRH '68
Kenneth J. McGlynn, FCRH '65, GBA '79, GSS '96
Francis J. McGrath, Ph.D., FCRH '63, GSAS '69
John T. McGuire, Esq., FCRH '64, LAW '67
James M. McKeone, PAR
James P. Melican, Jr. Esq., FCRH '62
Vincent A. Memoli, M.D., FCRH '72
James P. Miley, Jr., FCRH '68
Henry S. Miller, FCRH '68, PAR
Daniel Molerio, FCRH '75
Maureen E. Monahan, FCRH '80
John M. Mooney, Esq., FCRH '65
James J. Morley, FCRH '70
Bernadette M. Mosellie
Linda Ishkanian, Esq., FCRH '77, LAW '80, PAR, and Edward J. Munshower, PAR
Anne M. Murphy, FCRH '83
Francis X. Murphy, FCRH '62
Jeanne C. Pitoniak Myers, Ph D, TMC '69
Kevin P. O'Connell, Esq., FCRH '63, LAW '66
Joseph E. O'Gara, FCRH '40
Richard L. O'Hara, Esq., FCRH '52, LAW '58
Robert J. Orlandi, M.D., FCRH '64
Andrew L. Paone, FCRH '99
Dana J. Pasternak, FCRH '70
Mark Phelan, FCRH '68
Donald J. Pizzarello, Ph.D., FCRH '55, GSAS '57, '59
Philip A. Pizzo, M.D., FCRH '66
Vincent A. Policelli, M.D., FCRH '68
Anthony C. Quartell, M.D., FCRH '64, PAR
Raymond J. Quinlan, FCRH '73
Joseph F. Realini, FCRH '60, GBA '73
Ellen M. Reilly, FCRH '83
Robert T. Reilly, FCRH '61
Dennis A. Rhyne, M.D., FCRH '64
Thomas R. Riley, FCRH '81, PAR
Christine T. Rio, TMC '71
Daniel J. Riordan, FCRH '60
Gabriel and Beth Rodriguez, PAR
Patricia Ruppel and Dennis G. Ruppel, Esq., FCRH '68
Robert D. Russo, Jr., M.D., FCRH '69, PAR
Ambassador Charles B. Salmon, Jr., FCRH '59
James P. Sauter, Esq., FCRH '84, LAW '87
Carol A. Schaffhauser
Robert J. Schaffhauser, Ph.D., FCRH '60, PAR
Francis J. Serbaroli, Esq., FCRH '73, LAW '77
Noelle and Evan Shahin, PAR
Frank J. Sirianni, Ph.D., FCRH '69, FAC
Catherine C. Skinner, FCRH '89
Lawrence G Smith, M.D., FCRH '71
Jennifer O. Smith, Esq., FCRH '86
Eugene P. Souther, Esq., FCRH '53, LAW '59, PAR
Stefano La Sala Foundation, Inc.
Ronald A. Straci, Esq., FCRH '56, LAW '59
Patricia A. Teufel, PAR
Paul F. Torrisi, M.D., FCRH '68
Henry J. Tortora, FCRH '55
Richard R. Tortora, Esq., FCRH '81, PAR
Michael J. Tortorella, PhD, FCRH '68
Ellen M and Ronald J. Triani, FCRH '68
Daniel J. Valenti, FCRH '05
Janet G. and Paul J. Vitale, FCRH '72
Ellen C. Walsh, FCRH '90
Kathleen A. Walsh, Esq, FCRH '84, LAW '89
Marian C. Weiss, FCRH '77, PAR
Mark J. Wichern, FCRH '84, GBA '90
John J. Yarmick, FCRH '73
Boniface A. Zaino, FCRH '65

Oral Presentation Session Summary

Time	McGinley 234	McGinley 235	McGinley 236
Noon-1:00	The Science of Fuel Efficiency	Digging Deep! Findings from Anthropology	Theological Perspectives
1:00-2:00	Breakthroughs from Biological and Physiological Assessments	FCRH's Think Tank!	Making Meaning from Literature & Narratives
2:00-3:00	Cultural Expressions Past and Present	Multidisciplinary Middle Eastern Studies	Health Sciences Research from a Diverse Lens

ORAL PRESENTATIONS, 12-1pm

The Science of Fuel Efficiency

Moderator: Christopher Koenigsmann, McGinley 234

Oral-1: Composition-Dependent Catalytic Activity of Binary and Ternary Pt-Pd-Au Nanowires for the Electrochemical Oxidation and Detection of Small Organic Molecules, *Nicole Smina*

Oral-2: Toward Practical Artificial Photosynthesis: Enhanced Performance of Photoelectrochemical Cells with Metal Nanowires, *Elizabeth Morisseau*

Oral-3: The Effect of Zirconium Doping on the Efficiency of Titanium Dioxide Dye-Sensitized Photoelectrochemical Cells Elites, *Lauren Beglin*

Oral-4: Designing cost efficient catalysts for fuel cells utilizing first-row transition metals: composition-dependent behavior in Pt-based core-shell nanowires, *Kathryn Kingsbury*

Oral-5: Enhanced Oxygen Reduction Activity and Durability in Hollow Pt-Based Nanoframe Electrocatalysts, *William Beatrez*

Digging Deep! Findings from Anthropology

Moderator: Ellen Watts, McGinley 235

Oral-6: Anasazi Cannibalism, *Paige Hoffman*

Oral-7: The Role of Modern Humans in Neanderthal Extinction: Who Ate Whom?, *Anne-Marie Carruthers*

Oral-8: To Bury or Not to Bury: Enemy Interments at Tell Majnuna*, Sarah Hartman*

Oral-9: Revelations in Dental Metrics from Bab edh-Dhra, *Sarah Hartman*

Oral-10: Andean Funerary Customs, *Marc Bedoya*

Theological Perspectives

Moderator: William Gould, McGinley 236

Oral-11: A "Good Catholic:" A Historical and Theological Exploration of the Term, *Rachel Nolan*

Oral-12: Gods on Display, *Alexandra Rallo*

Oral-13: Claude McKay, *Rohini Parthasarathy*

Oral-14: The Impacts of Portrayals of Muslim Women in American Popular Culture on Muslim Women, *Sadia Chowdhury*

Breakthroughs from Biological and Physiological Assessments

Moderator: Jillian Minahan, McGinley 234

Oral-15: Measuring Stress Levels: Inter-Comparability of Popular ELISA Kits Reveals That Brand Matters, *Ashley Weems*

Oral-16: Characterizing Summer Diurnal Patterns of Photosynthesis on American Beachgrass (Ammophila breviligulata), *Colleen Cochran*

Oral-17: Gene Expression Analysis of Candidate Genes Contributing to Sex Differences in Drug Abuse, *David Shoshan*

Oral-18: How does the brain respond to stereotypes during written sentence comprehension, *Camilo Zapata*

FCRH's Think Tank!

Moderator: Olena Nikolayenko, McGinley 235

Oral-19: Youth Voter Turnout in Local Elections, *Claire Nunez*

Oral-20: Who Protests in America?, *Brad Langhoff*

Oral-21: Discrimination within the Housing Voucher System for Victims of Domestic Violence, *Jenna Koury*

Oral-22: The American Manifesto: How the American Legion and Anti-Communism Shaped Our Conception of National Identity, *Matt Cappetta*

Making Meaning from Literature & Narratives

Moderator: Sarah Duncan, McGinley 236

Oral-23: Imperio por la Idea, *Philip Andrew Wines*

Oral-24: Crossroads: Mapping Narrative Intersections of the Bronx African-American and Italian-American History Projects, *Alison Rini*

Oral-25: Justice in Shakespeare: A Triadic Conversation among Hamlet, Henry IV, Part 2, and the Merchant of Venice, *Sophia Giudici*

Oral-26: Indigenous, Ignored, Incarcerated: The Creating of the Native American "Savage", *Rafael Saplala*

ORAL PRESENTATIONS, 2-3pm

Cultural Expressions Past and Present
Moderator: Eric Bianchi, McGinley 234

Oral-27: From Exoticism to Multiculturalism: New Approaches to Cultural Otherness in Post-WWII American Popular Music, *Yohannah Franco Choi*

Oral-28: Fascist Aesthetic in the Films of Alessandro Blasetti, *Austin Sacker*

Oral-29: Music, Mathematics, and the Ancient Legacy: Leonhard Euler's Tentamen and Classical Reception, *Sarah Maher*

Oral-30: Neither Here nor There: The Work of Artist Tiffany Chung and Theorizing Vietnamese Diasporic Identity, *Sofia D'Amico*

Multidisciplinary Middle Eastern Studies
Moderator: Abigail Kedik, McGinley 235

Oral-31: Ethnicity, violence, and imperialism in Egypt and Nubia, *Beatriz Barraclough-Tan*

Oral 32: Smartphones and Smuggling in the Age of Digital Borders: How Syrian and Afghan refugees face different obstacles to EU exclusion and rightlessness, and how humanitarian digital information networks must mitigate disparities, *Rachel Recker*

Oral-33: Social Media's Lasting Impact on the Middle East, *Tyler Cremins*

Oral-34: Democracy in Iraqi Arab Tribes, *Gregory Hopp*

Health Sciences Research from a Diverse Lens
Moderator: Christie-Belle Garcia, McGinley 236

Oral-35: Approaching the History of the American AIDS Crisis through Narrative, *Sabrina Jamileh Sayegh*

Oral-36: Bridging the Gap: Maternal Health Outcomes in Black Communities, *Anya Patterson*

Oral-37: Power and Social Organization among Medical Interpreters, *Olivia Taylor*

Oral-38: Exploring Weight Indicators, Peer Influence, and Emotional Well-Being in Adolescents, *Rochelle Mendonca*

Oral-39: Comparing Hopelessness and Death Anxiety in Advanced Cancer Patients with Different Health Perceptions, *Molly Ni'Shuilleabhain*

Oral Presentations

Oral-1: Composition-Dependent Catalytic Activity of Binary and Ternary Pt-Pd-Au Nanowires for the Electrochemical Oxidation and Detection of Small Organic Molecules
Authors: Nicole Smina, William Beatrez, Adam Rosen, and Rosario Troia
Faculty Mentor: Christopher Koenigsmann
College: Fordham College at Rose Hill

Platinum is an effective catalyst towards the oxidation of small organic molecules (SOMs) such as methanol and glucose. Binary alloys of Pt and other transition metals offer a promising pathway to improving the efficiency of Pt-based catalysts in SOM oxidation reactions by reducing cost and enhancing the catalytic properties of pure Pt. Other transition metals can also lower the overpotential associated with the oxidation of the carbon monoxide (CO) intermediate produced during the oxidation of SOMs, thus overcoming a major mechanistic barrier. Our project involves synthesizing, characterizing, and investigating the catalytic properties of nanowire (NW) catalysts comprised of binary transition metal alloys of various compositions of platinum, gold, and palladium. The alloy NWs with tunable size and composition were synthesized utilizing an ambient template-based technique. They were characterized using scanning electron microscopy (SEM), energy dispersive X-ray spectroscopy (EDX), and powder X-ray diffraction (XRD). The kinetics of the NW catalysts towards SOM oxidation was determined using cyclic voltammetry (CV) and CO-stripping experiments. Results show that trends in catalytic performance and the mechanism of oxidation are dependent upon the structure of the active sites, the morphology, and the composition of the alloy NWs.

Oral-2: Toward Practical Artificial Photosynthesis: Enhanced Performance of Photoelectrochemical Cells with Metal Nanowires
Authors: Elizabeth Morisseau
Faculty Mentor: Christopher Koenigsmann
College: Fordham College at Rose Hill

Photoelectrochemical cells (PECs) are a promising class of devices for achieving artificial photosynthesis, in which water and sunlight are converted into storable fuels. Despite their promise, there are several key challenges that remain in developing a PEC device and significant developments are necessary to achieve practical energy conversion efficiencies and long term durability. In this project, we take advantage of a property of metal nanowires called surface plasmon resonance (SPR) as a promising route to increase the efficiency of PEC devices. SPR is the collective movement of electrons in metals that results in the scattering of light. This scattering effect has the potential to concentrate light within a PEC device by increasing the light's pathlength through the active layer. Toward this goal, we have synthesized gold and silver nanowires with diameters of 50 nm and an aspect ratio in excess of 40, which scatter light in the visible region of the spectrum. The wires are coated in thin layer of metal oxide to electrically isolate them from the cell while retaining their optical activity. Work is underway to incorporate the plasmonic nanowires into functioning dye-sensitized photoelectrochemical (DSPC) devices to examine the effect of nanowire composition, loading, and dispersion on the photocurrent of the device.

Oral-3: The Effect of Zirconium Doping on the Efficiency of Titanium Dioxide Dye-Sensitized Photoelectrochemical Cells
Authors: Lauren Beglin
Faculty Mentor: Christopher Koenigsmann
College: Fordham College at Rose Hill

With growing concerns over global climate change and a finite supply of fossil fuels, the need to develop alternative means of satisfying global energy needs is of increasing importance. Solar energy has by far the largest potential to do so, with the advantages of being sustainable and non-polluting. Dye-sensitized photoelectrochemical cells (DSPCs) are a promising platform for capturing solar energy because they can be configured to convert solar energy to liquid solar fuels or electricity. The DSPC photoanode consists of mesoporous semiconductor film coated with a photosensitive dye, and photoanodes consisting of titanium dioxide (TiO_2) nanoparticles (NPs) are favorable due to their stability and economic viability. A major shortfall in the widespread DSPC use is their low efficiency relative to other solar devices. Doping TiO_2 NPs with zirconium (Zr) is expected to modify the electronic structure of the semiconductor and result in an increased voltage output and higher efficiency when coupled with organic photosensitizers. Using a hydrothermal technique, TiO_2 NPs doped with Zr with compositions ranging from 0 - 10%

have been synthesized. Results from scanning electron microscopy, X-ray powder diffraction, and energy dispersive X-ray analysis have shown that the doped particles form a homogeneous solid solution. The performance of Zr-doped TiO2 NPs will be examined in functioning DSPC devices under simulated solar light.

Oral-4: Designing Cost Efficient Catalysts for Fuel Cells Utilizing First-Row Transition Metals: Composition-Dependent Behavior in Pt-Based Core-Shell Nanowires
Authors: Kathryn Kingsbury, William Beatrez, and Daniel Ma
Faculty Mentor: Christopher Koenigsmann
College: Fordham College at Rose Hill

Electrocatalysts assist the oxidation of small organic molecules in polymer electrolyte membrane (PEM) fuel cells, which provide an efficient and environmentally sustainable alternative to traditional methods of producing electrical energy. These devices can operate on a variety of fuels including hydrogen or small organic molecules such as methanol, ethanol, or glucose, which can be produced from renewable or abundant sources. PEM fuel cells traditionally employ platinum (Pt) nanostructures as catalysts for the oxidation of methanol and the reduction of oxygen. This limits their commercial viability because platinum is both expensive and lacks the long-term durability necessary for practical devices. Our proposed solution to these issues is to develop a core-shell catalyst composed of an inexpensive transition metal core that is coated with a Pt-based shell. This architecture not only reduces the cost of the catalyst but also allows for the structure of the catalytically active sites to be tuned for increased catalytic performance. We employ an ambient, template-based approach to synthesize cobalt (Co) nanowires with reproducible shape and size. A thin precious metal shell is selectively deposited on the surface of the nanowire utilizing a solution-based technique. The catalytic activity of the core-shell catalysts toward methanol oxidation is evaluated by thin-layer electrochemical techniques. Our results reveal that the structural interactions between the core and shell reduce the effect of poisoning during the oxidation of alcohols.

Oral-5: Enhanced Oxygen Reduction Activity and Durability in Hollow Pt-Based Nanoframe Electrocatalysts
Authors: William Beatrez
Faculty Mentor: Christopher Koenigsmann
College: Fordham College at Rose Hill

Hollow metallic nanostructures have recently shown promise as oxygen reduction reaction (ORR) catalysts for fuel cells. We have recently observed a significant size-dependent enhancement in the catalytic ORR activity and durability in a series of hollow, PtAg nanoparticles. The hollow nanoparticles maintained five-fold higher catalytic activity than commercially available solid Pt nanoparticle catalysts. In recent work, we employed a similar synthetic approach to prepare hollow nanoframes consisting of Pt alloyed with first-row transition metals such as Co and Ni. We employ high-angle annular dark-field imaging and high-resolution transmission electron microscopy to characterize the morphology, composition, and uniformity of the as-prepared catalysts. The catalytic performance, long-term durability, and mechanism of ORR were examined by rotating disk electrode (RDE) measurements in oxygen-saturated solution. Our results suggest significant enhancements in ORR performance relative to commercial catalysts.

Oral-6: Anasazi Cannibalism
Authors: Paige Hoffman
Faculty Mentor: Kimberly Consroe
College: Fordham College at Rose Hill

The Anasazi people of the American Southwest are the ideal group to look at when analyzing the issues and origins of ritualized violence and cannibalism because those activities were very common based on skeletal Anasazi remains found in various sites in the southwest. The Anasazi, along with their descendents, the Hopi, are known to have had instances of severe violence, including cannibalism. This was highly disputed for a time, but eventually was proven in early the 21st century, mostly due to the research and contributions of Christy Turner, an archaeologist from Arizona State University. There are dozens of sites which feature evidence of cannibalism in the American Southwest, and this presentation will focus on the sites of Chaco Canyon, Cowboy Wash, Polacca Wash, and Burnt Mesa. I will be discussing the evidence found at these sites as well as what reasons I believe the Anasazi had for practicing cannibalism. There are three proposed theories for why the Anasazi may have practiced cannibalism and all three will be mentioned throughout the presentation, as well as the greater question of what purpose cannibalism and ritualized violence may have served in the Anasazi world.

Oral-7: The Role of Modern Humans in Neanderthal Extinction: Who Ate Whom?
Authors: Anne-Marie Carruthers
Faculty Mentor: Kimberly Consroe
College: Fordham College at Rose Hill

The inference of Neanderthal cannibalism at multiple sites including Moula-Guercy suggests that, in conjunction with general competition with modern humans, consuming members of their own species might have contributed to the extinction of Neanderthals. In fact, said competition might have even driven Neanderthals to resort to eating their own when Cro-Magnon proved a more adept predator. Evidence of Neanderthal remains butchered in the same manner as their prey have allowed investigators to infer cannibalism in a few instances. Still, osteological evidence alone cannot confirm the theory; ritual defleshing as a burial rite or any number of taphonomic processes could be responsible for damage consistent with cannibalism at other sites. With so little evidence of Neanderthals as a species, let alone a specifically cannibalistic one, it is impossible to form a generalization of Neanderthal practices regarding burials, rituals, or the consumption of human flesh. An examination and comparison of the skeletal evidence at Moula Guercy and several other burial sites, along with a reconsideration of the role of cannibalism within Neanderthal populations, allows for a fuller evaluation of the potential driving forces behind their extinction. So while the possible causes for the extinction of the Neanderthals are varied and often contradictory, evidence of prehistoric cannibalism fits neatly into an array of other contributing factors, many of which might have been exacerbated by the emergence of Cro-Magnon.

Oral-8: To Bury or Not to Bury: Enemy Interments at Tell Majnuna
Authors: Sarah Hartman
Faculty Mentor: Kimberly Consroe
College: Fordham College at Rose Hill

This presentation attempts to answer the question of why the dead were buried by their enemies at the site of Tell Brak in Syria. In 2006, mass graves were discovered at Tell Brak, a late Chalcolithic site in Syria, containing the remains of enemies killed in a violent conflict, along with animal bones and pottery. This presentation explores the postmortem treatment of the mostly sub-adults and young adults found at Tell Brak and compares it to other ways enemies are treated postmortem in the prehistoric Near East. By looking at the bones through a forensic lens as well as analysis of taphonomic processes, it is clear that the dead were left out until a celebration took place in which they were buried along with the refuse from the celebration. Through analysis and interpretation of the grave, human remains, and cultural artifacts from Tell Brak, as well as comparison to other Near East sites, it can be concluded that the mass graves at Tell Brak were established to memorialize the conflict. This is supported by the zooarchaeological analysis of animal bones and the analysis of pottery intermixed with the human remains as remnants of a celebration, along with the establishment of a rubbish mound over the burial, marking its location. By understanding the meaning and significance of the mass graves at Tell Brak, the way in which these people viewed and treated their enemies postmortem is now illuminated.

Oral-9: Revelations in Dental Metrics from Bab edh-Dhra
Authors: Sarah Hartman
Faculty Mentor: Kimberly Consroe
College: Fordham College at Rose Hill

The skeletal remains of the Bab edh-Dhra population, stored in the Smithsonian Institution's Museum Support Center, comprise an important historical collection from an Early Bronze Age Jordanian settlement. This assemblage dates to the Paleolithic, but the majority of the site is from the Early Bronze Age (3300- 2000 BC). Although this collection is well-known and studied, it has not been completely analyzed in terms of its dental elements. As part of an ongoing research project concerning genetic relationships in the Bronze Age Levant (3300-1200 BC), the metrics of the Bab edh-Dhra collection have been documented and morphological characteristics of the Bab edh-Dhra collection are currently being documented. In this study, the metrics of the Bab edh-Dhra collection will be compared to global metrics to ascertain ancestral affinity of the Early Bronze Age population. The metric study shows phenotypic similarity to the populations surrounding the Jordanian region, with the exception of the Middle East. This exception is attributed to a poor population sample. By creating a photographic and detailed dental analysis of this population, we aim to inform future researchers working with collection by making assessments and records of dental characteristics readily available to them. The information collected during the course of four visits to this collection, and the research outcomes, are presented here as they apply to a larger project that is underway to identify ancient migration patterns in the Near Eastern Bronze Age.

Oral-10: Andean Funerary Customs
Authors: Marc Bedoya
Faculty Mentor: Kimberly Consroe
College: Fordham College at Rose Hill

Archeological interest in ancient Andean funerary customs is longstanding, dating back to the arrival of Europeans in South America. Many studies and analyses have been performed on Incan and pre-Incan grave sites to document the actions and methods of burial practices, especially in relation to human sacrifice. More recently, archeological studies have focused on the social and cultural motives for the sacrifices, and the treatment of victims of sacrifice during and after death. Recent research publications have been focused on topics like gender, religion, iconography, warfare, and other facets of ancient Andean society to offer more complete
rationale for mortuary rituals. Osteological analyses have gone beyond merely taking notes of cut patterns observed on bones; cut mark morphology is now concerned with the timing and method of those patterns, perimortem or postmortem. These studies have presented different, sometimes complex, views on the cultural significance of ancient Andean burial customs. A synthesis of these studies is presented here, that includes these various research topics, to present a cohesive perspective of socio-cultural rationale for ancient Andean funerary customs.

Oral-11: A "Good Catholic:" A Historical and Theological Exploration of the Term
Authors: Rachel Nolan
Faculty Mentor: Sarit Kattan Gribetz
College: Fordham College at Rose Hill

What does it mean to be a “good Catholic?” Is there one kind of person who fits the “good Catholic” mold or can there be diverse – and potentially even conflicting – types of people who could all be categorized under this same moniker? Seeking to complicate the meaning of the term “good Catholic,” I explore its historical, theological, and practical significance. I begin with a historical analysis, tracing the term’s origin in the English language to the early nineteenth century. I found that this term has been the focus of debate spanning back two centuries and has been a contested topic since the early 1800s. Next, I investigate a wide range of diverse connotations that the term currently has among contemporary Catholic clergy, theologians, and lay practitioners. I interviewed five people of varying religious, theological, and personal backgrounds about their opinions and thoughts concerning this topic. All participants are associated with Fordham, and they each provided their own definitions of “good Catholics,” contributing to wide-ranging discussions regarding this term. Finally, I conclude with a reflection on this term’s potentially useful and deleterious nature, while contemplating better ways of conceptualizing one’s relationship to and with Catholicism. I argue that this investigation matters because thinking critically about what it means to be a “good Catholic” can motivate, inform, and improve both Fordham as a university and the Catholic Church as a whole.

Oral-12: Gods on Display
Authors: Alexandra Rallo
Faculty Mentor: Julie Kleinman
College: Fordham College at Rose Hill

It is often assumed that objects subsumed by the Western museum are divested of their original contexts and re-defined as art. Nevertheless, religious objects identified as Hindu continue to receive devotional offerings in the museum space. My research explores the phenomenon of how these objects continue to function as sacred in a context typically thought of as secular. Consecrated statues, or murti, are considered by Hindu devotees to be the living embodiments of gods. However, how these objects become living beings and at what point they “die” is ultimately subject to debate. Consequently, Hindu museum objects can be considered sacred in some contexts and not in others. In order to understand how museum objects continue to function in a spiritual context in museums, I observed visitors’ interactions with art at the South Asian Gallery in the Met. I also attended services at a local Shaivist temple to see how Hindus interact with murti in the worship environment. I discovered that Hindu murti have multiple spiritual roles. Objects I found that these objects mediate multiple layers of sacredness to accommodate a complex devotional system. Different objects may be suited to one or more tasks, such as bestowing blessings, receiving worship, and elevating the worshipper’s consciousness; these three major role divisions enable different objects to occupy different spiritual roles. Consequently, museum objects, despite their tactile inaccessibility, can continue to fulfill various aspects of the devotional relationship. Ultimately, this disrupts the imagined dichotomy between the sacred and the secular.

Oral-13: Claude McKay
Authors: Rohini Parthasarathy
Faculty Mentor: Brenna Moore
College: Fordham College at Rose Hill

Claude McKay is a fiercely raw character that I decided to explore and liven through a study of his literature and poetry through time. My piece is a documentation of his life struggle and desperate desire to cling to an appropriate and consistent paradigm. He struggled to be taken seriously in the academic world because of his rawness and ability to foster real discourse on racial politics. In society, academic elites turn to figures like James Baldwin and Ta-Nehisi Coates as consumable versions of white criticism, while vehement figures are discarded as emotional and therefore, irrational. White academia does not offer a place for the unfiltered criticism, which presents real challenges in discussing race in an accurate and encompassing way. Alongside this, literature is an overlooked facet of social progression; It offers the reader new ways to imagine the world without the limiting and overbearing attachments of the real world. Idealism is essential to progressivism. McKay provoked new ways of envisaging the future, combining pragmatism with idealism to craft utopian visions. As a society collectively dependent on the input of individuals, we are aware of the fact that action can be prompted by the seeds of thought distributed by various minds diverse in opinion and experience. McKay wrote creative plots unrealized to serve the following purposes: to craft a personal coping mechanism for deep rooted oppression, to rationalize resentment towards strong institutional forces while relating to his marginalized peers, and to push the boundaries of society at large in a positive direction of racial progression through honesty and pathos.

Oral-14: The Impacts of Portrayals of Muslim Women in American Popular Culture on Muslim Women
Authors: Sadia Chowdhury
Faculty Mentor: Orit Avishai-Bentovim
College: Fordham College at Rose Hill

American popular culture frequently portrays Muslim women as stereotypical caricatures that strip them of their agency, thereby compromising their diversity, humanity, and richness and advancing harmful rhetoric towards them. In previous research, I examined how American popular culture portrays Muslim women and identified five dominant images: the "undesirable Muslim woman," the "oppressed Muslim woman," the "subservient Muslim," the "Muslim warrior," and the "Muslim hero." These portrayals tend to erase and silence Muslim women's voices, and enforce negative stereotypes, which in turn, lead to othering, lack of respect, violence, and hateful views. In this research, I examine the impacts of these portrayals of Muslim women in American popular culture on young Muslim women residing in the NYC area. I specifically evaluate how Muslim women respond to and experience these images and how these images influence their identities and perception of themselves, of other Muslim women, and of Islam. I find that these images do not directly impact how Muslim women perceive themselves or others. However, these images do impact their relationship with Islam, as they often feel that they have to defend their religion and their right to practice their religion. Understanding how Muslim women perceive and experience dominant media images will allow us to both identify the negative impacts of popular depictions on Muslim women as well as curate more positive images in American popular culture.

Oral-15: Measuring Stress Levels: Inter-Comparability of Popular ELISA Kits Reveals That Brand Matters
Authors: Ashley Weems
Faculty Mentor: Tiffany Yip
College: Fordham College at Rose Hill

The awareness of effects of stress have increased exponentially, especially with regards to stress due to discrimination. In a recent stress report released by the American Psychological Association's "Stress in America: The Impact of Discrimination", sixty-nine percent of Americans said they experienced some form of discrimination. The discrimination experienced by these Americans fuels high levels of stress and other health disparities (depression, diabetes, high blood pressure). Cortisol, or better known as the "stress hormone", is said to be the number one public health enemy. Elevated cortisol levels lead to adverse effects such as: interference with learning and memory, lower immune function, and increased weight gain. Furthermore, chronic stress and elevated cortisol levels increase risk for depression and lower life expectancy. Due to the increasing attention to the effects of elevated cortisol levels on the population, the generally accepted method of quantification through immunoassay kits yields investigation. An increased demand for convenient methods has prompted several companies to develop enzyme-linked immunosorbent assay (ELISA) kits to measure different hormone concentrations. However, the inter-comparability of kits from different manufacturers has yet to be determined. By investigating the inter-reliability between DRG and Salimetrics

brands of ELISA kits, I found that the Salimetrics brand kits are more reliable. As this sample size is significantly larger and more diverse (28.3% Asian/Asian American, 8.5% Black, Af. American or West Indian, 19.3% Hispanic or Latino, 43.9% White) than in any article thus far published, this analysis provides novel information for the field of cortisol level quantification by immunoassays.

Oral-16: Characterizing Summer Diurnal Patterns of Photosynthesis on American Beachgrass (Ammophila breviligulata)
Authors: Colleen Cochran
Faculty Mentor: Steven Franks
College: Fordham College at Rose Hill

Coastal dunes offer a number of invaluable ecosystem services, serving as both a protective barrier and a functioning habitat when properly maintained. Vegetation plays an important role in developing and maintaining dunes. Coastal dunes are highly stressful environments with only a limited variety of plants able to survive at the forefront of the dune. American Beachgrass (Ammophila breviligulata), a C3 plant, is able to survive in such conditions and is favored in management due to its deep roots that provide structural support as the plant grows in time with the sand accretion rate. When evaluating protection of natural vegetation, it is important to understand the response of coastal dune plants to environmental stressors. We collected dirunal photosynthesis during the full growing season of Ammophila. We hypothesized that Ammophila would stop photosynthesizing when the temperature, light intensity, and water stress are too high. Surprisingly, Ammophila was able to photosynthesis during these stressful summer conditions. We observed decreased photosynthesis in Ammophila during stressful conditions throughout the summer growing season. Photosynthesis continued to decrease througout the late growing season as the plants prepared for dormacy. Midday stomatal conductance peaked before and after dormancy and declined during the stressful middle of the summer. Seasonal and diurnal patterns of photosynthesis in Ammophila have not been previously characterized, making this a novel study. Understanding patterns of photosynthesis will help dune management as the ecophysiological functioning of dune plants will help coastal managers understand the effect of Ammophila on ecosystem-level processes.

Oral-17: Gene Expression Analysis of Candidate Genes Contributing to Sex Differences in Drug Abuse
Authors: David Shoshan
Faculty Mentor: Marija Kundakovic
College: Fordham College at Rose Hill

Although it has been widely recognized in previous studies that females have a higher sensitivity to cocaine compared to males, a comprehensive explanation for this phenomenon remains elusive. Previous investigations into the molecular basis for this sex difference have failed to account for the neuromodulatory effect of estrogen on female brain structure and function by tracking estrous-cycle-dependent fluctuations in estradiol. The goal of our study was to elucidate this in an animal model by conducting molecular analyses in the Nucleus Accumbens (NAc), part of the reward pathway underlying addiction, high-estrogenic females, low-estrogenic females, and male mice that were exposed to cocaine. Gene expression analysis was performed using quantitative qRT-PCR on several candidate genes implicated in addiction and synaptic plasticity, including DNA methyltransferase 3a (DNMT-3a), cyclin dependent kinase-5 (Cdk5), glutamate transporter (GLT-1), and glutamate AMPA receptor 3 (Gria3). Significant differences were found in the expression of GLT-1 between the Proestrus (high estrogen) female group and the Male group. Differential expression of this glutamate transporter indicates a sex difference in learning and memory components of addiction. These results highlight the role of estradiol in female sensitivity to cocaine addiction and implicate glutamatergic transmission in the molecular mechanisms of this sex difference.

Oral-18: How Does the Brain Respond to Stereotypes During Written Sentence Comprehension
Authors: Camilo Zapata
Faculty Mentor: Sarah Grey
College: Fordham College at Rose Hill

If a child were to say that she needs wine before bedtime, she would likely receive surprised reactions by the listeners. This reaction stems from the speaker-sentence context where the speaker (a child) is doing a stereotypically inconsistent/socially incongruous action (drinking wine). The present study investigates how these speaker-sentence contexts may elicit different brain responses between socially congruent and socially incongruent written sentences. This study expands on previous research that has found different brain responses in auditory contexts by investigating whether written sentences that conflict with social stereotypes elicit a similar brain response. The experiment manipulated gender, age, and socioeconomic status stereotypes in sentence contexts and asked participants to read the

sentences while electroencephalogram (EEG; brainwave) data were acquired. The study additionally utilized an empathy quotient (EQ) asking questions like "I can easily tell if someone else wants to enter a conversation" to quantify where participants lie on an empathy spectrum and determine whether brain responses are linked to different levels of empathy (as has been observed in related research). The results will be discussed in relation to how the social brain processes language and implications for future research.

Oral-19: Youth Voter Turnout in Local Elections
Authors: Claire Nunez
Faculty Mentor: Olena Nikolayenko
College: Fordham College at Rose Hill

Voter turnout, especially among youth, is significantly lower in local elections than in presidential and state races. However, the local government is responsible for tackling a wide range of public policy issues that directly affect youth. This study explores the impact of the neighborhood type, social media use, and political competition on youth's participation in local elections. Based upon in-depth interviews with 18-22 year old university students, the analysis finds that the competitiveness of local elections increased the odds of youth voting. Meanwhile, living in a suburban area, compared to a rural setting, did not appear to increase the likelihood of youth electoral participation. Furthermore, the interviewed youth claimed that social media use did not serve as a catalyst for their involvement in local elections. Taken as a whole, these findings suggest that politicians should develop more effective election campaigns to reach young voters.

Oral-20: Who Protests in America?
Authors: Brad Langhoff
Faculty Mentor: Olena Nikolayenko
College: Fordham College at Rose Hill

Scholars have long analyzed the determinants of protest participation, but there is an ongoing debate about the relative importance of various socio-demographic and attitudinal factors on protest behavior. Using data from the sixth wave of the World Values Survey, this study examines determinants of protest participation in contemporary America. The statistical analysis estimates the effects of (1) someone's status as chief wage earner of a household, (2) employment status, (3) educational level, (4) marital status, (5) income level, (6) sex, (7) size of town, (8) self-described social class and (9) level of interest in politics, and (10) level of religiosity on protest participation. Employing a linear probability model, the analysis finds that better-educated, higher-income young men in large cities are more likely to protest than others. The level of religiosity, however, does not seem to exert statistically significant effects on protest participation. This study will not only contribute to contentious politics literature, but also inform the policy-making debates by identifying the protest potential of individuals with certain socio-demographic characteristics.

Oral-21: Discrimination within the Housing Voucher System for Victims of Domestic Violence
Authors: Jenna Koury
Faculty Mentor: Marleny Rubio
College: Fordham College at Rose Hill

My research was conducted while interning at Violence Intervention Program, 'VIP' is an organization that works to give emergency housing to victims of domestic violence throughout the Bronx with an emphasis on protecting and housing members of the Latinx community. Working at VIP for the summer of 2018 gave me the ability to interact with both a marginalized community as well as the people dedicating their lives to fixing the broken system these women were placed into. At the beginning of my research, the voucher system in New York City had nine different types of vouchers. The wide range of vouchers, each calling for different applications and pre-requisites, was an obstacle in itself for the women working with VIP. The issue of multiple vouchers was relieved at the end of July. The state of New York combined all of the vouchers into one. The benefit of this change is that both people experiencing homelessness and victims of domestic violence are able to apply to one voucher allowing a more expedited process. The overall consensus was there is a slowness of HRA and the counselors within DHS were the biggest issue within the system. The other main concern is the monetary amount given with the voucher. The voucher no matter the size of the family will be under $2,000 a month for rent. This level is under the city poverty line and makes it very difficult for clients to find housing within this limited budget.

Oral-22: The American Manifesto: How the American Legion and Anti-Communism Shaped Our Conception of National Identity
Authors: Matt Cappetta
Faculty Mentor: Christopher Dietrich
College: Fordham College at Rose Hill

The American Legion is a national veterans organization founded at the conclusion of WWI which came to take on an outsized role in American politics in the second half of the 20th century. As veterans poured back into civil society following the conclusion of WWII, the American Legion organized and mobilized this massive and amalgamated body of veterans into a structured and unified political force seeking "to foster and perpetuate 100% Americanism." After analyzing the literature and history of the American Legion, it is apparent that the Legion understood Americanism to be a principally Christian and Libertarian-Individualistic concept, contributing to a dramatic shift in national identity that took place in American politics over the course of the Cold War. The Legion's ideological effort to inculcate this particular conception of American identity was focused largely on the anti-communist effort, gaining them the title as the most influential independent anti-communist lobbying organization in the Cold War. The American Legion's anti-communist effort to perpetuate their notion of 100% Americanism was instrumental in transforming our conception of national identity over the course of the Cold War. This shift in national self-understanding allowed for the transition from FDR's big-government welfare state of the 1940s to the libertarian small-government conservatism of the 1980s. I argue that by presenting Americanism as principally Christian and Libertarian-Individualistic, the American Legion created a shift in the ideological climate of American culture that paved the way for the election of Ronald Reagan and the conservative-religious New Right of the late 20th century.

Oral-23: Imperio por la Idea
Authors: Philip Andrew Wines
Faculty Mentor: Sara Lehman
College: Fordham College at Rose Hill

This work probes the mythological origins of the power structures within both medieval Spain and precolonial America, tracing methods of legitimization up to the conquest period and beyond. This paper preforms that examination through religious, philosophical, sociological, and political lenses. The work is divided between two contrasting analyses of the Spanish campaigns. The conquest of Mexico, serving as an example of cosmological heterogeneity and the failure of authority, is drawn from the account of Hernan Cortes in The Letters of Relation, and the Aztec narrative of Broken Spears. The conquest of Peru serves as an example of cosmological fusion through the mestizo and the creation of empire and is buttressed by the text of Garcilaso de la Vega's Royal Commentaries of the Incas. This paper ultimately concludes that authority must essentially be derived from cosmology.

Oral-24: Crossroads: Mapping Narrative Intersections of the Bronx African-American and Italian-American History Projects
Authors: Alison Rini
Faculty Mentor: Kathleen LaPenta-Long
College: Fordham College at Rose Hill

I have created a digital interactive map of the Bronx in the mid to late 20th century in order to contextualize selected stories from the interview archives of the Fordham's Bronx Italian-American History Initiative (BIAHI) and Bronx African-American History Project (BAAHP). This project represents the first official collaboration and conversation between the interview archives. My research question focuses on the impact of racial relations on urban demographics, and how they affected individual Bronx residents. Using open-sourced software from Knightlab by Northwestern University and Mapbox, I created a Digital Humanities mapping project to be showcased on both the BAAHP and BIAHI websites, placing individual stories, pictures, audio, and videos on specific locations on the map to visualize similarities, differences and convergences between the two collections' narratives. This project will be the first digital derivative project to emerge from these initiatives.

Oral-25: Justice in Shakespeare: A Triadic Conversation among Hamlet, Henry IV, Part 2, and The Merchant of Venice
Authors: Sophia Giudici
Faculty Mentor: Heather Dubrow
College: Fordham College at Rose Hill

In this paper, with the aid of my mentor Dr. Heather Dubrow, I delved into a comparative analysis of the theme of justice across three of William Shakespeare's plays. My query for this investigation was to determine whether or not Shakespeare's texts could be seen to have a consistent treatment of the theme of justice. This investigation's findings result from the combined arguments of my textual analysis and attention to secondary sources. The secondary sources utilized include textual analyses of these plays by prominent Shakespeareans, as well as literary research providing historical context.

Oral-26: Indigenous, Ignored, Incarcerated: The Creating of the Native American "Savage"
Authors: Rafael Saplala
Faculty Mentor: Christopher Dietrich
College: Fordham College at Rose Hill

This project will examine the historical and societal underpinnings predicating the disproportionate incarceration of Native Americans in the United States. Specifically, this project will examine the societal, legal, and political characterizations of Native Americans from after the Civil War and to the early 1900s that created and justified the current Native American criminalization rates experienced today. Despite the de jure enfranchisement of African Americans after the Civil War, the nation employed various forms of extralegal measures to oppress minority groups in the United States; while the plight of African Americans is widely known and reported on, another group faced similar scrutiny and oppression—their oppression, however, began when European colonists arrived in the New World. Throughout American history, Native Americans have been subjugated in various ways—the denial of sovereignty, the restriction of citizenhood, and now the covert criminalization of Native people. Today, across the nation—and especially in states heavily populated with Natives—prisons are disproportionately filled with Native Americans. The current literature focuses on the history of Native American criminalization but does not conclusively connect specific eras with the current incarceration epidemic. This project intends to closely examine the seminal period after the Civil War and directly connect it to current statistics and today's perceptions of the oppressed group. In doing this, this project will add to the relatively scarce amount of literature surrounding the generally ignored issue of Native American oppression and incarceration. Ultimately, the project hopes to raise awareness and visibility on the current epidemic.

Oral-27: From Exoticism to Multiculturalism: New Approaches to Cultural Otherness in Post-WWII American Popular Music
Authors: Yohannah Franco Choi
Faculty Mentor: Matthew Gelbart
College: Fordham College at Rose Hill

As disputes of cultural ownership and exploitation plague the American popular music industry, we must evaluate the agents, terms and outcomes of intercultural exchange in order to move towards more equitable commercial practices and mutual respect. This research project seeks to identify some descriptive and prescriptive signs of progress by answering the following question: In the U.S.'s culturally hybrid pop music scene between the 1950s-80s, how did white male artists' engagement with emerging multicultural ideologies demonstrate either an improvement upon or perpetuation of Western-centric exoticism through their cultural appropriation of historically marginalized or exploited peoples? By comparing two representative popular artists on either end of this timespan - Pete Seeger and the internationally influenced Folk Revival of the 1950s-60s, and Paul Simon and his South African-based 1986 album Graceland - one can track tangible progress from a tokenistic, monoculturally regulated multiculturalism with exoticist tendencies to a more decentralized, collaborative and empowering multiculturalism. This conclusion is reached through evaluation of three aspects of music production: what each artist thought he was doing, what he actually did in creative, commercial and performative practices, and how he was critically and publicly received in the States. The resulting analysis demonstrates that both Seeger's and Simon's musical appropriations were challenged by the progressive pluralist discourses of their time, and that both artists manifested to varying degrees a new multicultural sensitivity to originating cultures' voices and agency by taking deliberate steps to empower them through public attribution, financial resources and informed education about their cultural contexts.

Oral-28: Fascist Aesthetic in the Films of Alessandro Blasetti
Authors: Austin Sacker
Faculty Mentor: Francesca Parmeggiani
College: Fordham College at Rose Hill

In the fascist ideology, the artistic and the political are largely inseparable. Previous scholarship has determined largely that fascist political life is simultaneously seen as inherently artistic, and also a reproduction of art. In fascist Italy, monumentalism (particularly in architecture and public art), and the Futurist movement have been identified as major features of this fascist aesthetic. While these features are undoubtedly present in the films of Alessandro Blasetti that he produced during the fascist period in early to mid-20th Century Italy, his fascist aesthetic extends beyond just monumentalism and Futurism. Blasetti makes use of a myriad of filmmaking decisions to produce a more comprehensive fascist aesthetic. The fascist aesthetic of Blasetti consists of tableaus, specific visual techniques, editing techniques, use of sound and narrative choices, that ultimately demonstrate both the pervasive nature of the fascist ideology and its exaggerated artistic qualities.

Oral-29: Music, Mathematics, and the Ancient Legacy: Leonhard Euler's Tentamen and Classical Reception
Authors: Sarah Maher
Faculty Mentor: Eric Bianchi
College: Fordham College at Rose Hill

Leonhard Euler (1707-83) is regarded as one of the greatest mathematical minds of all time. This presentation will focus on his relatively unknown music-theoretical writings, mainly contained in the Tentamen novae theoriae musicae [1739], or "Attempt at a New Music Theory." It will firstly look directly at the Tentamen and examine its basic mathematical principles with mention of how these principles relate to some of Euler's later mathematical writings. Then it will examine the Tentamen in its cultural context. Through analysis of various historical texts and secondary sources, this presentation will consider the legacy of utilizing Classical sources in music theory from the Middle Ages onwards and study how Euler engages with this tradition in order to legitimize the content his own mathematical music theory. I conclude that, although Euler employs several Ancient musical ideas that are often contradictory, he uses them to lend credibility and legitimacy to his unusual music-theoretical views that faced criticism from his peers.

Oral-30: Neither Here nor There: The Work of Artist Tiffany Chung and Theorizing Vietnamese Diasporic Identity
Authors: Sofia D'Amico
Faculty Mentor: Asato Ikeda
College: Fordham College at Rose Hill

Artists from diasporic populations are situated at a unique vantage point to relay transnational experience, often not affixed firmly to a single national identity. Artist Tiffany Chung was born in Danang, Vietnam in 1969 and became part of the post-1975 Vietnamese Exodus of refugees to the United States. Especially in the case of diasporic and immigrant artists, I argue against nationality and place of birth as the paramount lens through which to interpret work and artistic ethos, and instead consider lifetime experience and the individuality of Chung's work, while investigating her chosen level of artistic engagement with Vietnam. By examining Chung's presence in recent group exhibition New Cartographies at Asia Society Texas Center, her monumental solo show at the Smithsonian Museum of American Art Vietnam, Past is Prologue, and solo booth at Miami Art Basel 2018 with Tyler Rollins Fine Art, I examine Chung's relationship with Vietnamese identity while also exploring her self-identification as an international artist of hybrid influences. Though incredibly interdisciplinary in her practice, Chung is most well-known for her cartographic works, requiring equal parts critical research as they do art-making, studying geopolitical conflict, migration, displacement, and urban transformation. Chung's commitment to migration issues are frequently attributed to her own experience as a refugee and early years in Saigon, Vietnam. Yet, it has continuously proven impossible to frame Chung as an archetype for the contemporary Vietnamese artist, and difficult still for the increasingly diverse migratory experiences of Vietnamese-American artists, to whom I dedicate much-deserved scholarly attention.

Oral-31: Ethnicity, Violence, and Imperialism in Egypt and Nubia
Authors: Beatriz Barraclough-Tan
Faculty Mentor: Kimberly Consroe
College: Fordham College at Rose Hill

Nubia was the site of almost constant conflict during the Egyptian Middle and New kingdoms, nowhere more visible than around the third cataract. Kerma was conquered and primarily occupied during the Middle kingdom (2050–1650 BC), while Tombos, also at the third cataract, would serve as a relatively peaceful Egyptian colony during the New Kingdom (1550–1050 BC). The two sites are close and are good examples of any change that occurred over the thousand years that are the study time. There is evidence from the Kerma remains that the native populations were subject to interpersonal violence that is not shown in the later populations of both those of Egyptian and Nubian descent at Tombos. Tombos was most likely an administrative centre for Egyptian holdings in Nubia, given the natural blockage in the river that controls traffic on the nile, as well as how Tombos shows fewer hard labour markers than the Kerma population. There are also fewer traumatic incidents in the Tombos population than in the Kerma group. This may be due to status, the ethnic background of Egyptian overseers vs Nubian workers, or changing Egyptian attitudes towards treatment of conquered peoples. Comparing remains from the two sites allows for analysis on Egyptian imperial practice, but further research on Nubian and Egyptian ethnicity as expressed in bone is required.

Oral-32: Smartphones and Smuggling in the Age of Digital Borders: How Syrian and Afghan Refugees Face Different Obstacles to EU Exclusion and Rightlessness, and How Humanitarian Digital Information Networks Must Mitigate Disparities
Authors: Rachel Recker
Faculty Mentor: Nora Murad
College: Fordham College at Rose Hill

The European Union's borders are digitizing; moving away from defense of the geographical border toward an internal policy of securitization, surveillance, and registration. The EU's policy toward migration is one of exclusion, and legal migration systems of visa and asylum are nearly impossible. This leads asylum seekers to take far more dangerous paths to refuge. Some circumvent EU policies by taking alternative routes through the Balkans to reach Northern Europe, relying on information from a complex digital network of other migrants. Others turn to dangerous and untrustworthy traffickers. In circumventing official EU systems and staying just beyond its surveillance, they also elude vital humanitarian aid. The nation state is changing, and it is being changed by these stateless individuals whose vulnerability rests on EU shoulders. This paper focuses on Syrian and Afghan refugees who are seeking asylum in Europe. I explore how the intersections of national origin and media literacy provide obstacles for these two groups. I examine how the EU's exclusionary Dublin regulations and the Eurodac fingerprint system violate rights; the EU must rethink its policy and reimagine its borders. I show how emerging humanitarian efforts of digital refugee information hubs in Greece, Italy, and other migrant hotspots in Balkan states miss critical populations of people who are not media literate, or do not have access to smartphones. The European Union must work together with humanitarian actors to create a plan that will deliver timely, relevant, accurate, and trustworthy information to vulnerable refugee populations, with or without a smartphone.

Oral-33: Social Media's Lasting Impact on the Middle East
Authors: Tyler Cremins
Faculty Mentor: John Entelis
College: Fordham College at Rose Hill

This research utilizes critical discourse analysis, qualitative interview data, and media analytics to situate the role of Social Media within the Arab Spring protests and the lasting effect of these technologies on society in the Middle East and North Africa. Investigating the prevalence of internet enabled technologies and social media platforms this paper will explain the acceleration of media adoption during the Arab Spring. Using the materials from revolutions in Tunisia, Egypt, Syria, and Iran from 2009-2014, this research will attempt to determine what role social media and public discussion played in the eventual outcomes of each nation. This research will also attempt to find common themes of discourse in each setting and how the transnational element of these technologies and social movements affected the local grievances of protesters and their initial demands. Why do current developments in the regions internet infrastructure and penetration challenge the claims of social media liberation? Finally this paper will make predictions about the possibility of similar events in the future and further innovations that could help or hinder pro-democracy advocates.

Oral-34: Democracy in Iraqi Arab Tribes
Authors: Gregory Hopp
Faculty Mentor: Mohamed Alsiadi
College: Fordham College at Rose Hill

The Iraqi Tribal System is a foreign entity to Americans, but it holds a place of great importance in internal Iraqi politics and in relations between Iraqis and the Coalition Forces. Numerous works have been written on this intricate network of tribal, clan-, and house-relationships, most notably those by ‘Abbas Al-‘azzawi and Samuel Stolzoff, yet ignorance of the tribal system still diminishes the efficacy of American efforts in Iraq. In this project, I set out to answer a question which should be a primary point of understand for US generals and politicians dealing with Iraq, but which has not yet been clearly explained and presented in western terms by these otherwise wonderfully informative works: can the Arab tribe in Iraq be considered a democracy? I begin by briefly confirming and demonstrating that Arab tribes, both in Iraq and in other Middle Eastern countries where this system exists, act as a pseudo-government; they manage the resources of the tribe, adjudicate disputes, and represent the tribes interests, both through the advocacy of the sheikh and creation of a voting block. I then analyze the authority and selection of the sheikh, to see if this system is compatible with democratic forces. Finally, I review the results of a survey of mine which was distributed to Iraqis, to see if it confirms my hypotheses.

Oral-35: Approaching the History of the American AIDS Crisis Through Narrative
Authors: Sabrina Jamileh Sayegh
Faculty Mentor: Orit Avishai-Bentovim
College: Fordham College at Rose Hill

The goal of this project was to present the history of the AIDS crisis in late 1980s America through a narrative, specifically, a script. The story adapts two queer coded characters from Victor Hugo's Les Miserables and places them in 1987 New York City. One character, Enjolras, is an activist, believing that institutional change to improve the lives and treatment of people with AIDS can only come through direct action. His partner, Grantaire, is a skeptic and ultimately lacks confidence in the potential impact of the activist movements. The pair struggle to reconcile their different approaches to living with AIDS and their beliefs about what activism should look like. They also experience conflict due to differences in their relation to spirituality. The history of this epidemic and the activist movements involved in combating it are largely untaught in formal education settings. They are typically covered in classes specifically situated in queer or sexuality studies departments. This project aims to make that untaught history more accessible as well as more palatable than a textbook might. This history is especially important for queer youth to learn and understand, considering they have likely had little to no exposure to queerness in its historical context.

Oral-36: Power and Social Organization Among Medical Interpreters
Authors: Olivia Taylor
Faculty Mentor: Daisy Deomampo
College: Fordham College at Rose Hill

Medical interpretation is a service relied upon by a growing number of Limited English Proficiency (LEP) patients in the US, as well as the health care providers (HCPs) who serve them. There is extensive research about the roles medical interpreters fulfill within a triadic relationship between LEP patients and HCPs. Few studies, however, have asked questions about medical interpreters as a group outside of this context. This study investigated the challenges faced by medical interpreters and the strategies used for managing them. It also examined the social organization and power distribution within the profession. The findings for interpreter challenges were grouped into four interconnected categories: working conditions, lack of support, psychological/emotional impact, and physical impact. Interpreters were found to primarily manage challenges using individual strategies, rather than group methods. An analysis of social organization and power distribution in the profession contributed to a deeper understanding of these findings. The absence of a cohesive community encourages individual management of work challenges. Interpreter organizations serve important functions within the professional culture, but wield no authority. The lack of internal hierarchy means that challenges caused by outside forces are met with little resistance. Studies have shown that medical interpretation is integral to positive health outcomes among LEP patients. The findings of this study demonstrate that most of the challenges interpreters encounter are not adequately addressed. The negative impact of such challenges on interpreters’ abilities to perform their roles is a disservice to LEP patients.

Oral-37: Bridging The Gap: Maternal Health Outcomes in Black Communities
Authors: Anya Patterson
Faculty Mentor: Orit Avishai-Bentovim
College: Fordham College at Rose Hill

This research examines the intersections between race and class in the healthcare system, specifically focusing on middle-class black women's experiences with their medical professionals during childbirth. Existing research shows that Black women of all class backgrounds have disproportionate negative health outcomes in childbirth as compared with white counterparts, suggesting that institutionalized racial biases at least partially account for some of these disparities. This research seeks to find commonalities between the experiences of middle class Black women and those of the upper and lower class, and to identify any biased treatment they experienced during maternity (regardless of whether or not they perceived it to be biased). This study will use a sample of 15 to 20 Black-identified middle class women ranging in age from 18 to 35 who have experienced pregnancy and childbirth in the past 5-10 years. Open-ended interviews will cover the following themes: respondents' perceived relationship with the medical professionals; perception of bias and discrimination; and as ease of access to health care providers.

Oral-38: Exploring Weight Indicators, Peer Influence, and Emotional Well-Being in Adolescents
Authors: Rochelle Mendonca
Faculty Mentor: Lindsay Hoyt
College: Fordham College at Rose Hill

Adolescence is a critical time of physical and cognitive development. Along with dramatic physical changes, the brain goes through a major period of reorganization, as identity and self-consciousness begin to develop. The growing displeasure one has with their body along with appearance conversations with school peers, can lead to body dissatisfaction, which in turn may decrease emotional well-being. The present study seeks to understand the relationship between subjective (body image) and objective (e.g., waist-hip ratio, body mass index) indicators of weight status and emotional well-being (i.e. depression, anxiety, stress, and positive well-being). The study included 30 participants (18 female), aged 9-15 years ($M = 12.23$, $SD = 2.03$). The sample was 30% Hispanic, 23% Black, 23% Asian, 10% Native American, 7% White, and 7% Black/Hispanic. Results suggested that objective, but not subjective, indicators of weight status predicted emotional well-being. Specifically, higher anxiety was significantly associated with higher weight ($\beta = 0.007$, $p = 0.018$), fat percentage ($\beta = 0.043$, $p = 0.012$), and body mass index ($\beta = 0.073$, $p = 0.012$) in boys. In girls, a smaller waist-hip ratio predicted worse anxiety ($\beta = -0.48$, $p = 0.025$). There were no significant findings for subjective weight, possibly due to cultural differences in perceptions of body image. Overall, the findings are contrary to the hypothesis that body image would be more closely tied to emotional well-being than objective weight. Therefore, future research with larger samples should explore potential mechanisms between objective weight and mental health in both boys and girls.

Oral-39: Comparing Hopelessness and Death Anxiety in Advanced Cancer Patients with Different Health Perceptions
Authors: Molly Ni'Shuilleabhain
Faculty Mentor: Barry Rosenfeld
College: Fordham College at Rose Hill

For individuals with advanced cancer, distress and hopelessness can have a profound impact on quality of life. For example, death-related distress was found to be positively associated with depression and negatively associated with emotional, physical, and functional well-being (Lo et al., 2011). Likewise, increased hopelessness was found to be a strong predictor of slower recovery from medical interventions and higher likelihood of death during a six-year follow-up period (Everson et al., 1996). Prigerson (1992) identified three types of health perceptions associated with different end of life outcomes. The purpose of this study is to compare the extent of hopelessness and death anxiety across these three groups. Patients with metastatic cancer (N=117) completed self-report surveys at Memorial Sloan Kettering Cancer Center outpatient clinics. A one-way analysis of variance showed that individuals of different health perceptions significantly differed in their levels of hopelessness, $F(2, 111) = 16.13$, $p < .001$, and levels of death acceptance, $F(2, 112) = 7.55$, $p = .001$. Patients who reported their health status as "Relatively healthy" as compared to "Seriously and/but not terminally ill" appear to be protected from hopelessness and death anxiety. Further research is needed to elucidate the mechanisms of prognostic awareness and death denial across these three groups. Identifying individuals at-risk for distress and hopelessness for targeted interventional therapy is necessary to optimize end of life outcomes.

Poster Presentations

Anthropology

Poster-1: 2019 Fordham Garbology Project
Authors: George Kite and Brooke Olownia
Faculty Mentor: Kimberly Consroe
College: Fordham College at Rose Hill

The Fordham Garbology project, which began in 2012, has continued for the past seven years with many interesting discoveries. The 2019 season is no different, as we looked at traditional discard materials along with a special focus on vaping paraphernalia and the upward trends compared to the previous years' data. Past projects have examined qualitative and quantitative properties of general disposal practices, recycling, youth activity, and cigarette tax evasive behavior on the Rose Hill Campus. The amount of appropriate material that ends up in designated recycling bins has been examined again in the 2019 field season and is presented here, but the focus this year has been on the frequency of electronic cigarette consumption in the Fordham community, and the material indicators of that behavior on campus. Close attention is given to the specific brands and flavors of the vaping paraphernalia in order to better understand the increasing phenomenon of vaping on campus and in a broader sense, the United States. The data is compared with FDA trends that show an increase in overall usage of vaping products in the U.S. and serves as a reminder that Fordham University is part of this national trend.

Poster-2: Women's Health at Fordham: Is it an Afterthought?
Authors: Casey Metzler
Faculty Mentor: Kimberly Consroe
College: Fordham College at Rose Hill

There are more female than male students on Fordham's Rose Hill Campus, yet accessibility to feminine sanitary products and information about women's healthcare is lacking is many aspects. These oversights are discriminatory and harmful towards the female population of the campus community. This project examines this problem using four metrics, including the geographical availability of feminine products on campus, the prices of these products, the prices of the same products off campus, and information available through the health center and its website. This research was able to ascertain that Fordham University is underserving its female population in regards to accessibility to feminine products and information about common women's health problems. By prioritizing women's health on campus, and by creating greater access to resources such as feminine products, as well as providing more in-depth information about common women's health issues, both on the Fordham Health Center website and at the physical location, these flaws can be remedied. By taking these actions, Fordham University can better serve all the female students, staff, and visitors that come to the Rose Hill Campus, and serve as a model for other universities and institutions in terms of women's healthcare access.

Biological Sciences

Poster-3: Gene Therapy and Sickle Cell Anemia
Authors: Daniel Miklos, Morgan Cannini, Nina MacClean, and Matt O'Connor
Faculty Mentor: Faaria Ahmad
College: Fordham College at Rose Hill

Gene therapy is an experimental technique that aims to treat genetic diseases. Techniques for gene therapy include the introduction of a healthy copy of a mutated gene into an individual's genome or the direct alteration of a disease-causing gene (1). The development of successful gene therapy techniques may hold the key to being able to successfully treat the millions of individuals who suffer from genetic diseases worldwide. An effective treatment option for genetic diseases would have a profound medical impact across the globe. One such genetic disease that is being experimentally treated with gene therapy is Sickle Cell Anemia. By delivering the wild type hemoglobin gene to patient's hematopoietic stem cells via viral infection or through the use of the CRISPR/CAS 9 system, gene therapy strategies for Sickle Cell Anemia aim to repopulate wild type red blood cells in affected individuals (2). However,

harmful side effects may potentially accompany this treatment method (3). The purpose of this project is to provide a comprehensive overview of gene therapy with particular regard to the treatment of Sickle Cell disease.

Poster-4: Genome Editing Advances Using CRISPR/Cas9 on Crop Plants
Authors: Christian Cassar, Sean Farragher, Annalise Holesovsky, and Alexander Oruci
Faculty Mentor: Tara Anderson
College: Fordham College at Rose Hill

Use of the CRISPR/Cas9 system for genome editing has become a very popular topic of study in the field of genetics, adding significantly to the many advances in editing techniques. Armed with the knowledge of the location of genes in genetic material, scientists have sought to find different methods to edit the genomes of many organisms. As a result of its proven efficacy, the CRISPR/Cas9 system was established as a genome editing tool. Genome editing using CRISPR/Cas9 has many applications, including in the fields of biological research, immunology, and agriculture. In regards to agriculture, the CRISPR/Cas9 system has been shown to effectively alter the phenotype of the apple and to generate mutations in the genome of the tomato. These genomic modifications demonstrate a great potential for inducing phenotypic changes in plants like the apple, examples of which include reducing the rate of ripening in tomato crops by targeting the RIN gene for mutation, and modifying the appearance of a plant by targeting the PDS gene in apples, with both utilizing the CRISPR/Cas9 system for these modifications. Such applications allow for the CRISPR/Cas9 system to be used as a tool in a variety of fields to produce many benefits such as desirable attributes in crops.

Poster-5: Utilizing Gene Drive to Control Virulence of Malarial Female Mosquitoes
Authors: Daniella Denysov, Nia Johnson, Mary Ronsivalle, and Angelika Saribekyan
Faculty Mentor: Tara Anderson
College: Fordham College at Rose Hill

Genetic engineering technology has been used in an effort to reduce the fitness of malarial mosquitoes. Gene drive technology aims to propagate a specific trait throughout a population by increasing the probability that certain genes are inherited. In terms of medical relevance, gene drives can help control insect populations, and therefore reduce the spread of specific diseases. One approach to gene drive technology with malarial mosquitoes is based on CRISPR-Cas9 targeted disruption of the female specific isoform of the gene dsx essential for female fertility in the malarial mosquito species Anopheles gambiae. Another approach seeks to introduce parasite resistance phenotypes into a species of malarial mosquitoes Anopheles stephensi, making incapable of further transmitting the disease. With either method of population modification or population suppression, there is a chance for the development of resistance to the gene drive. Some studies show evidence of resistance to synthetic gene drive, making the introduction of the gene drive into the natural population difficult. However, some studies have explored the use of guide RNAs to reduce germline resistance rates, offering promising improvements to gene drive technology. A better understanding of the risks and outcomes of gene drives can help achieve malaria eradication through application to natural populations.

Poster-6: CRISPR/Cas9 and Cancer Research and Therapy
Authors: Joseph Floeder, Daniel Garcia, Victor Imparato II, and Alexander Vallone
Faculty Mentor: Tara Anderson
College: Fordham College at Rose Hill

CRISPR/Cas9 will revolutionize the way we treat genetic diseases. Research is being done on applying this genome editing tool in cancer research. CRISPR/Cas9 has been used to develop a cell line with the G12V mutation of the KRAS gene. A G12V mutation within the KRAS gene produces a protein product with a substitution at the 12th amino acid position, which produces KRAS proteins that perform their GTPase function without a growth factor stimulus. Continuous GTPase activity causes cells to proliferate at an abnormal pace, producing tumors, specifically in colorectal cancer. Those with the G12V mutation experience poor clinical outcome when treated with EGFR therapy. This cell line, which is engineered to include the G12V mutation in the KRAS gene, can serve as a control in labs testing for the presence of the G12V mutation in the KRAS gene in cancer patients. By performing Cas9 screening, entire segments of the cancer genome have been uncovered. When the lung cancer cell line was injected into mice, metastasis rates of lung tissue were slow. After being altered by the mGeCKOa genome-scale Cas9 knockout library, metastasis rates increased. Results showed how specific mutations could alter the oncogene to cause massive increases to metastasis rates. CRISPR-Cas9's applicability has led to developments of new generation models of cancer and expanded catalogues of genetic alterations. Mouse models of cancer with CRISPR-Cas9 implementation have been

used to uncover aspects of tumor initiation and maintenance, while genome editing has made ES cell manipulation more rapid and powerful.

Poster-7: Microchimerism in Human Pregnancy and Beyond
Authors: Fatima Khan, Olivia Doll, Maria Eisenhardt, and Beatriz Barraclough-Tan
Faculty Mentor: Tara Anderson
College: Fordham College at Rose Hill

Microchimerism is the appearance of small numbers of genetically foreign cells in an organism. Microchimerism often originates during pregnancy, when fetal cells enter the maternal bloodstream, where they can be observed for decades postpartum. These microchimeric cells can be detected through in situ hybridization of the Y chromosome in parrafin-embedded autopsy tissue samples from various organs of women who died either while pregnant with or shortly after delivering a son. Recent studies suggest that microchimerism could have immunological significance, both in terms of the developing fetus, and in the mother's future pregnancies and overall health. Data also indicate that the pluripotency of microchimeral tissue may be useful in fighting disease in mothers years after they have given birth. It has been hypothesized that maternal retention of microchimeric cells confers fitness through improving the outcome of future pregnancies. Although these cells may promote genetic fitness, the fetal cell manipulation of the maternal system can also have negative influences on women during and beyond pregnancy. The role of microchimerism during and after pregnancy remains an active area of research.

Poster-8: Coral Reef Reconstruction Through Genetic Modification
Authors: Sydney Souness, Saige Mitchell, and Noelle Chaney
Faculty Mentor: Tara Anderson
College: Fordham College at Rose Hill

Coral reefs, an essential ecosystem that harbors an extremely diverse population of organisms, are being threatened by global warming which increases the temperature of the oceans. Research is being conducted to promote sustainable coral reefs in their new marine conditions. The focus involves altering the genetic material of both corals and the microscopic organisms with which they interact in order to develop coral species that can survive and regenerate in elevated temperature conditions. Examining RNA edits in nuclear genes of dinoflagellates and gene expression in both coral species and their symbionts are useful techniques in determining the rate of distribution of coral bleaching along with devising ways to make the coral more resilient in response to environmental stressors. These gene editing methods are being researched to decrease the effects of climate-induced stress on reefs by introducing corals to gene sequences linked to environmental adaptability and to thermo-adaptive symbionts to promote the possible regeneration of coral species in efforts towards reef management and recovery.

Poster-9: Anti-Fungal Ability of J. lividum and S. rhizophila in Environments of Varying Nutrient Levels
Authors: Sereene Kurzum
Graduate Student Mentor: Elle Barnes
College: Fordham College at Rose Hill

Amphibians are an expansive and diverse class of organisms that play crucial roles in their ecosystems. However, they are currently under threat of mass extinction largely as a result of habitat degradation as well as the spread of the infectious disease, chytridiomycosis. Some amphibians, such as the salamander species Plethodon cinereus, have been found to possess bacteria that resist against the disease. Two such bacteria with high anti-fungal ability include Stenotrophomonas rhizophila and Janthinobacterium lividum. Both bacteria have been known to inhibit Bd on their own, but how they impact each other's growth and anti-fungal ability is still unclear. To test the impacts of the two bacteria on each other, as well as the effects of nutrient levels on their growth and anti-fungal ability, both bacteria were introduced first simultaneously, then sequentially, to two different media with high and low nutrient concentrations. qPCR was used to calculate population abundance, and Bd inhibition was measured by growing Bd in the presence of metabolites filtered from the media samples. I hypothesized that in sequential introduction, the species introduced first will have higher population abundance as compared to the abundance in simultaneous introduction, and that there will be higher Bd-inhibition in the higher nutrient media. Overall, this project will further inform not only how to treat this deadly disease, but how to prevent it from spreading and worsening the effects of amphibian mass extinction.

Poster-10: Relating Abiotic Factors to Microbial Diversity Across Gradients of Land Use
Authors: Marissa Mesko
Graduate Student Mentor: Elle Barnes
College: Fordham College at Rose Hill

Urbanization, an extreme form of land use change, has increasingly shifted diversity and functioning within surrounding ecosystems. Its effects are amplified in the soil, which contains microorganisms whose characteristics and functionality change as the environment is disturbed. This can have important consequences for larger organisms such as amphibians, who obtain skin microbes from soil. Environmental gradients, such as soil pH, moisture, and distance from a stream are useful for studying how abiotic factors associated with urbanization alter soil microbial diversity, indirectly affecting which microbes are available for amphibians. Soil samples were collected from nine amphibian habitats across an urban-to-rural gradient beginning in New York City. Bacterial DNA was extracted and amplified, then sequenced on an Illumina MiSeq. Sequences were analyzed and alpha and beta diversity were calculated. It was hypothesized that diversity would be positively correlated with pH and moisture, with urban areas being the most diverse. Soil pH was found to be more important in driving diversity variation than moisture or distance from stream. Urban soils were found to be most diverse but dominated by a few abundant taxa. We noted that soils by site and level of urbanization showed differences in community composition across the gradient. Studying microbial diversity along land-use gradients will help elucidate urbanization's effects on soil, microbial, and other ecosystems, providing a framework for approaching problems of conservation and responsible land use change. Results of this study may inform further research on the soil reservoir's impact on disease prevention in amphibian communities affected by urbanization.

Poster-11: Role of CrkII Adaptor Protein and Cofilin in HPV16 Infection
Authors: Elsa Au-Yeung
Graduate Student Mentor: Alyssa Biondi
College: Fordham College at Rose Hill

Human Papillomavirus (HPV) is the most common sexually transmitted infection in the US and is a major causative agent in cervical cancer (13). Previous literature has indicated that other HPV genotypes utilize a well-known clathrin and caveolin dependent mechanism to enter human epithelial cells. HPV 16 is different from these other genotypes because it uses a non-traditional internalization mechanism to enter the cell. It is hypothesized that HPV 16 uses a mechanism similar to macropinocytosis in order to manipulate the host's cells actin network and subsequently internalizes into the host cell via cell signaling. HPV 16 is dependent on heparan sulfate for initial attachment and activates a focal adhesion kinase FAK which is critical for viral entry to the early endosome (7). We hypothesize that HPV 16 internalization is driven by the formation of filopodia activated by intracellular signaling events through FAK phosphorylation, recruitment of adaptor protein CrkII and actin depolymerizing factor cofilin. Previous studies indicate that CrkII is involved in cytoskeleton remodeling. The objective of this study is to delineate the relationship among CrkII, cofilin, and filopodia formation by testing if CrkII induces signaling that upregulates cofilin. HPV 16 infection will be modeled using pseudovirions that mimic observed HPV 16 viral-membrane interactions. Fluorescent antibody tags and immunofluorescence microscopy will be used to visualize cytoskeletal rearrangements, observe CrkII and cofilin interaction, and identify filopodia formation. By further understanding the mechanisms involved in HPV 16 viral internalization, it will bring us closer to halting the HPV epidemic.

Poster-12: Optimization of RT-qPCR to Detect Heartland Virus in Ticks in Westchester, NY
Authors: Blair Brunetti
Faculty Mentor: Alan J. Clark
College: Fordham College at Rose Hill

Heartland virus (HRTV) is a tick-borne, RNA-virus whose range is currently expanding into the Northeast US from Midwestern and Southern states. HRTV has been shown to cause leukopenia and thrombocytopenia in human hosts. No vaccine or medication is currently available to prevent or treat HRTV, and the virus is capable of killing its human hosts. Thus, it is essential that a procedure be developed to identify such viruses in ticks. Acknowledging this, I worked to develop an RT-qPCR assay that would test for HRTV in ticks in the most accurate, cost-efficient and timely manner possible. Because assessing tick-borne viruses is a relatively new area of study, these procedures have been adjusted and optimized as needed. Optimizing this protocol will allow me to determine if ticks collected in Westchester, NY are carriers of HRTV and whether birds are competent vectors of HRTV. Since migrating birds have the potential to transport ticks hundreds of miles, finding infected ticks on birds would indicate an increased risk of HRTV developing into a national health crisis.

Poster-13: Relationship Between Telomeres and Aging/Cancer
Authors: Hannah Adams, Alexa Letizia, Kalyna Leshchuk, and James Langan
Faculty Mentor: Edward Dubrovsky
College: Fordham College at Rose Hill

Telomeres are regions of chromosomes that consist of a few hundred nucleotides of telomere repeats, along with the shelterin complex, that must "cap" each chromosome end to avoid activation of DNA repair pathways to preserve the integrity of the coding region of the DNA (Aubert et. al., 2008). It is suggested that telomere length can contribute to age-related diseases and cancers (Tabori et. al., 2007). Telomerase is an enzyme that catalyzes the addition of nucleotides to the 3' overhang of telomeres as a mechanism to counteract telomere shortening (Donate et. al., 2011). Researchers are investigating the consequences of abnormal telomerase activity to further understand abnormal cell growth. We will present an overview of current research regarding telomere length and cap proteins that investigates the connections between the viability of telomeres and the processes of aging and cancer development.

Poster-14: Genetically Modified Organisms: Creation, Detection, and Controversy
Authors: Elizabeth Carey, Marley Cutrona, Gabriella Fuertes, and Michelle Rodriguez
Faculty Mentor: Edward Dubrovsky
College: Fordham College at Rose Hill

Genetically modified organisms (GMOs) are organisms whose genomes have been artificially changed by genetic engineering methods. For example, genetically modified agricultural products are a prominent area of contemporary research. In addition, GMOs are substantially beneficial for developing model organisms to use in medical research. As GMOs became more prominent in science, the media often portrayed them negatively, leading to a large amount of public distrust of GMO food products and ethical debates of GMOs as a whole (Shanahan). Subsequently, much research has been done investigating the potential effects of GMOs on human health and methods to detect GMOs to determine a correlation between genetic modification of food products and health outcome. GMOs are made by identifying a trait of interest, isolating that trait, inserting the trait into a desired genome, and then propagating that organism (Powell). As of now, general PCR methods are considered to be the most reliable methods for the detection of GMOs. There are four main methods used for this identification of GMOs: screening methods, gene-specific methods, construct-specific methods, and the most advanced being event-specific methods (Holst-Jensen). The most important factor that contributes to the specificity of the PCR method is choosing the target sequence motif, which is normally part of the modified gene construct (Holst-Jensen). Despite public belief that GMOs negatively affect human health, studies have not found evidence of this and GMOs in both the agricultural and medical realms continue to be valuable resources for developing societies.

Poster-15: Studying Hypertrophic Cardiomyopathy in a D. melanogaster Model
Authors: Marisa Mercadante, Gabriella Pandolfelli, and Ekaterina Migunova
Faculty Mentor: Edward Dubrovsky
College: Fordham College at Rose Hill

Mutations in the human gene ELAC2 have been linked to hypertrophic cardiomyopathy (HCM), a deadly disease that causes thickened heart walls. Drosophila melanogaster possess a homolog to ELAC2 called RNaseZ. The RNaseZ gene encodes both nuclear and mitochondrial forms of RNaseZ enzyme, which is essential for tRNA processing and protein synthesis. We previously created model flies carrying HCM alleles and found that mutant larvae had significantly thicker heart walls than wild type. In this study, we first tested the hypothesis that HCM pathology stems from the mitochondrial malfunction, and second, expanded our analysis to adult heart, brain and muscle. First, we created a fly model in which HCM-linked damage is rescued from the nucleus. Histological analysis confirmed that mutant larvae still had significantly thicker heart walls than wild type, so we concluded that the HCM phenotype is caused by impaired RNaseZ activity specifically in mitochondria. Through oxidative phosphorylation, mitochondria is the major source of the chemical energy, ATP, in all cells of the animal body. The heart, as well as the brain and muscles, require high amounts of ATP to function, so we decided to expand our histological analysis to these tissues in adult flies. Preliminary results showed that mutant fly brains had vacuoles whereas control flies did not. The histological analysis of adult hearts was consistent with previous results, as mutant adult hearts had thicker walls than the control fly hearts. Muscle tissue analysis is still underway.

Poster-16: Heart Hypertrophy Due to Point Mutations in Drosophila RNase Z gene
Authors: Gabriella Pandolfelli and Ekaterina Migunova
Faculty Mentor: Edward Dubrovsky
College: Fordham College at Rose Hill

Infantile Hypertrophic Cardiomyopathy is a genetic disease in which the heart muscle becomes thickened resulting in the heart not being capable to pump blood efficiently. Severe forms of HCM have been linked to mutations of ELAC2 gene in humans, which is highly conserved among all organisms. In Drosophila the RNaze Z gene is a homolog for the ELAC2 gene. The RNase Z enzyme encoded by this gene is involved in tRNA processing in the nucleus and mitochondria. Compromised function of RNase Z in mitochondria disrupts oxidative phosphorylation and significantly reduces production of ATP. Defects in mitochondria activity often lead to heart problems, since the heart is among the most energy-consuming organs. Previously we have shown that Drosophila larvae, which carry mutations linked to HCM, have thickened heart walls. In this project, I wanted to test if heart wall thickening is a result of cell over-proliferation or overgrowth. To determine this I created a construct that expresses GFP in heart cells and established several transgenic lines that carry this construct. I analyzed these flies under a fluorescent microscope to confirm the presence of GFP in the cardiomyocytes. Currently, I am crossing the transgenic flies with those that carry the HCM mutation to bring the transgene into the mutant genetic background. Next, the flies will be studied under a fluorescent microscope and the cardiomyocytes will be counted.

Poster-17: Investigating the Mechanism of Hypertrophic Cardiomyopathy: Expression of the Human ELAC2 gene in Drosophila
Authors: Joanna Theophilopoulos
Faculty Mentor: Edward Dubrovsky
College: Fordham College at Rose Hill

Hypertrophic cardiomyopathy is a heart condition in which the myocardium becomes abnormally thick, making the heart an inefficient pump. Infantile HCM has an extremely poor prognosis. One third of children diagnosed before age one will experience heart failure that results in death or need for transplantation (Shinwari et al., 2017). Mutations in the human ELAC2 gene are associated with infantile HCM. However, the precise role variants play in the development of HCM is still unclear. ELAC2 encodes for RNase Z, an endoribonuclease responsible for processing the 3' end of tRNA molecules. Because RNase Z is highly conserved among eukaryotic organisms, the Drosophila RNase Z ortholog may be a promising source of insight for studying the mechanisms of HCM. In Drosophila, knockout of the dRNaseZ gene causes larval growth arrest and eventually death (Xie et al., 2013). In this study, we established and tested transgenic flies carrying a pCaSpeR-hs-ELAC2-V5 construct. The presence of the ELAC2-V5 protein in these animals was tested using V5 antibodies through Western blot hybridization. These flies were then crossed with flies containing the Z24 mutation. A rescue experiment revealed that the human ELAC2 protein can partially rescue the lethal knockout phenotype in flies. Studying the expression of the wild type form of ELAC2 in Drosophila opens up the possibility of introducing mutant forms of the gene into the Drosophila genome, which could lead to a better understanding of associated heart phenotypes and the underlying molecular mechanisms of HCM.

Poster-18: Gene Therapy of Trisomy 21
Authors: Timothy Uy, Jeremy Militte, AmberRose Nelson, and Sakshi Dadlani
Faculty Mentor: Edward Dubrovsky
College: Fordham College at Rose Hill

Trisomy 21, commonly referred to as Down Syndrome, is caused by the presence of an extra copy of chromosome 21. This extra copy leads to an excess of gene products encoded on chromosome 21. Mammals, including humans, are highly sensitive to this kind of gene dosage imbalance, so trisomy 21 causes severe cognitive deficiency and health problems in humans. Many of the symptoms of trisomy 21 arise from a lack of neuron production during early brain development. Potential treatments that could re-balance gene dosage in trisomy 21 patients in the prenatal period could help promote normal growth and mitigate the severe and often debilitating symptoms, increasing life expectancy and quality of life. As gene therapy techniques have advanced, potential methods to reestablish proper dosage of genes identified as contributors to the symptoms of trisomy 21 have been identified and tested in laboratory settings.

Poster-19: Tagging Juvenile Hormone Receptor Gce Using CRISPR/Cas9 Technology
Authors: Li Ying Wei
Faculty Mentor: Edward Dubrovsky
College: Fordham College at Rose Hill

Juvenile hormone (JH) is one of two major hormones that controls insect development and physiology. The mechanism of JH regulation in Drosophila is not entirely understood despite the exciting discovery of the JH receptors (JHR) Met and Gce. It is hence crucial to study the expression of the receptors in different tissues and stages of development. In this project, we aimed to generate Drosophila with tagged Gce receptor proteins. To accomplish this, we designed a plasmid encoding gRNA under ubiquitous U6 promoter and used CRISPR/Cas9 technology to introduce the tag into Gce. The gRNA guides the Cas9 enzyme to a specific location followed by which a double stranded break is produced. The donor template containing the coding sequence for the tag was then used by the endogenous repair mechanism to produce the tagged gce gene. The genetic materials were injected into fly embryos. The larvae obtained after the injection were raised to adulthood and crossed with appropriate balancer lines for two generations. Purified DNA from the resulting progeny were amplified by PCR and analyzed electrophoretically for the identification of flies with modified Gce. This tool will be used in the near future to analyze the expression of JHR Gce in the spatiotemporal manner.

Poster-20: Green Fluorescence Protein
Authors: Margaret Burzynski, Paige Caleca, Maeve McGinn, and Sydney Taylor
Faculty Mentor: Faaria Fasih-Ahmad
College: Fordham College at Rose Hill

Green fluorescence protein is a chain of many amino acids which absorb the blue light emitted by a protein found in the jellyfish Aequorea victoria. This protein which first emits blue light is called aequorin; it binds to calcium and causes blue fluorescence. When this blue light is completely absorbed by the GFP, green fluorescence results(1). The protein has 238 amino acids, and three of these amino acids (65-67) form the structure (-barrel-shaped protein) which emits green fluorescent light (2). Our poster will be on the discovery, use, and impact of green fluorescence protein in both cellular and molecular biology and genetics. DNA recombinant technology allows researchers to combine the gene which produces the GFP to another protein of interest, and then insert the product into another cell. In 1994, Martin Chalfie was the first to transfer this green fluorescent gene successfully into E. coli and C. elegans. The gene was thought to be especially useful as a way to tag living cells because it does not require exogenous substrates or cofactors for expression (3). In genetics, the green fluorescent protein also serves as a reporter gene which can be inserted into a regulatory sequence of a gene of interest to track gene expression. If/when the cell exhibits green fluorescence, scientists can infer the gene of interest is expressed. The ability to express the gene for green fluorescence in multiple cell types has allowed scientists to target and study specific cells, genes, or organs of interest using the protein's fluorescence.

Poster-21: Genetics in Forensic Science
Authors: Fawziyah Khan, Jennifer Khaled, Marien Rodriguez, and Jessica Panthappattu
Faculty Mentor: Faaria Fasih-Ahmad
College: Fordham College at Rose Hill

DNA forensics investigates genetic material in criminal investigations in order to help answer specific questions pertaining to particular criminal and/or civil cases. DNA can be found in a variety of sources such as blood, skin cells, semen, hair, saliva, and tissue. These forms of DNA can be studied using several techniques, such as PCR, which is a technique used to amplify small amounts of DNA to help identify an individual based on their DNA genotype (1). More specifically, PCR requires the enzyme Taq Polymerase in order to make new strands of DNA using existing strands as templates, as well as PCR primers. Additionally, Short Tandem Repeats (STR) analysis has become increasingly popular because PCR is very sensitive to degraded and contaminated DNA (1). STR analysis examines DNA regions with short repeat units that are usually 2 to 6 bp in length, therefore this method is more effective when we have larger samples of DNA. Ultimately, depending on the case being investigated, forensic scientists choose one of these techniques to trace back this DNA to the individual who may have left it behind. In order to do, they use a national database, which is part of the Combined DNA Index System (CODIS) that enables law enforcement agencies all throughout the nation to share and/or compare DNA profiles to help investigate cases.

Poster-22: Plant-Based Edible Vaccines
Authors: Samantha Maddock, William Collins III, Steven Palacios, and Elizabeth Wood
Faculty Mentor: Faaria Fasih-Ahmad
College: Fordham College at Rose Hill

Although plants have been modified for thousands of years through artificial selection and selective breeding, the concept of using biotechnology to modify organisms within the span of a single generation is relatively new. Genetically modified organisms (GMOs) are created by either introducing a new gene into an organism or deleting a gene that is already there (Brandner, 2002). Modern methods have progressed to the point where genes for viral surface antigens can be expressed by plants and used to transfer immunity to individuals who consume the plant or plant-based products. Currently, bananas, tomatoes, carrots, lettuce, corn, and potatoes all show promise in their ability to produce viable vaccines. This would greatly decrease the cost of vaccine production and allow for their distribution in developing countries (Shors, 2013). While cases are limited, there is great potential for the cultivation of plants to produce edible vaccines for diseases, such as, Hepatitis B (Kapusta, et al., 1999). This poster will summarize previous findings on edible vaccines as well as analyze the efficacy, benefits, and drawbacks of using GMOs to produce them.

Poster-23: The Rapidly Mutating Nature of Influenza
Authors: Olivia Matalka, Aerianna DeFoe, Cheolhwa Jin, and Noah Willers
Faculty Mentor: Faaria Fasih-Ahmad
College: Fordham College at Rose Hill

The influenza virus is a rapidly mutating virus which typically infects the nose, throat, and lungs. Currently, four types of influenza viruses have been identified: A, B, C, and D. Influenza A can affect not only humans but also poultry, swine, bats and other animals. Human influenza A and B are responsible for seasonal epidemics (Influenza, 2018). As the virus replicates, mutations can occur. The virus mutates using two different processes, antigenic shift and antigenic drift. Antigenic drift is seen in all strains of A and B viruses and involves point mutations within antibody-binding sites in the HA (haemagglutinin) protein and NA (neuraminidase) protein. These mutations cause a change so that host antibodies can no longer bind to the virus and trigger an immune reaction. Antigenic shift is only seen in influenza A viruses; this results from the replacement of the HA protein which creates a novel viruses which the body has never encountered before (Carrat et al. 2007). Due to the rapid nature of these mutations, the flu vaccine composition must be reviewed and updated to ensure defense against evolving viruses (Wood et al. 2007). For many years, vaccine production for the influenza A seed strains have been made through the technique of genetic reassortment using field strains chosen by experts working for the World Health Organization (WHO). For example, during 2016-2017, flu vaccination prevented an estimated 5.3 million influenza illnesses, 2.6 million influenza-associated medical visits, and 85,000 influenza-associated hospitalizations (CDC Newsroom).

Poster-24: The Effects of Selection for Divergence in Flowering Time in Brassica Rapa (Field Mustard)
Authors: Kayleigh Robertson
Faculty Mentor: Steven Franks
College: Fordham College at Rose Hill

This study was designed to better understand the flowering time variation in natural populations. Flowering time is a key trait in plants and has been found to evolve due to climatic changes, such as droughts. Artificial selection was used to create a set of early and late blooming plants for the purpose of comparing them phenotypically and genotypically. Sixty of each type of plant were put into six trays, with each tray being interspersed throughout. Data was collected on emergence, flowering time, number of flowers, and diameter of the stems. Plants that were artificially selected for early flowering emerged earlier, flowered earlier, had an earlier peak flowering period, and had a smaller diameter. Currently, the analysis of genetic differences between the early and late flowering plants is underway. The results of these studies will help us understand the sources of variation in flowering time in natural plant populations, which is helpful for predicting responses to climate change.

Poster-25: Effects of Simulated Urban Pollutants on Brassica Rapa Growth
Authors: Monica Whaley, Michael Liberto, Alexis Notorianni, and Olivia Ballone
Graduate Student Mentor: Conor Gilligan
College: Fordham College at Rose Hill

As human population grows and the density and pollution within urban environments expands, the plants and wildlife in the area become greatly altered. It is important to understand these anthropogenic effects on ecology since these are

often artificially induced by humans and not found in nature. This experiment aims to monitor the effects of urban conditions, in terms of pollutants, on the growth of plants in city settings. We subjected fast-growing Brassica Rapa plants to varying urban pollutants including sulfuric acid, nitric acid and volatile organic compounds. We used sulfuric acid and nitric acid to stimulate acid rain and volatile organic compounds to stimulate runoff from motor vehicles. Using various dilutions of the compounds we aimed to see how the anthropogenic conditions would affect the growth and health of our sample groups. We imposed these polluted conditions on the plants six days after germination and tracked their growth over the following two weeks. We expect that all of the plants exposed to the urban pollutants will have lesser growth than the control plants which were just given water.

Poster-26: The Effect of De-Icing Salt on Plant Germination Rate
Authors: Elizabeth Carey, Rachel Pak, Laxshika Raveendran, Nancy Rutishauser, and Maggie Shannon
Faculty Mentor: Evon Hekkala
College: Fordham College at Rose Hill

During the wintertime, the use of road salts in urban environments has been shown to have an impact on vegetative growth, including but not limited to plant height, girth, and rate of maturation. However, in some environments, plants have evolved adaptations that allow higher salt concentrations to have lower negative impacts. The purpose of this investigation is to see whether there are specific saline concentrations that inhibit, or possibly assist, growth of native New York species, which may be insightful for urban planners when installing or renovating green spaces. Using the relatively salt tolerant species, milkweed, and a salt intolerant species, Brassica rapa, we are testing the differential effects of low, medium, and high salt water concentrations on growth rate. Preliminary data suggests that low concentrations of salt yield faster germination rates than higher concentrations. However, all groups exposed to saline had slower germination rates when compared to the control group, which has no salt exposure. The goal of this study is to highlight overlooked impacts of increased road salt usage on local plants to enable urban planners to make better decisions about which vegetative species may be more compatible with city maintenance procedures.

Poster-27: Examining Antibiotic Resistant Bacteria Abundance Near New York Sewage Outflows
Authors: Molly Ni'Shuilleabhain, Ryan Mason, Sara Rubino, Rachel Lam, Michael Kausch, and Conor Gilligan
Faculty Mentor: Evon Hekkala
College: Fordham College at Rose Hill

This study examines the presence of antibiotic resistant bacteria in samples collected from water sources in New York City. Water samples were collected from brackish and freshwater sources varying in proximity to combined sewage overflow (CSO) sites. The mean difference in bacterial growth on agar plates treated with ampicillin, bacitracin, and a control was measured. It is hypothesized that there will be increased growth in antibiotic-treated water samples from sources close to CSOs, which suggests antibiotic resistance due to exposure to sewage. Moreover, there will be increased growth in antibiotic-treated water samples from brackish sources, which suggests antibiotic resistance due to exposure to diverse microbes in the sea. These results would implicate the possible negative effects of the presence of antibiotics on humans and our environment. Future research could test the effects of stronger or more targeted antibiotics on the growth of bacteria in other water samples near CSOs.

Poster-28: The Impact Female Dominance has on Measures of Feeding Priority in Ring-Tailed Lemurs
Authors: Momina Tariq, Eesha Khan, Demir Dacic, and Abdul Rahim
Faculty Mentor: Evon Hekkala
College: Fordham College at Rose Hill

In an effort to better understand the impact female dominance patterns has on measures of feeding priority, behavioral patterns of ring- tailed lemurs (Lemur catta) were observed. Female primates achieve feeding priority by leading their groups to food, thereby gaining access to the food first and positively influencing their food intake compared to other group members. This female feeding priority is crucial to the adaptive significance of the ring-tailed lemur social system. Behavioral data was observed over a span of three weeks on two separate social groups; one being the natal group (Group 1) that is composed of significantly more females. We specifically collected data on agonistic encounters during feeding time, such as lunging, chasing, cuffing, grabbing, and biting males. In addition, we also collected data on submissive responses to these aggressive behaviors include jumping away, fleeing, and squealing. We found a significant difference between both groups based on agonistic behaviors exhibited during feeding time. The top-ranking female in Group 1 led the group to the food sources more often and had a greater food intake compared to group 2 that did not have a top-ranking female. The results suggests that female dominance facilitates feeding priority in ring-tailed lemurs.

Poster-29: Analysis of Bacterial Aerosols in New York City Subway Stations
Authors: Susan Antigua, Nishat Anjum, and Jake Keszthelyi
Graduate Student Mentor: Marly Katz
College: Fordham College at Rose Hill

New York City is an industrial urban area subject to a large amount of air pollution, which likely has an impact on the airborne bacteria that can be found in the city. In order to better understand the presence of viable bacterial aerosols in New York City, aerosol samples were collected from 10 different public transit stations by exposing nutrient agar plates to the environment for a 15-minute time period. We hypothesized that there would be a variety of aerosol bacteria in New York City subway stations. After incubation and storage, a varying degree of microbial growth was found on the agar plates. Our results demonstrate the diversity in color range and size of the bacterial colonies we collected. On average we found 41.8 colonies on our agar plates, with a minimum of zero colonies counted at the Bleecker Street station and a maximum of 242 colonies at Canal Street. The difference in growth observed at Bleecker St. and Canal St. is interesting as they are only two train stops away from each other. Depending on the location, different colony sizes, morphology, and colors were observed. Based on our results, our hypothesis was supported. We conclude that there is great bacterial diversity present in the air humans breathe in subway stations. Further investigation into the colonies may allow for a better understanding of the spread of bacterial aerosols in the city, and the means by which pathogens can be transmitted through the public transit system beyond direct contact.

Poster-30: The Antibacterial Efficacy of Different Branded Toothpastes on the Oral Flora
Authors: Blair Brunetti, Alyssa Godfrey, Adara Mifsud, and Mario Torres
Graduate Student Mentor: Marly Katz
College: Fordham College at Rose Hill

Toothpaste is generally considered an important component of oral hygiene. When tasked with selecting a particular toothpaste, individuals must consider a variety of factors including form, flavor, and additives. For the purpose of this study, four types of toothpastes were compared, each advertised for different benefits: Tom's Natural Antiplaque, Crest Gum Detoxify, Sensodyne Pronamel, and Colgate Advanced Whitening. We hypothesized that the largest difference in bacteria count before and after plating mouth bacteria would indicate that the toothpaste used was most effective in reducing mouth bacteria. In particular, it was predicted that Crest Gum Detoxify and Colgate Advanced whitening would be most effective because they both contain the active ingredient stannous fluoride, an antibacterial agent. To test this hypothesis, each group member inoculated two Nutrient Agar plates with bacteria swabbed from their teeth, gums, and tongue prior to and following brushing with their designated toothpaste. Differences in bacterial growth on the "before" and "after" plates for each trial were compared and colonies were counted using the Standard Plate Count method. The results of the current study did not support the hypothesis, but instead indicated that the amount of bacteria actually increased after brushing, regardless of the type of toothpaste. Although toothpaste may have eliminated harmful bacteria, we did not observe a reduction in total bacterial abundance.

Poster-31: Examining Microbial Growth within Air-Conditioning Units on Rose Hill Campus
Authors: Eni Katrini, Conner Reynolds, Kelsey Vinzant, and Madison White
Graduate Student Mentor: Marly Katz
College: Fordham College at Rose Hill

Bacterial growth is supported by a wide variety of conditions. In our experiment, we explored bacterial growth in a cooler environment: that of the air conditioner. For a microbe, the air conditioner is a moist, dark location that is slightly acidic due to the inflow of dissolved carbon dioxide. We wanted to know if these conditions could be conducive to the proliferation of bacteria. To do this, we cultured bacterial samples using nutrient agar from 5 air conditioner units on the Rose Hill campus; including one from Larkin Hall, one from Freeman Hall, two from Keating Hall, and one from Walsh Hall. In the Larkin site, we also took a sample to culture on Sabouraud agar to test for fungi and discovered that there was abundant fungal growth. The ideal growth conditions for fungi are 25-30° C, a mildly acidic environmental pH, and darkness--precisely the conditions found in an air conditioner. Additionally, despite the potentially challenging growth conditions being supplied by air conditioner units, we observed bacterial growth on the majority of our plates. Our results show that both bacteria and fungi are capable of growing in air conditioners, and ultimately suggest that the conditions supplied by on-campus air conditioners support viable bacterial and fungal growth. These results imply that the air conditioners should be cleaned on a regular basis to avoid any potential respiratory infections.

Poster-32: Efficiency of Variant-Based Hand Sanitizer on Staphylococcus Epidermidis
Authors: Michael Liberto, Cameron DiGate, Alexis Notarianni, and Amanda Shepard
Graduate Student Mentor: Marly Katz
College: Fordham College at Rose Hill

Proper hand hygiene is a simple and effective practice for preventing transmission of viruses and bacteria. Hand sanitizers are commonly used in place of soap and water for convenience purposes or when proper resources for hand washing are unavailable. Hand sanitizers may differ from alcohol-based sanitizers to alcohol-free sanitizers as well as in their methods of application. There is vast research on the effectiveness of alcohol-based hand sanitizers in preventing disease transmission, however, research on the effectiveness of alcohol-free hand sanitizers is lacking. The goal of this project was to evaluate the antimicrobial efficacy of four different hand sanitizers against Staphylococcus epidermidis and to compare the antimicrobial effectiveness among the differing hand sanitizers. The four hand sanitizers evaluated were: one alcohol-based gel, one alcohol-based spray, one alcohol-free spray, and one alcohol-free foam. We hypothesized that the alcohol-based gel would be the most effective antimicrobial agent. We used a modified Kirby-Bauer method, using S. epidermidis from lab stock and cultures isolated from human skin, to measure the zones of inhibition of each hand sanitizer. The results of the experiment indicate that alcohol-based gel hand sanitizer created the largest zone of inhibition, with alcohol-free foam hand sanitizer creating the second largest zone of inhibition. It can be concluded that alcohol-based gel hand sanitizer is the most effective in killing or inhibiting growth of S. epidermidis.

Poster-33: An Examination of Coliform Bacteria Presence in Puddles from Urban and Suburban Settings
Authors: Isabella Mascio, Samantha Milano, Shareen Wong, and Matthew Brucculeri
Graduate Student Mentor: Marly Katz
College: Fordham College at Rose Hill

Water contamination is one common mode of disease transmission, making testing for water quality essential. Coliforms are important bacteria in determining water quality. In particular, the detection of Escherichia coli, an organism found in the digestive tract of warm-blooded animals, suggests contamination with fecal bacteria and other disease-causing microbes. We wanted to analyze the sanitation level of the ground in urban and suburban settings by collecting two different puddle samples on concrete in Baltimore, on campus at Fordham University, in Fair Lawn, New Jersey, and New Fairfield, Connecticut. To determine if coliforms were present in our water samples, the presumptive and confirmed tests were used. These tests are able to detect if gram-negative and lactose fermenting bacteria are present, which could be an indication of coliform contamination. We hypothesized that samples taken from urban areas would show higher concentrations of bacteria than those from suburban areas. We found that the Freeman puddle had the highest concentration, with 350 organisms per 100 mL, and that the Pratt St. puddle in Baltimore had the lowest with 4.0 organisms per 100 mL. All of the other samples had between 4.5 and 130 organisms per 100 mL. While there were lactose fermenting bacteria in all of the puddles, the confirmed tests were all negative for E. Coli. It is therefore unlikely any of the water samples collected were contaminated by fecal material.

Poster-34: Effectiveness of Different Antimicrobial Agents in Inhibiting Bacterial Growth from Commonly Used Screen Surfaces
Authors: Marissa Mesko, Alyssa D'Avanzo, Jessica Panthappattu, and Melanie Taylor
Graduate Student Mentor: Marly Katz
College: Fordham College at Rose Hill

The relationship between bacteria and surfaces has important implications for biofilm formation and the infection of plants and animals. It is important to understand the interaction of bacteria with surfaces to help guide the development of materials that inhibit cell growth. Universities are breeding grounds for bacterial flora due to touching of surfaces by students and faculty and lack of frequent cleaning. We used a modified Kirby-Bauer test to determine the ability of three antimicrobial products (Clorox wipes, Ecos cleaning solution, rice vinegar) to inhibit bacterial growth from surfaces at our university. We inoculated nutrient agar (NA) with swab samples of screen surfaces and added disks impregnated with antimicrobial agent. Inoculated NA plates were incubated at 37 degrees Celsius for 24 hours and analyzed one week after incubation. We hypothesized that Clorox wipes would inhibit bacterial growth from screen surfaces while Ecos cleaning solution and generic rice vinegar would not inhibit growth. No major zones of inhibition were created by the three antimicrobial agents for any of the total 56 plates. The Clorox wipes seemed to create a slight, very small, zone of inhibition in a few of the plates compared to the other two cleaners. Lack of zones of inhibition in plates with significant growth could potentially show the lack of antimicrobial properties of the agents or it could reflect the bacteria developing resistance against the agents.

Poster-35: Bacterial Growth from a Mesotrophic and Eutrophic Lake in Response to Nitrate Enrichment
Authors: Cameron DiGate, Dan Miklos, Cheolhwa Jin, Yibing Zhou, and Natalie Lynch
Graduate Student Mentor: Michael Kausch
College: Fordham College at Rose Hill

Eutrophication in freshwater ecosystems adversely affects water quality and biodiversity. It is a global environmental problem commonly linked to increasing human population. Bacterial and phytoplankton growth in lakes is controlled by concentrations of nutrients, particularly nitrogen and phosphorus. Nitrogen is an essential element for the growth of microorganisms, in which bioavailable forms are assimilated into amino acids and proteins. The primary sources of nitrogen pollution in impacted lakes are often agricultural runoff and untreated wastewater. This study aims to compare the growth response of bacteria from a mesotrophic and a eutrophic lake when grown on culture medium with nitrate (NO3) added. Surface water samples were collected from Calder Lake in Armonk, NY, a suburban mesotrophic lake, and the Lake in Central Park, an urban eutrophic/hypereutrophic lake in New York City. Samples were serially diluted ten-fold and plated onto nutrient agar (NA), with or without the addition of NO3 (+100 µg/L or +500 µg/L). We predict that bacterial growth from Calder Lake will be significantly greater in the presence of increased NO3 because baseline nutrient concentrations in the lake are low. Additionally, we predict that bacteria from the Lake in Central Park will exhibit less of a growth response to increased NO3 because baseline nutrient concentrations are elevated in that system.

Poster-36: Role of DNA Methylation in Synaptic Plasticity Changes in the Ventral Hippocampus across the Estrous Cycle
Authors: April Rich and Ivana Jaric
Faculty Mentor: Marija Kundakovic
College: Fordham College at Rose Hill

Previous studies have shown changes in dendritic spine density and genome wide chromatin organization in the ventral hippocampus of adult female mice across the estrous cycle. Variations in dendritic spine density have implications for synaptic plasticity and neurogenesis. A potential molecular mechanism underlying these variations is DNA methylation, an epigenetic modification, which alters the accessibility of genes and subsequently gene expression. To assess whether DNA methylation is involved, this study analyzed genes related to synaptic plasticity (Ncan and Gria3) that showed differential chromatin organization and differential expression between high and low estrogen females and males. Data generated from ventral hippocampal DNA using bisulfite pyrosequencing showed differential methylation in the regulatory region of the Gria3 gene (encoding an AMPA glutamate receptor subunit) when each female group was compared to males but not in a within-female comparison. The results of this study provide insights into sex-specific epigenetic mechanisms involved in the regulation of synaptic plasticity and address the involvement of hormone dynamics in the adult female brain.

Poster-37: Investigation of the Protein-Protein Interaction between HPV16 L2 and Histone H2B in the Host Cell
Authors: Azka Ali, Olivia Matalka, and Soodah Manzoor
Faculty Mentor: Patricio Meneses
College: Fordham College at Rose Hill

Human Papillomavirus is a non-enveloped DNA virus that infects human epithelial cells. HPV16 has been identified as the major etiological agent in cervical cancer. Researchers estimate that at least 80% of sexually active people will have an HPV infection at some point in their lifetime. The two current vaccines, Cervarix and Gardasil, available for HPV target L1, the major capsid protein. L1 is present only until the virus injects its DNA into the host cell thus limiting protection to those who have not been infected by the virus. This project is looking to examine the interaction between L2, the minor capsid protein and the host cell's H2B protein. The L2 protein accompanies the viral DNA to the host's nucleus. In eukaryotic cells, DNA is organized compactly by wrapping around histone proteins. Viral DNA is wrapped around H2B in the capsid protein. Previous data from coimmunoprecipitation has indicated that L2 and H2B do indeed interact. We predict that the L2 protein interacts with the host cell's H2B histone in order to integrate viral DNA into the host genome, thus resulting in the first steps of oncogenesis. In order to assess our hypothesis, we will produce our desired proteins via co-transfection in 293 TT cells and detect their presence via SDS-PAGE. If H2B and L2 do interact, we will be able to purify and isolate our H2B-L2 protein complex through immunoprecipitation. By understanding integration of viral DNA into the host genome, we can potentially create a vaccine for those already infected.

Poster-38: Repurposing for Glioblastoma: Identification of Repaglinide Target Proteins Using MASPIT
Authors: Brighid Morgan
Faculty Mentor: Patricio Meneses
College: Fordham College at Rose Hill

Drug repurposing is a burgeoning field of research, as it offers financial and temporal advantages over 'starting from scratch' to develop drugs. Many cases of drug repurposing have resulted from a top-down approach, where unexpected clinical side effects of a drug are observed and exploited, leading to rebranding of the drug or the development and synthesis of a similar compound. This approach has yielded successful drugs, such as Viagra and Prozac, but it relies on serendipity. Rational drug repurposing, the bottom-up approach, systematically identifies molecular targets of a drug to predict its pathological and clinical effects. This study combines both approaches to attempt to find a drug which can be repurposed to treat glioblastoma multiforme (GBM), a highly aggressive and lethal form of brain cancer with no existing cure. A previous study found that repaglinide, an anti-diabetic small molecule drug, inhibits human GBM cell proliferation and migration in vitro and increases median survival time of mice with orthotopic GBM by some unknown mechanism. The goal of my research is to identify a novel target of repaglinide which may be responsible for these anti-tumor effects. As an intern at Orionis Biosciences, I selected repaglinide to be synthesized as a trimethoprim hybrid ligand to be screened against the human proteome using the company's small molecule-protein interaction assay technology, MASPIT, which employs the JAK-STAT pathway by incorporating an interaction trap in a signaling-deficient type I cytokine receptor and using a STAT-dependent complementation assay. Through various statistical analyses of the assay data, we identified multiple repaglinide target proteins. One proprietary target has known cellular functions which suggest potential involvement in the mechanism by which repaglinide inhibits GBM tumor growth.

Poster-39: Analysis of HPV16 L2 Dimerization
Authors: Jaclyn Perhati
Faculty Mentor: Patricio Meneses
College: Fordham College at Rose Hill

The Human Papillomavirus (HPV) minor capsid protein L2 plays a major role in the biology of HPV and how it replicates in infected cells. In this this study, exploration of L2 protein-protein interactions was done using split Yellow Fluorescent Protein (YFP) as a tag. In the use of YFP as a tag, a technique known as Bimolecular Fluorescence Complementation (BiFC) was used for analysis. In this technique, the yellow fluorescent protein is split into its amino (N) and carboxyl (C) termini to respectively form N-YFP and C-YFP. These fragments can then be ligated to L2 proteins at either the N or C terminus of L2. Expression of the L2-YFP (N/C) fusion proteins in mammalian cells would reconstitute YFP if L2 protein binds to itself. During investigation of the protein-protein interaction of the L2 protein, we observed that the plasmids created were functional in creating proteins with the N and C termini ligated to L2 proteins. We hypothesized that if the N and C terminal fragments of YFP are bound to two L2 proteins, then fluorescence occurs by the formation of a bimolecular fluorescent complex when the L2 protein dimerizes. Investigation of the role of the other HPV capsid protein, HPV16 L1, in inducing dimerization of L2 proteins, therefore imparting fluorescence, will also be conducted. If dimerization of L2 is detected by fluorescence techniques of transfection, then the data collected would have implications indicating L2's potential functional as a transcription factor and would support work previously published by our laboratory.

Poster-40: Identifying the Role of cdc42 in Intracellular Signaling Responsible for Filopodia Formation and Effective HPV16 Entry
Authors: Abdul Rahim
Faculty Mentor: Patricio Meneses
College: Fordham College at Rose Hill

Human Papillomavirus Virus (HPV) is the most frequently sexually transmitted infection, often causing serious problems such as genital warts and cervical cancer. Over two hundred types of HPV papillomavirus types have been discovered and in particular, HPV 16 and HPV 18 oncogenic types are found to be in 70 % of cervical cancers. Thus, in regards to HPV 16 role in cervical cancer, this research focused on the mechanism of cdc42, a small GTPase of the Rho-subfamily. Functioning as a regulator of signaling pathways immersed in diverse roles of cell morphology, migration, endocytosis and cell cycle progression, cdc42 is found to be overexpressed in cancer and is central to dynamic actin cytoskeletal assembly and rearrangement. Harkening off cdc42 actin and cytoskeletal rearrangements, this research sought to determine if cdc42 protein expression is increased after viral binding, to investigate the

temporal and spatial position of cdc42 binding through methods such as immunofluorescence, and to use timed drug treatments affecting actin arrangement -known to induce cdc42 signaling- to explore filopodia formation. The experiments predominantly investigated if infection will decrease after cdc42 functions are altered or inhibited. The research supported filopodia formation with initial HPV 16 viral binding and a decrease in infection after cdc42 signaling paths are inhibited. Using flow cytometry, increased infection rates were observed when filopodia formation was induced. Determining cdc42 function in HPV16 viral infection of HaCaT cells and interactions with viral capsid proteins can be essential to HPV 16 viral entry inhibition.

Poster-41: Investigating an EGFRvIII-Targeted Fusion Protein for Use in Suicide Gene Cancer Therapy
Authors: Kelsey Vinzant
Faculty Mentor: Patricio Meneses
College: Fordham College at Rose Hill

Epidermal Growth Factor Receptor Variant III (EGFRvIII) is a tumor-specific mutation expressed in many types of cancers, making it an excellent anti-cancer therapy target. To target EGFRvIII, we developed a plasmid construct that contains both the coding sequences for Streptolysin-O (SLO), a bacteria-produced toxin, and PEPvIII, a peptide that acts as a targeting system for the mutant. Theoretically, the plasmid will produce a highly toxic, target specific fusion protein that may be further developed into a functional suicide gene therapy. The overall purpose of my project was to advance our understanding of the cellular mechanisms employed by the fusion protein such that we may provide insight into targeted suicide gene therapy as a treatment option for EGFRvIII expressive cancers. I spent the semester completing a proof-of-concept experiment, which entailed transfecting different cell lines with the plasmid of interest and then extracting the conditioned media and cellular lysates to see if binding could be visualized. We are working to visually distinguish the effects of the PEPvIII-GFP lysates on EGFR and EGFRvIII cell lines.

Poster-42: Applications of Genetics in Forensic Science
Authors: Zoe Araujo, John Socci, Julia Delzingaro, Esteban Tovar, and Katherine Asianah
Graduate Student Mentor: Ekaterina Migunova
College: Fordham College at Rose Hill

Advances in the field of genetics have allowed researchers to implement various methods of DNA analysis into forensic science. Processes such as the polymerase chain reaction, or PCR, have given scientists the ability to amplify a small sequence of DNA found at a crime scene into billions of fragments. This allows for scientists to create a genetic fingerprint for genetic material left at a crime scene based off of the sample's unique DNA sequence. This "fingerprint" may then be compared to DNA sequences of suspects or a DNA database in order to determine the owner of the DNA collected from the scene. The use of PCR in forensic science has created incredible progress in the field, concerning the ways in which suspects are declared guilty or not guilty of a crime. Though PCR is a reliable technique, research is continuously being done in order to uncover more methods in which genetic analysis can aid forensic scientists. Researchers have discovered that through the use of predictive DNA markers corresponding to external traits such as eye color, hair color, or sex, they can obtain a basic outline of a potential suspect in cases where a pool of suspects is too large, and must be narrowed. These externally visible characteristics (EVCs) can aid law enforcement in reducing the number of suspects from a specific case and focus their attention on groups that carry the same or similar visible traits.

Poster-43: Epigenetics and Addiction
Authors: Rochelle Mendonca, Rodolfo Keesey, Joanna Moles, and Julia Sese
Graduate Student Mentor: Ekaterina Migunova
College: Fordham College at Rose Hill

Epigenetics is the study of interactions between genes and the environment that result in specific phenotypes. Identical genomes can lead to entirely different phenotypes given the environmental interactions between the organism and the environment. This process is brought about by changes in the transcription and expression of genes as a result of cellular mechanisms. Different environmental interactions affect gene regulation by controlling the degree to which a stretch of DNA is stored as compact chromatin (Maze, 2011). Recent studies have explored the role of epigenetic genome modifications in affecting the neurobiological response to the exposure of various abusive substances (Wong, Mill, & Fernandes, 2011). Certain substances, such as cocaine, are highly addictive and family studies have suggested that the heritability of these substances is moderate to high (Cadet, McCoy, & Jayanthi, 2006). Several methods have been used to study the profound effects of these substances on gene expression. One of the most revealing methods in the study of addiction has been the effect of cocaine on rats. In this method, rats were exposed to cocaine and their

proteins were assayed. It was found that exposure to cocaine manipulated gene expression mechanisms, suggesting that drugs have epigenetic effects (Pandey 2014). Within the last decade, studies have sought a better understanding of epigenetic mechanisms that can imitate human conditions that influence pharmaceutical developments against addiction. Furthermore, these various mechanisms of gene regulation can inform the lasting changes in the brain caused by drugs, and offer new modes of addiction therapy (Wong 2011).

Poster-44: Effects of Roadside Pollution on Soil
Authors: Kasey Harrington, Sepora Alkozai, Michelle Ngo, and Adalain Meier
Faculty Mentor: Jason Munshi-South
College: Fordham College at Rose Hill

This experiment was performed to determine if soil composition would vary as distance from a major roadway increased. Soil samples were taken from eight locations in the New York Botanical Garden. Four locations were within several feet of a major roadway, and four were toward the center of the NYBG grounds, away from any major roadways. Several properties of the soil were then tested and compared between the two sample types. These properties were texture, pH, mineral composition, salinity, and water content. The texture of the soil along the roadways was expected to be more sandy than clay-like, as the area is presumably more well drained. The water content of the soil near a roadway was expected to be lower than that of the soil at a distance from a roadway. The pH was expected to be lower and the salinity was expected to be higher closer to the roadway, as the roads had been recently salted due to snow. The soil near the roadway was expected to be lower in nitrogen, phosphorus, and potassium. The expected results should show the effect that roadways have on surrounding soil.

Poster-45: Investigating the Preferential Feeding Choices of Feral Pigeons
Authors: Katherine Janiszewski, Samyukthaa Saiprakash, Bruna Rosa, and Lara Carrion
Faculty Mentor: Jason Munshi-South
College: Fordham College at Rose Hill

This investigation was performed to determine whether feral pigeons (Columba livia domestica) show a preference towards foods high in unsaturated fats (shown to be “high quality foods” in experimental settings) over foods low in unsaturated fats when foraging in urban environments. A four by four meter square was divided into equal quadrants, with one cup of crushed popcorn (low in unsaturated fats), crushed tortilla chips (low in unsaturated fats), sunflower hearts (high in unsaturated fats), or granulated peanuts (high in unsaturated fats) were spread evenly. The foraging start and end times, the greatest number of feral pigeons in each quadrant, and the presence of competing species was recorded for each of the twelve trials. On average, more feral pigeons foraged in the squares containing granulated peanuts or sunflower hearts than the squares containing crushed popcorn or crushed tortilla chips. Furthermore, pigeons depleted the food in the sunflower heart quadrant in the shortest average amount of time. These results support the hypothesis that when provided a range of foods, feral pigeons will preferentially feed on foods containing higher levels of unsaturated fats.

Poster-46: The Effect of Urbanization on Mammal Richness and Abundance in New York
Authors: Nora Kuka, Claudia Calle-Alvarez, Maria Krisch, Mary Lally, and Quinn Maguire
Faculty Mentor: Jason Munshi-South
College: Fordham College at Rose Hill

As the rate of urbanization increases, it is crucial to monitor the effects of human traffic on local mammal populations. Previous studies have found that urbanization typically decreases species richness and relative abundance. The creation of new buildings and roads results in habitat fragmentation that negatively impacts medium and large-sized mammals in urban areas. Fragmentation impacts movement patterns and disrupts food chains. Roads and trails can help or hinder animals moving from place to place and impact how species find prey and hide from predators. New York City is highly urbanized so it is important to determine the effect of the creation of roads, paths, and trails on the mammal population. This experiment utilized camera traps in the Bronx Zoo (Bronx, NY) and the Louis Calder Center (Armonk, NY) to estimate species frequencies in locations with varying levels of human traffic. We hypothesized that animal abundance and richness will be greater in areas of less frequent human traffic. It was found that species frequency was affected by varying degrees of human traffic. The findings of this study elucidate the effects of urbanization or human activity upon the richness and abundance of animal species in the surrounding ecosystem. These discoveries open doors to future studies involving the alteration of animal behavior in response to urbanization and the overall health of an ecosystem that has been affected by human activity.

Poster-47: Winter Microbial Growth
Authors: Alda Sukaj, Samuel Crowley, Saudah Manzoor, Jacklyn Regan, and Sabrina Sayegh
Faculty Mentor: Jason Munshi-South
College: Fordham College at Rose Hill

The goal of this study was to determine the effects of impervious surface and car traffic on snow bacterial diversity. This observational study was completed by comparing the variance in diversity from samples taken from 3 locations on Fordham's Rose Hill Campus to 3 locations taken along Fordham Road. Samples were melted and cultured on nutrient agar plates in 1/100,000 dilutions. Diversity and growth of bacterial colonies were then assessed. The total abundance of colonies was measured using the colony counting method. Additionally, water quality was measured in terms of pH level, nitrogen content, and phosphorous content. We predicted there will be more growth (biodiversity) on the plates that were inoculated with the off-campus snow samples because the pollution/nutrient runoff from the city streets could potentially lead to more growth and differing bacterial groups.

Poster-48: Investigating the Effects of Environmental Pollution on Lichen Microbiomes
Authors: Joanna Theophilopoulos, Bridget Kayes, Jillian Meyer, Gabriella Pandolfelli, and Mehak Sawhney
Faculty Mentor: Jason Munshi-South
College: Fordham College at Rose Hill

Lichens are organisms that result from a symbiotic relationship between fungi and algae, or cyanobacteria. Traditionally, the organisms are only thought of as these two species. However, lichens can contain diverse bacterial communities aside from the primary photosynthetic species. It is well known that environmental pollution, measured by vehicular gas emissions, can impact the diversity and abundance of lichen species. In this study, we investigate whether pollution impacts lichen microbiomes. Nitrogen gases from vehicular emissions are a primary source of pollution in urban communities. Nitrogen gas concentrations typically decrease significantly with increasing distance from the road. Evidence shows that emissions of SO2 and NOX led to a decrease in lichen biodiversity. In this study, we examined the lichen microbiomes of two lichen populations- one on trees adjacent to roadsides, and one on trees more than 50 m away from major roads- in order to analyze the effects of vehicular pollution on lichen biodiversity. Samples came from trees in the center of Fordham University's Rose Hill Campus and from the sidewalk adjacent to Southern Boulevard in the Bronx. For each sample, we used sterile scalpels and forceps to remove a portion of the lichen. Each sample was cultured in broth then plated on agar to examine bacterial colonies.

Poster-49: The Effects of Acute Aerobic Exercise on Working Memory in College Students
Authors: Nouralison Abdella, Mackenzie Connelly, Presley Mekeel, and Laxshika Raveendran
Faculty Mentor: Usha Sankar
College: Fordham College at Rose Hill

Working memory, also known as short term memory registers and temporarily retains incoming information. It is the memory that we use to keep information consciously "in mind." Focusing attention is necessary for memory based skills. Level of alertness and attentiveness can be assessed using electroencephalography. This test is utilized to detect and record electrical activity in the brain via electrodes. In particular, the electroencephalogram (EEG) portrays the electrical potential difference between different points on the surface of the scalp. The electrical activity is recorded as brain waves which represent momentary collective postsynaptic potential activity. Brain activity varies according to the different states of consciousness and can be identified by assessing key characteristics of brain waves such as frequency and amplitude. Working memory is subject to interferences such as attempts to learn conflicting information; however, previous studies have demonstrated that engaging in chronic exercises are associated with improvements in cognitive functioning as determined by several memory and attention associated tasks. In particular, studies have demonstrated associations between chronic exercise and enhanced working memory. Therefore, our goal is to examine what impact acute exercise may have on working memory in college students. Previous studies show that people that score high on memory tests generally have higher alpha rhythm frequency. It is hypothesized that acute exercise will improve working memory and overall EEG waves will have a higher frequency and smaller amplitude, thereby representing enhanced attentiveness. This will be tested utilizing digit span memory tests and BIOPAC instrument respectively.

Poster-50: Role of Hand Dominance in Brain Activity While Writing
Authors: Sepora Alkozai, Eileen Casey, Sophia Giatzis, and Emma Spoldi
Faculty Mentor: Usha Sankar
College: Fordham College at Rose Hill

Approximately 90% of the human population is right-handed. Due to the cultural beliefs of some societies around the world as well as the advent of technology that is usually primarily catered to right-handed people, left-handed individuals are often encouraged to utilize their non-dominant hand. Prior studies conducted have demonstrated a difference in brain activity observed between everyday tasks performed with the non-dominant hand versus with the dominant hand. Our study investigates whether the change in brain wave amplitudes will differ in an individual depending on whether one was writing with their dominant or nondominant hand. Three right-handed participants and one left-handed participant (4 females; 19-22 years old) will be tested using the electroencephalogram function of the BIOPAC system. The four participants will each write a paragraph from the Fordham University's Student Handbook while electrodes from the BIOPAC monitor their brain activity. Beta waves are most prominent in an individual when they are awake and concentrating on a task, and therefore are the waves that will be under investigation. It is predicted the beta wave amplitude will differ between dominant and non-dominant hand usage in individuals while writing, since it generally requires more focus to write with one's non-dominant hand. Information gathered from this study will be useful in answering the question as to why it is more challenging to use the non dominant hand, and whether using one's dominant hand has a use in conserving brain activity by requiring less focus to perform mental tasks.

Poster-51: Influence of Rest Periods on Student Focus as Reflected by Quantitative EEG Results
Authors: Isabella Crisci, Viky Mali, Stephanie Pepdjonovic, and Ethan Dobrzynski
Faculty Mentor: Usha Sankar
College: Fordham College at Rose Hill

Critical thinking has become an essential part of better understanding one's mental capabilities and this topic dates back to as early as Plato. Since Plato's time, much research has been done on the topic of critical thinking to improve our current understanding of it. With a simple google search, many articles and studies can be found on tips for improving critical thinking like doing work in a timely manner with breaks. This claim is supported by recent studies conducted like one by Goodwin et al. which looked at what teaching styles encouraged optimal critical thinking in students. Another study found by Howie, Kaye, et al. looked at how a recess break during learning allowed students to have stronger critical thinking when they came back to class. In this study, the effect of different lengths of rest on the focus of a student will be examined. This will be demonstrated by a sample of Fordham students being broken into four groups, each with different break times. Their critical thinking will be tested while they are reading SAT passages by comparing the frequency and amplitude of their beta waves as recorded on an EEG before and after the break. We hypothesize that if a subject is given a 10-minute break, they will be able to focus more when reading passages and answering questions as opposed to those who have a 0-minute, 5-minute, or 20-minute break.

Poster-52: Sounds and Signals: How Fear Affects Brain Activity
Authors: Steven DeBellis, Jack Palillo, Mrika Gocaj, and Katherine Asianah
Faculty Mentor: Usha Sankar
College: Fordham College at Rose Hill

A non-invasive way of measuring electrical activity in the brain is via Electroencephalography (EEG). The wave patterns in a EEG is an indication of different activities and there are four distinguishable patterns namely alpha, beta, delta and theta. Beta waves are brain waves that occur when the brain is strongly engaged in mental activity and their characteristic frequencies range from 13-30 Hertz. Theta waves occur when the brain performs tasks that are repetitive. Theta waves are recorded from 4.5- 7 Hz. Therefore we can expect these waves will be present in emotional incidents. This experiment endeavours to determine if an image or a sound will produce higher levels of beta and theta waves in response to certain images. These images, characterized as positive, neutral, or threatening, have been selected from a database curated by Harvard University. We expect to see more beta waves in response to negative images because of the evocation of more emotional response. We are trying to correlate the relationship between beta and theta waves and the images and sounds of varying emotional content.

Poster-53: Beta and Alpha Waves of Bilingual Individuals
Authors: Amal Elwan, Sara Rubino, and Danielle Gallagher
Faculty Mentor: Usha Sankar
College: Fordham College at Rose Hill

Differences in the brainwave pattern of bilingual versus monolingual people has shown significant differences in alpha, beta, delta, and gamma waves. Alpha waves are those related to the conscious and relaxed state while beta waves are related to a state of high concentration and cognitive engagement. Previous studies compared the alpha and beta wave activity of high and low proficiency second language speakers. It was found that there were no differences in general alertness between subjects as expressed by alpha frequency waves. However, there were differences in beta waves between the two groups. In our study, we will be evaluating the alpha and beta brain waves of participants who can communicate proficiently in a second language. We will recruit college students who do not speak a second language as controls and another group of subjects whose native language is not Spanish but have completed exit level Spanish classes. Participants will be asked 5 questions of increasing difficulty while we conduct an Electroencephalographic (EEG) investigation using BIOPAC technology. We will measure participants' amplitude of alpha and beta waves with each question to determine if peak intensity differed from our control group. EEG recordings will be obtained from electrode placements over the left and right frontal and parietal lobes of the brain as participants responded to questions. We hope that this study will give insight on the ability of bilingualism to change the properties of the brain and supplement studies already conducted on the correlations between bilingualism and improved overall cognitive ability.

Poster-54: The Effects of Western and Eastern Classical Music on Alpha and Beta Waves
Authors: Kaitlin Hiciano, Veronica Baio, Karla Maysonet, and Julia Rabazzi
Faculty Mentor: Usha Sankar
College: Fordham College at Rose Hill

An electroencephalogram (EEG) is a test used to evaluate the electrical activity of the brain. Typically, an EEG shows the summed postsynaptic potentials in brain neurons. Additionally, an EEG can be used to detect abnormalities in the brain by tracking and recording brain wave patterns. It has been determined that music can have an influence on a person's brain waves. It has been implicated in other scientific studies that these waves can be studied to determine a person's current emotional state. In this study, we are attempting to determine the effect that Western classical music, for example the works of Mozart and Bach, and Eastern classical music, such as Indian Carnatic and Chinese folk music, may have on a person's brain waves and emotional state. We hypothesize that Western classical music will lead to an increase in alpha waves, a wave rhythm characterized by relatively low frequency and predominates when a person is relaxed, with eyes closed. We predict this because our subjects, who are college aged males and females, will presumably be more familiar with Western classical music and will likely relax while, because of their presumed unfamiliarity with Eastern classical music, they will be more likely to focus harder and pay more attention to the Indian Carnatic and Chinese folk music.

Poster-55: Research Project in Physiology
Authors: Alexia Insinga
Faculty Mentor: Usha Sankar
College: Fordham College at Rose Hill

It is important to understand the physiological effects caused by music since music is an integral aspect of the lives of many individuals. Multiple studies analyzing the effects of music suggest that it can have different effects on physiological processes. Classical music was found to be associated with a decrease in heart rate and blood pressure compared to high intensity pop music. We will be testing 8 female and 8 male students at Fordham University between the ages of 18-22, who are in average shape and health. We will first measure their baseline blood pressure and heart rate at a relaxed state and use that measurement to compare it to their heart rate and blood pressure after listening to preferred music. We hypothesize that heart rate and blood pressure can be stimulated to a greater extent when listening to preferred music genres. In our experiment, we will be testing rock, rap, classical, pop, and country music each for 90 seconds, in order to analyze the physiological effects of each respective genre of music. We will take into account the preferences the subjects have for each type of music by providing them with a survey to take at the beginning of the study. This allows for us to determine if physiological effects induced by preferred music stimulate heart activity to a greater extent. By performing this experiment, we can aid the general public in a number of ways. For instance, businesses, doctors offices, malls, gyms, schools, and other public locations, could utilize specific types of music in

order to achieve desired results. In addition, future experiments could determine if music can be prescribed to patients as a form of medication or treatment to induce certain emotional or physiological states.

Poster-56: Grip Strength Differences Between Athletes and Non-Athletes
Authors: Kelsey Krolikowski, Jessica O'Keeffe, Elizabeth Khalil, and Olivia Killilea
Faculty Mentor: Usha Sankar
College: Fordham College at Rose Hill

Previous studies show that males have a greater mean grip strength compared to female counterparts. Following fatigue-inducing exercise, grip strengths decrease. We plan to investigate how fatigue is related to athletic abilities and we will do this by measuring grip strength. Fatigue is the decrease in a muscle's ability to generate force. We will measure the participants' grip strength using electromyography (EMG) using the Biopac system, which measures electrical signals involved in muscular contractions by placing electrodes on the skin. The participants will be divided into two groups: athletes and nonathletes. We will recruit subjects in the age group of 18-22 years old in good physical health, from Fordham University Men's Rugby Team for the athlete group, and college men who do not exercise regularly for the non-athlete group. Each participant will lift a 30 pound dumbbell for 10 repetitions with each arm. The grip strength of all participants in a resting state will be recorded before and after lifting for both the dominant and nondominant arms separately. We hypothesize that athletes will have more fatigue resistance than non-athletes, meaning that they will maintain the maximal grip strength for a longer period of time, both prior to and after to lifting. This study will help quantify fatigue levels and act as a baseline for determining the dynamics behind which exercises would be most effective for muscle efficiency. Further research should focus on the workouts that have the greatest impact on fatigue resistance.

Poster-57: The Effect of Different Sound Frequencies on Brain Waves
Authors: Margaret Mena, Maria Aliberti, and Gabrielle Ma
Faculty Mentor: Usha Sankar
College: Fordham College at Rose Hill

Brain waves are representations of electrical activities of the brain, specifically the summed synaptic activity of neurons. The brain waves themselves represent moments of collective postsynaptic potential, specifically referred to as excitatory postsynaptic potentials and inhibitory postsynaptic potentials. The "Mozart Effect" describes the tendencies of individuals to have altered brain wave activity when listening to Mozart's compositions. Past research demonstrated a significant increase in alpha coherence when listening to Mozart's compositions, and that long term music therapy increased alpha activity in patients with schizophrenia, anxiety, and depression. This evidence suggests that specific music can induce corresponding brain wave activity that mimics the frequency of the sound heard. We are investigating the effect of various musical stimuli on the production of different brain waves. We plan to expose the participants to sound recordings of various frequencies that correspond to the alpha, beta, gamma, and theta waves and record the responses of the participant's brain wave activity, using the Biopac EEG. We will evaluate if and how the different sound frequencies affects the subject's brain wave pattern. We hypothesize that the brain waves will mimic the activity of the music that the person is listening to. Understanding how the brain responds to specific types of music can be applied by helping people understand what music to listen to when they want to enter the proper state to relieve stress, be attentive, or lull to sleep.

Poster-58: Superbugs: Bacterial Antibiotic Resistance
Authors: Steven DeBellis, Nicole First, Armando Bunjaj, and Baran Ak
Faculty Mentor: Michael Sekor
College: Fordham College at Rose Hill

"Superbugs" are microbes that have antibiotic resistance to several strains of antibiotics. There are a variety of molecular mechanisms that induce multiple-drug resistance (MDR), including, intrinsic resistance and fluoroquinolone (FQ) resistance. Intrinsic resistance is catalyzed by the expression of certain bacterial genes that generate a resistance phenotype. FQ resistance occurs through MDR efflux pumps, modifying enzymes, and modifying target-protection proteins. Additionally, genetic mechanisms of resistance are mostly found within transmission especially plasmids, phages, and transformation. A main method of transferring antibiotic resistance is through the use of resistance plasmids, also known as R- plasmids. An R-plasmid contains vectors which confer resistance to anti-biotics, it replicates outside of the genomic DNA. These plasmids are transmitted via conjunction from one bacterium to another. Staphylococcus aureus, also known as MRSA, is a notorious superbug because it is resistant to an entire set of antibiotics, known as beta-lactams. What is intriguing about MRSA is that is has gained its

resistance through several different methods, horizontal transfer through conjugation and through mutation of its own chromosomes, which it transfers to other MRSA strains. Mutation is another lesser, but important way that antibiotic resistance occurs. In the light of the current crisis of antibiotic resistant strains, the CDC has proposed several methods to combat this national dilemma. Scientists are developing new forms of antibiotics which bacteria are not resistant to. The overall plan is to create new medicine and to use better judgement in the distribution of this new medicine.

Poster-59: Wolf Hirschhorn Syndrome: A Chromosomal Study
Authors: Dylan Garvey, Faisal Elali, Catherine Nappi, and Samantha Quinlan
Faculty Mentor: Michael Sekor
College: Fordham College at Rose Hill

Wolf-Hirschhorn syndrome, also known as chromosome deletion Dillan 4p syndrome, Pitt-Rogers-Danks syndrome, or Pitt syndrome, is a condition caused by the chromosomal deletion from the short end of the p arm of chromosome 4 in humans. The size of the deletion from chromosome 4 varies among those afflicted by WHS. Studies, however, have shown that those with more severe cases of WHS have larger chromosomal deletions. Due to this deletion, genes that have a significant role in early development, such as NSD2, LETM1, and MSX1, are deleted, causing the negative effects this disorder produces. The major features this specific chromosomal deletion may cause include characteristic facial abnormalities, delayed growth and development, intellectual disability, low muscle tone, seizures, skeletal deformities, congenital heart defects, hearing loss, urinary tract malformations, and/or structural brain abnormalities. Due to these "extra" chromosomal deletions, the varying severity WHS has on its respective carriers is measured on a molecular and phenotypic scale. The overall purpose of this poster is to explore the causes and effects of Wolf-Hirschhorn syndrome on a molecular and phenotypic level, as well as possible treatments for degenerative genetic disorders.

Poster-60: Role of Phenazines in Antibiotic Resistance of P. aeruginosa
Authors: Christine Lim, Jonathan Donado, John Soriano, Lily Van Petten, and Li Ying Wei
Faculty Mentor: Michael Sekor
College: Fordham College at Rose Hill

Antibiotics treat infection by killing and slowing down the growth of bacteria. However, the efficiency of antibiotics remains debatable, given the ever-growing number of bacterial strains developing antibiotic resistance. Bacteria become resistant by undergoing genetic modifications, including exchange of extrachromosomal DNA through conjugation, mutations in chromosomal DNA, upregulation of efflux pump, and the genetic expression of degradation enzymes. Coupled with rapid evolution, this allows for the production of individual elements that confer the ability to resist antibiotic treatment and ensure the survival of bacterial cultures. This emergence of pathogenic bacteria consequently poses serious public health challenges worldwide, such as the propagation of infectious biofilms (surface-associated assemblages of microbial cells suspended in extracellular matrices). This study highlights the strain Pseudomonas aeruginosa, a rod-shaped bacterium connected to illnesses such as ventilator-associated pneumonia and multiple sepsis syndromes. P. aeruginosa releases metabolites called phenazines that promote tolerance to clinically relevant antibiotics, specifically ciprofloxacin, by altering the metabolic response to antibiotic treatment in microaerobic biofilm regions. Studies using methods such as stable isotope labeling with Raman scattering microscopy have allowed for the visualization of biofilm metabolic activity, elucidating the complex gene interactions between bacterial products, their effects on biofilm metabolism, and antibiotics used to treat infectious strains like P. aeruginosa. Such research analyzing the antagonistic effect of metabolites offers significant value, as it may lead to a more comprehensive understanding of antibiotic resistance mechanisms, and in turn, enable the development of more effective drug treatments to bacterial infection.

Poster-61: Recent Advancements of In Vitro Antibody Generation
Authors: Shatu Mallik, (Isra) Selin Bayram, Maria Pantagis, and Kate Uhling
Faculty Mentor: Michael Sekor
College: Fordham College at Rose Hill

Antibodies are essential parts of the immune system, functioning to attack antigens that trigger the body's immune response. In the human body, antibodies are created by lymphocytes, which are part of the adaptive immune system. We examined case studies regarding the development of antibodies both in vitro and in vivo. In vivo development takes place inside an isolated living organism, whereas in vitro development occurs in a controlled, external environment. One model of in vitro generation of antibodies is the In Vitro Plasma Cell Differentiation Model which uses B-cells in order to create antibodies in a test tube. Because Plasma Cells are rare, it is difficult to study them

inside the human body. Techniques such as in vitro differentiation allow these cells to be studied in an environment similar to their natural habitat. The In Vitro Plasma Cell Differentiation Model allows scientists to study B-cell to Plasma Cell differentiation, while the transcriptional changes and phenotype of the B-cell to Plasma cell remains the same as it was in vivo. A new method of generating antibodies in vitro uses hybridoma technology, combining the two steps of immunizing the animal and B cell fusion with myeloma cells, which is simpler and quicker. The development of in vitro antibody generation allows for a large-scale production of antibodies which can be applied to new therapies, such as developing anti-tumor antibodies. In vitro generation also reduces the need for animal testing and experimentations, as well as reducing costs for antibody generation.

Poster-62: CRISPR/Cas9-Mediated Knockout of DMD Gene
Authors: Michael Zrzavy, Sonam Mistry, Michelle Pawlowski, and Yurun Zhou
Faculty Mentor: Michael Sekor
College: Fordham College at Rose Hill

Duchenne Muscular Dystrophy (DMD) is an X-linked degenerative muscle condition caused by the lack of dystrophin production in muscle cells. Dystrophin is a protein responsible for connection of muscle cells to the extracellular matrix. Contraction of muscles lacking dystrophin leads to degradation and eventual replacement of muscles with non-contractile fibrotic tissue, starting in the arms and legs and leading to the respiratory muscles, which is usually fatal. DMD is caused by the deletion of two nucleotides in the DMD gene, which leads to a frameshift mutation and subsequent reading of a premature stop codon (UAA). CRISPR (Clustered Regularly Interspaced Short Palindromic Repeats) technology uses the Cas9 protein complex combined with CRISPR DNA templates to selectively knockin or knockout genes. Researchers at the University of California have used the CRISPR/Cas9 gene-editing protein complex to delete exon sequences in the DMD gene, restoring the reading frame for dystrophin production and leading to the milder form of the disease known as Becker Muscular Dystrophy (BMD), which has fewer complications. Other studies had similar success using exon skipping and exon knockin techniques. The findings in these studies can be used to develop new gene therapy drugs and potentially improve the lives of those living with DMD.

Chemistry

Poster-63: Exploring the Interactions of Gingival Fibroblasts with Hybrid Peptide-Pectic Acid Scaffolds
Authors: Niyasha Wijedasa and Sarah Broas
Faculty Mentor: Ipsita Banerjee
College: Fordham College at Rose Hill

Hydroxyapatite (HaP) derived from fish scales and bone is a copious natural source for developing biomaterials. While many fish species have been utilized for preparing HaP, to our knowledge, hybrid scaffolds formed by combining fish scale derived HaP with peptide nanofibers and pectic acid derivatives have not been reported. In this work, we have developed a unique three-dimensional scaffold network using fish scales and examined the interactions with mammalian gingival fibroblasts. The rationale being that peptide nanofibers in combination with 3D scaffolds derived from natural fish scales and pectate, with high binding affinity toward HaP can offer a model environment for the growth and proliferation of cells. The nanofibers ranged from 200 nm-300nm in diameter as indicated by TEM and SEM analysis. The binding interactions of the 3D scaffolds with nanofibers and pectic acid was confirmed by FTIR, TEM and SEM analysis. EDX analysis and electron diffraction patterns confirmed the presence Ca, P, and O content and formation of crystallinity of HaP. To examine if the 3D scaffolds promote mineralization and calcium deposition, we carried out alizarin assay. Optical microscopy and cell viability assay revealed that the nanofiber bound biomaterials had a higher adherence toward gingival fibroblasts. Alkaline phosphatase assay was carried out to determine differentiation. Our studies indicate that peptide nanofiber scaffold matrices may have significant utility in the development of biomaterials for tissue regeneration.

Poster-64: Further Studies on a Copper Cyanide Network
Authors: Leena Rachid and Christina Sheedy
Faculty Mentor: Peter Corfield
College: Fordham College at Rose Hill

The use of polymeric metal coordination complexes in crystal engineering is increasingly prevalent. An understanding of these structures and their functions is necessary for the development of new functional materials. Copper complexes in particular provide an affordable and observable method of study. Our goal is to synthesize new mixed-valence

copper cyanide (CuCN) polymers, containing copper in both +I and +II oxidation states. CuCN complexes are synthesized by either the partial reduction by cyanide of solutions containing Cu(II) ions complexed with amine ligands, or by air oxidation of solutions containing Cu(I) cyano complexes and amines. Products are characterized by X-ray diffraction, infrared spectroscopy, thermal gravimetric analysis (TGA), and electron spin resonance (esr). The types of materials obtained depend both on the nature of the base used and the preparation conditions. In previous studies using the base N-methyl ethanolamine (meoen), a single crystal X-ray analysis showed a non mixed-valence 3D anionic Cu(I)CN network, with the protonated base sitting in cavities in the network. However, the esr spectrum indicated the presence of Cu(II). In order to resolve this discrepant result, we resynthesized the complex in larger amounts, under conditions which now led to two clearly different components, - a blue powder and a small amount of colorless crystalline material. An esr analysis of the two new components resulted in a Cu(II) esr signal for the blue components and esr silence for the colorless crystals, as expected for the structure previously determined.

Poster-65: Utilizing Data Analysis Techniques and Machine Learning Models to Predict Perovskite Crystal Growth

Authors: William Borrelli
Faculty Mentor: Joshua Schrier
College: Fordham College at Rose Hill

Perovskites are a family of compounds with a crystalline structure all conforming to the general formula ABX3. The crystal structure is composed of a large cation surrounded by smaller cations, with anions located between them. The variety of ions that can make up the structure of perovskites give them a wide range of applications, namely in solar cells, batteries, magnets, and superconductors. This variation makes novel perovskite discovery a promising endeavor, however there is much to learn about how perovskite crystals form and the variables that impact their formation. Through data analysis techniques and machine learning models, we are seeking to shed light on the mystery of perovskite formation, with the goal of improving models for predicting successful crystal growth.

Poster-66: The Automation of Hirshfeld Surface Generation Using Mathematica

Authors: Marie Natalie Yamilee Morency
Faculty Mentor: Joshua Schrier
College: Fordham College at Rose Hill

Understanding intermolecular interactions in molecular crystals is crucial to the fabrication of new materials. Hirshfeld surfaces are a computational method of partitioning molecules in molecular crystals based on electron density. Each point on surface is defined by a (de, di) pair that encodes chemical bonding and geometric information. In a Hirshfeld surface, the molecule is all of the space where the promolecule is larger than the procrystal. The molecules thus end up stacked like bricks. The small space that exists between two molecules is where they are equally dense in a region – the procrystal equals the promolecule. Prior research has shown that non-linear manifold learning of Hirshfeld surfaces can be used to identify similarities and differences between metal organic frameworks (hybrid materials with potential applications in gas storage and catalysis). I have written software to automate computing Hirshfeld surfaces for structures in the Cambridge Structure Database, using the Hirshfeld surface Tonto package [Jayatilaka, Dylan. Tonto. Computer software. SOURCEFORGE. 30 Sept. 2005. Nov. 2018, https://sourceforge.net/projects/tonto-chem/], and have applied this to the polymorphs of Aspirin. However, applying the program to more complicated structures such as MOF's has proven to be more challenging. In this poster, I show my successes, the challenges I've encountered and my next step.

Poster-67: Using Machine Learning to Predict Favorable Reaction Conditions of Perovskite Crystals

Authors: Xinqiao Zhang
Faculty Mentor: Joshua Schrier
College: Fordham College at Rose Hill

Perovskites are hybrid organic-inorganic crystals with the general formula ABX3 (where A= organic molecule, B= metal, X= halogen). The molecules combine to form octahedral inorganic crystals of varying dimensionality. The hybrid organic-inorganic nature of perovskite results in interesting properties and many applications. For instance, the presence of an organic ion in 2D perovskites allows for greater photon absorption, creating a more efficient photovoltaic system than traditional materials, such as silicon. Additional uses of perovskites include fuel cells, batteries and catalysts. Automated remote experiments are run on a different organic molecule every week. This experiment conditions are determined by a model that predicts favorable conditions for the formation of the APbI3 perovskite, where A is a variable amine group in a supersaturated solution without a seed crystal. After running initial

experiments, the model splits the dataset based on the organic molecule used, then collect a random sample to train a classifier. After training, the model sorts a set of reaction conditions and suggests plausible conditions to run the next set of experiments. The model consistently scores around 80% accuracy, but will hopefully improve its accuracy, and avoid false negatives in particular in order to predict all possible reaction conditions.

Communication and Culture

Poster-68: Environmental Conservation in the Era of Ineffective Governance: How to Implement Environmental Conservation Laws in Brazil?
Authors: Nicole Drepaul
Faculty Mentor: Thomas McCourt
College: Fordham College at Lincoln Center

How can society implement conservation laws in eras of ineffective governance? Research has often been used to support the application of environmental laws by the government. However, in eras of dysfunctional or ineffective governance, alternative perspectives on their implementation may be required. I propose new conservation approaches that are necessary for future generations to implement, strengthen, and improve conservation laws or efforts in eras of poor governance. In doing so, I suggest that good governance may be achieved through non-conventional means involving other bodies: environmental police forces, non-governmental organizations (NGOs), media, and educational and research facilities. Brazil offers a case study for the promotion, implementation, and enforcement of conservation laws. This case study addresses the following questions: How does good governance protect the environmental resources of Brazilian communities, and what are its successes and failures?

Communicaton and Media Studies

Poster-69: Children's Gender Identities and Media's Role
Authors: Saakje Hoekstra
Faculty Mentor: Lewis Freeman
College: Fordham College at Rose Hill

Throughout the past decade, there has been an increasing amount of research conducted regarding the difference between gender and sexuality. In the recent past, these terms were used somewhat interchangeably (within the social context, at least). There was a general conception that "sex" related to the distinction between men and women within the scientific, medical realms, whereas gender referred to how men and women were different in the physical sense. In recent years, however, the accurate difference between sex and gender has become more commonly understood – the accurate difference being that sex refers to one's biological identity at birth, whereas gender is the identity that they personally relate to, and is socially constructed – gender is socially constructed in many ways, some of the main ways being by parents, peers, and media. This paper aims to evaluate media's impact on children's sense of gender identities through the examination of gender stereotypes and gender representation in media consumed by children beginning at birth, and spanning into their teenage years.

Computer and Information Sciences

Poster-70: Computational Study of Changes to Cortical Vision with Age
Authors: Sarah Cavanagh
Faculty Mentor: Daniel Leeds
College: Fordham College at Rose Hill

Vision in the brain is believed to employ a rough hierarchy of regions, encoding increasingly complex properties of the visual input. Past studies have provided great insights into visual representations at multiple stages of the hierarchy, increasingly informed by computer vision models (e.g., Leeds, 2013; Horikawa, 2017). However, little work has provided understanding on the role of age, and of broader cognition, on the evolution of vision. Recent studies have suggested changes in sensitivity to simple luminance (Brewer, 2014) and high-level categories (Zebrowitz, 2016), without clear investigation of intermediate properties. We adapt behavioral data and fMRI neuroimaging data from Stern (2014) to model age and cognitive effects on cortical responses to 111 line patterns from 294 subjects aged 20

through 80. Data was collected in the context of a cognitive pattern comparison task (Salthouse, 1991). We use a medial-axis computational model (Kimia, 1995) to capture mid-level shape/complexity properties of line patterns. Selectivity for more "complex" visual patterns was observed in early and mid-level regions of the visual cortex. Notably, shape/complexity selectivity decreased with age in mid-level visual regions and increased with age in motor planning and execution regions. Substantial changes in voxel selectivity are not observed with changing subject reaction time during pattern comparison. Comparison of shape/complexity selectivity with luminance selectivities reveals important overlaps and distinctions between low- and mid-level visual representations in the brain.

Poster-71: Spider
Authors: Yuxuan Wu
Faculty Mentor: Yanjun Li
College: Fordham College at Rose Hill

This program is a spider, also often called a web crawler, that automatically turns online poetry in text format (stored on poetryfoundation.org) into txt file. The purpose of the program is to establish a large repository for a text mining algorithm developed by my mentor, Dr. Yanjun Li. The program is written in python, with three main functions, and uses two main libraries serving my purpose. The three functions are “list”, “detail”, and “genfile” which each represent requesting the webpage, fetching content, and generate txt file. The two main libraries used are “request” and “RE.” The request library is used to get the html* web page, and the regular expression library is used to single out the title and body text. Some other libraries are used too, but these two are the core of this project. Since this is a crawler program, being disliked by majority of the websites, many problems occurred. Most of the public website has anti-crawler mechanics that the old-school bs4, beautiful soup, library is no longer usable. Many other problems like program visit rejection, frequent visit from the same IP address will end the connection with the webpage. Many techniques were introduced in this program to bypass the anti-crawler mechanics, such as header camouflage, dealing with json not regular html, and etc. In order to solve all the problems that I encountered, I investigated and learned many solutions and scripting tools which at the end I came with my final product.

Poster-72: T.O.A.D. - Toad Observation by Analysis of Depth
Authors: Philip Bal
Faculty Mentor: Damian Lyons
College: Fordham College at Rose Hill

The Kihansi Spray Toad, officially classified as ‘extinct in the wild’, is being bred by the Bronx Zoo in an effort to reintroduce the species back into the wild. With thousands of toads already bred in captivity, an opportunity to learn about the toads behavior presents itself for the first time ever, at scale. In order to accurately and efficiently gain information about the toads behavior, we present an automated tracking system that is based on the Intel RealSense SR300 Camera. As the average size of the toad is less than 1 inch, existing tracking systems prove ineffective. Thus, we developed a tracking system using a combination of depth tracking and color correlation to identify and track individual toads. Depth and color video sequences are produced from the SR300 camera. Depth video sequences, in grayscale, are derived from an infrared sensor and sense any motion that may occur, hence detecting moving toads. Color video sequences, in RGB, allow for color correlation while tracking targets. A template of the color of a toad is taken manually, once, as a universal example of what the color of a toad should be. This is then compared against potential targets every frame to increase the confidence a toad has been detected versus, for example, a leaf moving. The program detects and tracks toads from frame to frame, and produces a set of tracks in 2 and 3 dimensions, as well as 2 dimensional heat maps.

Poster-73: Towards Affective Drone Swarms
Authors: Kasper Grispino and Truong-Huy D. Nguyen
Faculty Mentor: Damian Lyons
College: Fordham College at Rose Hill

Drone swarms are teams of autonomous un-manned aerial vehicles that act as a collective entity. We are interested in humanizing drone swarms by equipping them with the ability to emotionally affect human users through their non-verbal motions. Inspired by recent findings in how observers are emotionally touched by watching dance moves, we investigate the questions of whether and how coordinated drone swarm motions can transmit messages that a layperson can understand. We specifically aimed to convey 2 distinct messages through these drone swarms which are to signal danger and to guide. Our IRB approved study led to several interesting findings, promising results and challenges.

Poster-74: Identifying Classification Algorithms Most Suitable for Learning from Imbalanced Data Sets
Authors: Ray Tischio
Faculty Mentor: Gary Weiss
College: Fordham College at Rose Hill

This study examines the difference amongst classifier performance in the presence of class imbalance. In data mining and machine learning, classification algorithms are used to induce a classifier from labeled training data. In many real-world situations, the classes may be quite unbalanced; this can confound classification algorithms, which might simply learn to always predict the more common classes. Most algorithms assume that the number of training examples belonging to each class is relatively balanced, rendering predictive accuracy a suitable metric to judge the results. However, when handling unbalanced data, accuracy may not be a credible measure. This research evaluates thirteen classification algorithms using three metrics—Accuracy, F1-measure, and AUC score — on twenty-nine data sets with varying levels of class imbalance. The same experiment methodology is applied to each data set, as well as each data set's balanced version. This study empirically establishes which classification algorithms naturally perform best in the presence of class imbalance. Based on our results, boosting methods and decision tree methods perform above average. The Gradient Boosting classifier performs best across average scores, while decision tree learning methods such as Decision Tree and Random Forest perform in a near-tie for second best. The category of Naive Bayes classifiers are among the poor performing algorithms. Our results support that class imbalance does not affect all classification algorithms equally.

Economics

Poster-75: Labor Market Returns to Internships: Evidence from a Field Experiment in NYC
Authors: Kirsten Anastasio, Shambhavi Singh, and Jacklyn Lourdes Yap
Faculty Mentor: Subha Mani
College: Fordham College at Rose Hill

Although many college students in the U.S. are encouraged to gain internship experience while in school, the economic returns of completing an internship are greatly understudied. In this study, we utilize the resume audit methodology to send fictitious resumes to New York City entry-level job postings across three distinct industries to examine differences in interview callback rates of resumes (that are otherwise identical) with internship and no internship experience, GPA, rank of one's college and gender. Our preliminary findings show that, overall, having internship experience increases the probability of callback by 2.5%, and having internship experience is particularly helpful for those entering the Finance industry. We also find that the having internship benefits women, but not men. To further explain the returns to internship experience, we've also developed a novel discrete choice lab experiment, wherein current undergraduates and job recruiters rank fictitious resumes according to their perceived returns.

Engineering Physics

Poster-76: Cancer Detection Through Raman Spectroscopy
Authors: Jack Keane
Faculty Mentor: Stephen Holler
College: Fordham College at Rose Hill

Last Summer I worked with Dr. Stephen Holler of the Physics & Engineering Physics Department to assist his further research in cancer detection using Raman spectroscopy. Developing accurate and precise tools to rapidly remove cancer in vivo is vital for the patient's health, especially when it comes to extremely sensitive regions like the head and neck. We achieve results by firing a laser at a tissue sample, receiving the reflected light into our detection device, and measuring the frequency change to understand more about the molecular structure of the substance. Dr. Holler and his colleagues' previous research has yielded promising results, which we furthered through the introduction of new lenses for our laser and a circulator for the optical fiber connections. These changes to the apparatus decreased the amount of interference on our readings to help define the peaks and troughs of our data. Due to setbacks with Mt. Sinai Hospital management we weren't able to receive new cancer tissue samples which would possess continuous malignant and healthy regions. Nevertheless, we used previous tissue samples in cold storage to calibrate our updated apparatus. Throughout my research, one of the most valuable things I learned was how to work with optical fiber. It's extremely delicate and to install the circulator it required many hours of splicing, manipulating, and cleaning. I feel

quite pleased with how my research with Dr. Holler went as I believe we offered serious improvements to his cancer detection device.

Environmental Studies

Poster-77: Biomimicry in Wave Energy Capture
Authors: Robin Happel and John Noss
Faculty Mentor: Edward Van Buren
College: Fordham College at Rose Hill

Almost half the world's population lives along coastlines. For this reason, wave energy capture technology is something of a dark horse among the renewables sector. Although rarely used at present, the possibility of converting kinetic energy from ocean waves into electricity holds tremendous promise. And, from wind turbine blades patterned on the fins of humpback whales, to honeycombs hidden in countless everyday objects, biomimicry is similarly being recognized as a realm of unexplored potential. In using nature as a model for engineering, evolution becomes essentially a form of experimentation, and serves as millennia of iterative design. Expanding upon my more theoretical project last spring which used solely modeling software, this data was collected using a wave tank provided by generous grant funding from Fordham. In this study, standard wave energy models in use today are compared with possible future shell designs that could potentially provide greater durability during storm surges. It is hoped that someday such research may serve to provide reliable energy to coastal communities affected by increasingly intense tropical storms. Especially after watching my family weather Florence last fall, such coastal resilience is a cause I'm deeply committed to, and thus this display discusses environmental justice as well as simply engineering.

Fordham College at Rose Hill

Poster-78: Relational Dynamics Amongst Primary Care and Antipsychotic Usage in Children
Authors: Shubarna Akhter, Mia Behrens, Jason Dufour, Tereze Nika, and Lily Van Petten
Faculty Mentor: Rachel Annunziato
College: Fordham College at Rose Hill

Primary care is known to serve as a preventative measure in pediatric mental health care (Briggs, Racine, & Chinitz, 2007). Despite this information, the majority of children with mental health care needs fail to seek specialized attention (Hacker, Penfold, Arsenault, Zhang, Soumerai, & Wissow, 2016). However, research has found that antipsychotic medication is prescribed to children displaying non-psychotic behaviors (Pappadopulos, 2002). With the relationship between antipsychotic prescription and primary care visits unclear, further investigation in necessary. Given this background, it was hypothesized that (1) antipsychotic usage is positively correlated to hospitalization for mental health reasons and negatively correlated to primary care visits in children and (2) regions of the U.S. where primary care is less accessible to adolescents is negatively correlated with the prescription of antipsychotic drugs and hospitalization for mental illness. To investigate these relationships, health records of U.S. children and adolescents ranging from ages 1 to 20 from each state were utilized from the 2017 Child and Adult Health Care Quality Measures dataset and compared. Based on correlational analyses, findings suggest there is a negative relationship between well visits and antipsychotic usage. Also, an one-way ANOVA test was conducted suggesting that there are disparities in both antipsychotic use and hospitalization for mental illness between regions of the U.S. Further investigation is needed to further apply these findings, in particular the high rates of antipsychotic usage and low rates of wellcare visits in the Southwest.

Poster-79: Impact of Health Care Spending on Quality of Care in Privately and Publicly Owned Oklahoma Prisons
Authors: Amelia Antzoulatos, Mandilee Hill, Rachel Hinton, and Anneliese Weinhardt
Faculty Mentor: Rachel Annunziato
College: Fordham College at Rose Hill

The history of private prisons in America begins primarily in the mid-1800's in the South after the Civil War. The increase in correctional privatization has been justified in many different ways throughout its rise, though always with an undercurrent of economic motivation. This literature review will focus on the state and private prison spending budget for Oklahoma, which began engaging more substantially with private prisons in the mid 90's, and which now

has the largest inmate population per one hundred citizens. Despite this, the state has the lowest number of full-time medical staff per one thousand prisoners, decreasing quality of individual care and increasing wait times, particularly in the area of mental healthcare. Since 2007, Oklahoma state healthcare funding has also decreased both in terms of real spending and as a percentage of total correctional spending. While the total prison population has not seen a significant increase in population, the number of prisoners over 55 notably has, and this raises additional concerns about the state's ability to adequately care for an aging inmate population. In this review, we will analyze the impacts of spending, staffing, and data collection on quality of care in privately and publicly owned Oklahoma prisons, using data collected from Pew Research, the Vera Institute, and others. While the crimes prisoners have committed distort the call to supply them with basic human needs, this ethical dilemma needs to be addressed in a time when unjust incarcerations are rapidly increasing.

Poster-80: Lack of Follow-Up Care Amongst Children Prescribed with ADHD Medication Across The Country
Authors: Isabella Ardizzone, Tasfia Addrita, Eric Budhu, Brianna Dias, Nicole Hamilton, Amanda Nastasi, JiAhn Reilly, and Tejaswi Thapa
Faculty Mentor: Rachel Annunziato
College: Fordham College at Rose Hill

Attention-deficit hyperactivity disorder, or ADHD, is a behavioral condition that makes focusing on everyday tasks and routines challenging. The most common treatment is stimulant medication in both children and adults. Medication provides people with quick, but temporary improvements in focus and social interaction. There has been concern about the overmedication of children as well as the proper protocol for monitoring medication. The current study investigates the follow-up protocol of children receiving ADHD medication across regions in America using the 2017 Child and Adult Health Care Quality Measures dataset. In addition, consistency of prenatal care was examined as a possible contributor to ADHD medication follow-up. Results showed that among children who are first prescribed medication, there is a strong correlation between having one follow-up and two or more follow-ups. This data suggests that children who are seen once for prescription ADHD medication will be seen a second time. Indices of prenatal care were not associated with better follow-up. Although there were no significant differences between regions in follow-up care provision, all regions reported extremely low rates for follow-up visits, ranging from 50-63%. This implies that children receiving ADHD medication are not being monitored properly across the country. Findings suggest the need for improved medication monitoring; perhaps augmenting prenatal care to include efforts that focus on building longer-term connections to the health care system are warranted.

Poster-81: Stress in College
Authors: Daphne Baker, Kristen Bohovich, Thomas Dang, Grace Denomme, Lakumi Dias, Emily Huegler, Ellen Isernhagen, Michael L'Abbate, Samantha Petruzzelli, and Carolyne Stoffel
Faculty Mentor: Rachel Annunziato
College: Fordham College at Rose Hill

We conducted a literature review of a study entitled "Sources of Stress Among College Students" (Ross et al. 1997), which offered a strong foundation for analyzing stressors in college students. However, problems were found in the study, including the sample size and male to female ratio, as well as the methods of data collection. Additionally, the study was modernized to more accurately reflect the different stressors which affect current college students. Taking these issues into account, we created a new survey in order to modernize and correct the original survey. We designed our project to include a set of demographic questions to compare the sources of stress over different class years and confounding variables that may influence the results of the study. Additionally, all sources of stress were categorized to examine if there was a correlation between demographic factors and levels of stress. These categories included habitual, academic, career, relationship, financial, and technological stressors. Furthermore, we created a uniform scale throughout the survey to more clearly identify which stressor proved to be more impactful on each class year. The implications of the study include developing and restructuring programs to help college students manage stress.

Poster-82: Unequal Wealth Distribution Between Racial Groups in Brazil
Authors: Catherine Gassiot and Carsyn Fisher
Faculty Mentor: Rachel Annunziato
College: Fordham College at Rose Hill

Unequal wealth distribution amongst racial groups is a pervasive issue in Brazil. There are several historical variables that have affected wealth distribution amongst racial groups including the country's history of colonialism and its role in the slave trade, and the problem has been perpetuated in modern times by public policy. In this literature review we

will explore the ways that unequal wealth distribution amongst racial groups manifests itself in the Brazilian economy and society. In this paper, we will investigate both the impact that public policy has had on maintaining and increasing the income inequality between racial groups in Brazil, as well as the public perception surrounding the disparity in income between racial groups. We anticipate that most policies increasing unequal wealth distribution will have been from the 20th century, but that the effects are still readily visible in today's Brazilian society, and that public perception will cite a lack of effort rather than institutional discrimination as the reason behind the disparity.

Poster-83: Students' Personal Stigmas Surrounding Suicide-Related Help-Seeking Behaviors Compared to Perceived Public Stigma
Authors: Katherine Sheehan, Ashley Blasi, Giselle Bravo, and Diana Reynoso
Faculty Mentor: Rachel Annunziato
College: Fordham College at Rose Hill

This study explores whether or not students' own attitudes about seeking help for suicidal tendencies or behaviors are similar or different from students' perceptions of others' attitudes. This research is important to explore how well people understand others' attitudes towards mental health, and specifically, suicide. Previous research has shown that college students can be impacted by personal and public stigma when considering seeking psychological services (Pederson, & Paves, 2014). Students on college campuses responded to questions on the SPEAKS, which includes scaling statements that reflect a students' own perceptions of behaviors related to seeking mental health services and students' perceptions of what other people think about these help-seeking behaviors. Using a dataset from the Garrett Lee Smith Memorial Suicide Prevention Evaluation that used this survey, a Chi square analysis showed that students' own perceptions were significantly different and more positive than what they perceived others' were. These findings demonstrate that further work is necessary to reduce stigmas on college campuses, and the study begins an important exploration into the social motivations behind barriers and stigma surrounding help-seeking behaviors in college students.

Poster-84: Classroom Design and Test Performance
Authors: Annabelle Soto, Meghan Hughes, and Louis Norred
Faculty Mentor: Rachel Annunziato
College: Fordham College at Rose Hill

Our experiment aims to analyze the effects of different classroom settings on student academic performance. Past research has proposed contradictory findings between the correlation of performance and classroom setting. More equivocal findings have been derived from research in the workplace rather than i college classroom setting, and therefore we intend to utilize the successful practices of office setting in our experiment. Variables that are expected to have an effect on student performance include size, building quality, climate, lighting, color, presence of open- plan designs, and more. Through manipulation of these variables, classroom setting has the ability to enhance, inhibit, or have no effect on student performance. We designed an experiment to more directly study the effects of modern classrooms. We classify "modern classrooms" as having improved building quality, open-plan designs, and bright colors. To perform the experiment, 10 college students will take a standardized math achievement test in an older, more traditional classroom at Fordham University, and in a newly renovated, modern classroom to take another similar test. The order of test administration will be counterbalanced between groups of five students (half will start in the modern classroom and then move to the traditional classroom and vice versa). We hypothesize that modernity of classroom settings will be associated with increases performance in college students. If it is the case that when students are given similar tests in both a traditional classroom setting and a modern classroom setting, the results differ, these findings will offer important implications for maximizing student success.

Integrative Neuroscience

Poster-85: Rank Order Similarity in Scene-Selective Response Found Between Multimodal Neuroimaging Data
Authors: Howard Hughes
Faculty Mentor: Elissa Aminoff
College: Fordham College at Rose Hill

Understanding and navigating our visual world requires the comprehension of multiple visual attributes within the scenes immediately surrounding us. The scene-selective cortex of the brain, including the parahippocampal place area (PPA), retrosplenial complex (RSC), and occipital place area (OPA) are three regions which have been established as

becoming more activated in response to scene stimuli as opposed to objects or faces. Our study sought to understand not only the features of the scenes that explained variability in this activation, but also when this scene processing was occurring in the temporal domain. Using data from EEG (n=4) and fMRI experiments (n=9) where 100 scenes were presented to the subjects, we were able to establish a rank order either based on the amplitude of the event-related potential (ERP) at the N170 and P200 components or the blood oxygen level dependent (BOLD) response, respectively. Results demonstrated that the rank order of the scenes when averaged across subjects was most similar between the N170 component and the average BOLD response, with a Spearman's Rho of 0.235. These similar rankings suggest that the ranking from image to image carries meaning within the scene-selective cortex, and uncovering this meaning may reveal how the brain processes scene information. This is the first time that scene processing has been studied by comparing electrophysiological and functional neuroimaging data and demonstrates coherence between the two methodologies.

Poster-86: An fMRI Investigation of Same and Similar Scene Representation in the Brain
Authors: Annette Young
Faculty Mentor: Elissa Aminoff
College: Fordham College at Rose Hill

Neuroscience literature has shown that three brain regions, the parahippocampal place area (PPA), occipital place area (OPA), and retrosplenial cortex (RSC), are causally and selectively involved in scene processing. The purpose of this experiment is to determine whether these brain regions process scenes on the basis of a scene's category. To understand this, the level of brain activation in these regions at points when subjects viewed repeated images or images of a certain category was compared. We also compared the brain activity in the lateral occipital cortex, or LOC, which is involved in object recognition, and a control Early Visual area. Previous research has shown that the PPA and RSC process scenes at a more abstract level; our experiment sought to discover if these regions of the brain, or any of the other three regions of interest, showed a greater sensitivity for scene categorization. fMRI data from the BOLD5000 study was analyzed using Matlab software, and the Pearson correlations were compared for brain activity within each set of repeated and categorical images. The significance of these correlations revealed that the greatest similarity in activity across all three subjects occurred in both the left and right hemispheres of the RSC. These results suggest that the RSC is in fact involved in processing a scene's category.

Poster-87: Behavioral Differences in Optogenetic Self-Stimulation in Male and Female Mice
Authors: Joseph Floeder
Faculty Mentor: Paul Mermelstein
College: Fordham College at Rose Hill

A substantial amount of scientific literature is devoted to studying sex differences in addiction. While the causes of these sex differences are not fully understood, it is clear that females have a heightened vulnerability to drugs of abuse and progress from being casual drug users to addicts more quickly than males. In this project, we set out to test for sex differences in the glutamatergic pathway between the infralimbic cortex and the nucleus accumbens shell, a pathway known to be involved in motivated behavior, by using optogenetic self-stimulation in mice. Mice were tested in a two-sided real time place preference chamber and received optogenetic stimulation on one side of the chamber at three different frequencies: 10, 20, and 30 Hz. We hypothesize that at higher intensities of stimulation, both the male and female mice will develop a preference for the side of stimulation while only the females would develop a preference for the side of stimulation during lower intensities. We propose that associations between glutamate receptors and estrogen receptors in this specific neural pathway are responsible for the heightened response to drugs of abuse that females exhibit. My project can provide a stronger understanding of the role this pathway plays in sex differences and potentially lead to techniques that address the issue of female susceptibility to drugs of abuse.

Poster-88: The Interplay of Autism Symptom Severity and Language Ability on Executive Functioning Deficits and the Effects of Executive Functioning Ability on Academic Achievement in Kindergarteners with Autism Spectrum Disorder
Authors: Jeannine Ederer, Hannah R. Thomas, Yeo Bi Choi, and So Hyun Kim
Faculty Mentor: Amy Roy
College: Fordham College at Rose Hill

This study assesses the influence of autism symptom severity and language ability on executive function (EF) deficits and the effects of EF ability on academic achievement in a sample of high-functioning kindergarteners with autism spectrum disorder (ASD). It was hypothesized that both autism symptoms and language ability would predict EF in

the sample, that autism symptom severity would be a stronger predictor of EF ability than language ability, and that EF ability would be predictive of academic achievement in the sample. The EF Touch Task, the Autism Diagnostic Observation Schedule, Woodcock-Johnson, and the Children's Behavior Checklist were used to measure EF, autism symptom severity, academic achievement, and language ability, respectively. The results supported the hypothesis that EF ability was a predictor of academic achievement in the sample. Likely due to small sample size, the other hypotheses were not supported and should be further investigated. Implications of these findings are explored.

Poster-89: The Effect of Corticospinal Tract Connectivity on Hand Function Improvement in Children with Unilateral Cerebral Palsy
Authors: Brittany Zaita
Faculty Mentor: Amy Roy
College: Fordham College at Rose Hill

Children with cerebral palsy (CP) may experience cortical reorganization following their brain injury. The corticospinal tract (CST) plays a major role in the hand function of healthy adults, but the extent to which CST connectivity may play a role in hand function recovery in children with CP remains unknown. The literature suggests that individuals with a contralateral/bilateral CST will have better hand function improvements with constraint induced movement therapy (CIMT), and that individuals with an ipsilateral CST will have better hand function improvements with hand arm bimanual intensive therapy (HABIT). The present study examined interactions between laterality (CST organization) and hand function improvement for two different intensive interventions; CIMT and HABIT. Results show that laterality of the CST may not affect hand function improvement in children with unilateral CP. The findings of the present study show that treatment works to improve hand function regardless of laterality.

Poster-90: Neural Correlates of Stress Induced Escape Behaviors in Male C57BL/6J Mice After Chronic Social Defeat Stress (CSDS)
Authors: Susan Antigua, Baila Hall, Robert Fetcho, Conor Liston, and Anjali Rajadhyaksha
Faculty Mentor: Karen Siedlecki
College: Fordham College at Rose Hill

Mice that undergo Chronic Social Defeat Stress (CSDS) exhibit one of two phenotypes – they are either stress susceptible or stress resilient. Previous studies show that the Infralimbic cortex (IL) and the Nucleus Accumbens (NAc) are stress sensitive and are involved in social behavior. However, the connection between the two regions is less understood in terms of stress induced escape behaviors. The escape behavior we studied is called dashing, which is characterized by a mouse jumping away from an aggressor. To understand the relationship between the IL: NAc circuit in dashing, phenotypically different C57 mice previously exposed to CSDS were placed in an Open-Field Social Interaction (OFSI) task with an aggressive CD1 mouse. The relationship between dashing and IL: NAc activity was analyzed using a neural signal recording technique called fiber photometry. We hypothesized that there would be higher neural activation in the IL: NAc circuit in stressed mice compared to non-stressed, or control mice, and that susceptible mice would dash more than resilient and control mice. However, we found that this circuit is not involved in dashing in stressed mice. When susceptible mice dashed, neural activity in the IL: NAc circuit decreased and they dashed less on average. Control mice dashed more and showed higher activation in the IL: NAc region when dashing. Thus, our results do not support our hypotheses. We concluded that dashing, or general escape behavior, is modulated differently in stressed and non-stressed animals. Further investigation must be done to identify and understand these differing neural circuits.

Judaic Studies

Poster-91: The Immediate Responses of Various Publications to the Nuremberg and Italian Racial Laws
Authors: Emilia Klapak
Faculty Mentor: Magda Teter
College: Fordham College at Rose Hill

This research paper sought to answer the question of how the international press reacted to the announcements of the overtly anti-Semitic Nuremberg Laws of 1935 in Germany and the Italian Racial Laws of 1938 in Italy, prior to the beginning of World War II. By evaluating published pieces in the New York Times, the Jewish Advocate, L'Osservatore Romano, and Il Progresso Italo-Americano, it can be seen how the press did not take proper condemning actions and thus allowed for anti-Semitism to flourish in the international landscape. These findings are

significant because they demonstrate the power of the press and the need for journalism to take action against inhumane occurrences worldwide.

Mathematics

Poster-92: The Roots of Pediatric Asthma in the Bronx: An Investigation Into PM2.5 Levels
Authors: Natalie Ward
Faculty Mentor: Melkana Brakalova
College: Fordham College at Rose Hill

Several studies investigating the correlation between air pollution and cases of childhood asthma point to a link between heavily trafficked roadways and the development of adverse respiratory health conditions within vulnerable populations, specifically children. The Bronx in particular has one of the highest incidences of pediatric asthma in the United States. The hospitalization rate for cases of asthma is twenty-one percent higher than the national average. For children residing in the Borough, the leading cause of hospitalization and school absence is pediatric asthma. High levels of PM2.5 in the air can often be blamed for creating respiratory issues among children and adults. Car exhaust, specifically from diesel trucks, are culprits of emitting high levels of PM2.5 into the air. The main goal of this research is to monitor the exposure levels of PM2.5 in the Bronx. Focusing on the South Bronx, the area of the Borough with a booming shipment industry and many highly trafficked roadways, I will assess if these levels of PM2.5 are in a range that may cause adverse health concerns for the public.

Poster-93: Surface Area Minimizing Shape Satisfying the da Vinci Rule
Authors: Frank Buono and Olaniyi Olasehinde
Faculty Mentor: Rolf Ryham
College: Fordham College at Rose Hill

Leonardo da Vinci's rule states that the sum of the cross-sectional area of all tree branches above a branching point at any height is equal to the cross-sectional area of the trunk or the branch immediately below the branching point. Our study will use the calculus of variations and techniques in the theory of functions of bounded variation to show the existence of a surface area minimizing shape satisfying the da Vinci rule. We will employ the direct method of the calculus of variations and prove the existence a surface area minimizing shape that follows the da Vinci rule. Satisfying the compactness properties in the theory presents the biggest challenge because in the direct method it is possible for tiny pieces of the shape to break off to infinity, invalidating a necessary assumption of the theory. Our goal is to develop a condensation argument that forces the minimizing sequence to stay within a bounded region. We will aid our theoretical analysis with numerical simulations via the finite difference method.

Modern Languages and Literatures

Poster-94: What Do College Students Think of American English Dialects? A Survey-Based Approach
Authors: Catherine Aumiller
Faculty Mentor: Sarah Grey
College: Fordham College at Rose Hill

Do personality factors or sociocultural background relate to English-speaking college students' attitudes towards American English dialects? Previous research has found connections between foreign language attitudes and these individual difference factors (Dewaele & McCloskey, 2015). We extended this work by taking a survey-based approach to test for associations between Extraversion, Neuroticism, Tolerance for Ambiguity, six racial/ethnic and linguistic sociocultural factors, and language dialect attitudes. The study specifically examined attitudes towards Standard American English, African American Vernacular English, and Chicano English dialects. This addresses a gap in the literature regarding the relationship between individual difference factors and attitudes towards dialects. Results from 113 survey respondents showed connections between personality factors and dialect attitudes, but not uniformly across all dialects as predicted. Extraversion and TA were shown to be positively associated with attitudes towards AAVE. Neuroticism was shown to be positively associated with attitudes towards SAE. The one sociocultural variable to show a significant relationship with attitudes was speaking a non-English language natively or at home. The study's findings elucidate college students' attitudes towards these American English dialects and demonstrate how cognitive traits and sociocultural and linguistic background factors relate to language attitudes among college

students. The results are informative for improving cross-cultural communication and strengthening language awareness and diversity.

Poster-95: Rhythms of Language: An EEG Study on Sentence Comprehension
Authors: Justin Esposito
Faculty Mentor: Sarah Grey
College: Fordham College at Rose Hill

Neural oscillations are being increasingly investigated in psycholinguistics to examine the brain's dynamic functional networks, but their role in language comprehension is not fully understood. The predictive coding framework, developed by A. G. Lewis and M. Bastiaansen (2015), outlines a role for beta oscillations (13-30 Hz) in language comprehension in which beta oscillations are involved in actively maintaining a functional neurocognitive network and modulating top-down predictions. Within this theoretical framework, beta power increases when the network needs to be actively maintained and decreases when the brain's current cognitive set needs to be changed. The agreement attraction effect is a linguistic phenomenon where the brain processes an ungrammatical sentence as less ungrammatical due to an interfering attractor noun. Within the predictive coding framework, agreement attraction contexts may cause a smaller beta desynchronization when compared to ungrammatical sentences if beta oscillations are linked to cognitive maintenance. Participants read grammatical and ungrammatical sentences with or without an attractor. Event-related potential data confirmed previous research on P600 amplitude reduction in agreement attraction contexts. Time-frequency analysis revealed a smaller beta desynchronization in agreement attraction contexts compared to sentences without an attractor, in line with the predictive coding framework, though this effect was not statistically significant. The results shed light on the relationship between beta neural desynchronization and agreement attraction and suggest a direction for future research.

Poster-96: Bilingualism and the Musical Brain
Authors: Liat Shenkar
Faculty Mentor: Sarah Grey
College: Fordham College at Rose Hill

Both music and language processing are of great interest in the field of cognitive neuroscience and may even share similar neural mechanisms (Peretz et al., 2009). Similarly to language, music contains its own syntactic structure with components including pitch, volume, and timbre. As a result of this parallel, the study of music processing in the brain can be utilized to better understand the processing of aspects of language. Notable research conducted by Patel et. al (1998) suggests that the event-related potential (ERP; brainwave) brain response that underlies musical syntax processing is the same response underlying language syntax (P600 response), indicating a shared processing mechanism for music and language. This study utilized the EEG technique to test whether bilinguals' experience with multiple language syntaxes affects their processing of musical syntax, compared to monolinguals, who have experience with only a single linguistic syntax. It is hypothesized that a larger P600 response will be visible in the bilingual participants as a result of their exposure to multiple language syntaxes. The results are discussed in relation to this prediction and their implications for understanding bilingualism and neurocognition of music.

Natural Sciences

Poster-97: Intramolecular Friedel-Crafts Alkylation of N-Benzyl Aziridines: A Novel Synthetic Method with an Application Toward Natural Product Synthesis
Authors: Nicholas Di Grandi
Faculty Mentor: Martin Di Grandi
College: Fordham College at Rose Hill

Background: Pancratistatin, a member of the Amaryllidaceae family of natural products, was originally isolated from a Hawaiian spider lily and subsequently found to have unique anti-cancer properties. While several published syntheses of this compound have been reported, this research explores the potential use of N-benzyl aziridines to serve as precursors to 1,2,3,4-tetrahydroisoquinolines, part of the core ring system of this natural product. Purpose: This research project plans to expand N-benzylaziridines in the presence of either Bronsted or Lewis acids, via an intramolecular Friedel-Crafts cyclization, to a 1,2,3,4-tetrahydroisoquinoline ring system. Results: We have been able to accomplish this transformation with simple systems using triflic acid as the acid source under microwave radiation. Current experiments are underway to probe the scope of this reaction.

Physics

Poster-98: Integrating Myoelectric Sensors into a 3D Printed Prosthetic Hand
Authors: Rodolfo Keesey, Gordon Perrett, Daijon James, and Jahiem Menzie
Faculty Mentor: Stephen Holler
College: Fordham College at Rose Hill

Amputations permanently prevent an individual from functioning at preinjury levels. The prosthetics that treat amputation are expensive, in 2009 amputations cost Americans upwards of $8.3 billion. Because the illnesses that result in amputation primarily target peoples of lower socioeconomic status, the costly expenditure of prosthetics is often shouldered by groups with lower resources. The purpose of this study is to integrate electromyogram (EMG) signal detection with 3D printed prosthetics to create an inexpensive, effective prosthetic hand capable of detecting and mimicking human motion. EMG signals are electrical signals generated from the activation of a muscle; these signals can be analyzed as an inexpensive method of detecting user intent. EMG signals from the muscles of the forearm will be analyzed using multiple sets of electrodes. The resulting signals will be filtered and interpreted in MATLAB using principal component analysis in conjunction with quadratic SVM to classify EMG signals into specific hand movements. Principal component analysis is a technique used to remove extraneous variables from the data set, while quadratic SVM is used to find predictive equations to classify patterns. Together the two techniques allow for effective classification of hand movements based upon EMG signals. With successful classification of EMG signals, this study creates a prototype 3D printed prosthetic capable of replicating the motions of a human hand in real time based only upon muscle input.

Poster-99: Chiral Liquid Crystal Polymer Networks and their Detection of Volatile Organic Compounds
Authors: Anthony Panariti, Daniel Carrozzi, Lee Anne Vigilia, and Thomas Stoke
Faculty Mentor: Petr Shibayev
College: Fordham College at Rose Hill

Materials found in nature are often classified as being in the liquid, solid or gas state. Some materials such as nematic liquid crystals flow like liquids but orient themselves along a common axis. Chiral nematic liquid crystals additionally form periodical helical structures which lead to a selective reflection of light and a pronounced coloring of the whole chiral sample. Chiral liquid crystalline oligomers that can be crosslinked are of particular interest because they can incorporate low molar mass compounds in their network structures. These materials were created, and their response to volatile organic compounds (VOCs) of different nature was studied. We have shown that chiral networks with polar and non-polar molecular inclusions respond differently (by changing color) to many VOCs (toluene, ethanol, cyclohexane and acetic acid). Thus, a set of few different chiral films can be used as a selective sensor for different VOCs. A variety of colors developing in such a sensor serves as a characteristic fingerprint of a certain VOC. Although such a sensor is sensitive to relatively high concentrations of VOCs, it can be used to measure daily exposure to VOCs in an industrial environment. We discuss a mechanism of color change mostly related to swelling of chiral networks in a gas atmosphere of VOCs.

Poster-100: Chiral Structure Replication and Characteristics of VOC Exposure
Authors: Thomas Stoke
Faculty Mentor: Petr Shibayev
College: Fordham College at Rose Hill

Chiral glassy liquid crystals are known to have interesting surface patterns, characterized by focal conic domains distributed across their surface. In present work these chiral structures were observed and studied by Atomic Force Microscopy and Differential calorimetry. For the first time, they were also replicated on the surfaces of common polymers by evaporating concentrated solutions of these polymers deposited on the chiral surfaces. When exposed to certain Volatile Organic Compounds (VOC's) in the gas phase, the surface structure of chiral polymers is seen to break down. However, it partially restores when VOCs are removed. Replica polymers were not affected by VOCs at all.Thus, the reconstruction of the surface is a characteristic of chiral polymers and elastic energy stored in a glassy state. This was also confirmed by DSC measurements. This opens new ways for building VOC sensors and using surface reconstruction in creating new surface patterns for nanotechnology including chiral nanosurfaces and metamaterials.

Political Science

Poster-101: The Effect of Chinese FDI in Sub-Saharan Africa on Individuals' Attitudes on China
Authors: Stephanie Galbraith
Faculty Mentor: Idalia Bastiaens
College: Fordham College at Rose Hill

Chinese foreign direct investment (FDI) into Sub-Saharan Africa has increased drastically in the past two decades from $464 million in 2005 to $18.5 billion in 2012. While an increasing number of studies focus on the macro-level effects of this investment, few scholars explore individuals attitudes towards FDI from China. This study examines how Chinese FDI into Sub-Saharan Africa influences the attitudes of local residents towards China. Data from PEW Global Attitudes surveys in ten nations across Sub-Saharan Africa in 2007 and 2013 was used in an ordered logit regression to predict how the perceived influence of China impacts favorable views of China. United Nations Conference on Trade and Development (UNCTAD) data on bilateral stocks was also employed to measure the influence of China in each country. As hypothesized, individuals who perceive China as having "a great deal" of influence on their country were nine times more likely to have a "very favorable" view of China than a "very unfavorable" view. This individual-level data differs from existing macro-level studies which conclude that Chinese FDI into Sub-Saharan Africa is a form of neo-colonialism and advocate against increased FDI. Instead, this study points to how the masses have relatively positive views of Chinese involvement in Sub-Saharan Africa. Further investigations should continue to explore the impact of Chinese investment on individual attitudes in other countries in Sub-Saharan Africa to better understand variations in attitudes toward China across the region.

Poster-102: The Case of Two Diverging Roads: A Hayekian Explanation of the Crisis in Venezuela and the Miracle In Chile
Authors: Theodore Schoneman and Jack Brennan
Faculty Mentor: William Baumgarth
College: Fordham College at Rose Hill

At different points in the latter half of the 20th century, Chile and Venezuela were in similar positions. In the early 1970s, Chile had a democratically elected socialist President, Salvador Allende. By the late 1990s, Venezuela had elected their own democratic socialist, Hugo Chavez. Despite having the same initial conditions of low economic freedom and high political freedom, Venezuela today is in crisis while Chile is thriving. This project demonstrates that the work of Friedrich Hayek can explain this divergence. We see that Venezuela's slow demise mirrored the path from democracy to despotism explained in Hayek's The Road to Serfdom. The citizens of Venezuela, intent on having a planned economy, slowly gave away power, until the government controlled nearly every aspect of the economy. This brought economic miscalculations and lead to a disaster similar to what Hayek predicted. Contrarily, in 1974 Chile was on this road, but US intervention helped set up a coup d'etat that replaced Allende with military ruler Augusto Pinochet. In 1979, Hayek expressed support this coup. We explain this support for this coup by examining Hayek's contention that only economic freedom and not political freedom is necessary for long term success in a country. This explains why temporary dictatorship that allows for economic freedom, can garner positive results in the long run despite initial moral misgivings. However, we explain why this strategy should only be used in rare situations when it is obvious that a country will reach the end of Hayek's road.

Psychology

Poster-103: The Determinants of Political Trust: A Cross-Sectional Study of Latin America
Authors: Rosalyn Kutsch
Faculty Mentor: Rachel Annunziato
College: Fordham College at Rose Hill

This study contributes to the existing scholarship on political trust by focusing on both macro and household level determinants of political trust in Latin America. Latin America is a diverse and economically complex region. While the region experienced economic growth and stronger democratic institutions in the early 2000s, recent political instability has created uncertainty for the future of Latin American politics. This study examines self-reported levels of political trust in Latin America to explore the many questions that have emerged in this field: Does less economic inequality and stronger democratic processes contribute to a greater political trust of the populace? Do the current

levels of political trust vary significantly between and within countries in the region? To construct a regression model, approximately 21,000 household surveys from the Vanderbilt Latin American Public Opinion Project are used. The study focuses on surveys collected from 17 countries between 2016-2017. Macro-level variables (such as the GINI inequality index, gross national income, and EIU democracy score) and household-level variables (i.e. age, gender, ethnicity, political efficacy and community trust) are used. This study finds that majority of the household level variables are significant to the determination of an individual's political trust. However, contrary to existing literature, this study finds that individual voter turnout is not a significant determinant of political trust in the region. Furthermore, at the macro-level, the level of enforcement for compulsory voting laws in Latin America is not a significant factor in overall political trust.

Poster-104: Social Media Usage and Well-Being
Authors: Samantha Petruzzelli, Ryann Chandler, Katharine Duffy, Kathryn Munyan and Introduction to Behavioral Health, Manresa Scholars Program
Faculty Mentor: Rachel Annunziato
College: Fordham College at Rose Hill

As students of Introduction to Behavioral Health Manresa Program, we noticed a lack of research analyzing the correlation between well-being and usage of social media. Since technology is relatively new to society, the long term effects that it has on people have yet to be investigated. We designed a study to examine social media usage and its relationship with different aspects of well-being among college students. The study includes four questionnaires that address the subjects social media usage, experience of stress, well-being and demographic questions. These surveys were meant to assess participants levels of stress and distress in relation to the interference of social media in their lives and how bothered they were by the presence of social media. We also asked for the subjects to specify what types of social media they used. Examples of these platforms include Instagram, Facebook, Snapchat, etc. The data concluded that social media does have an impact on stress levels, distress levels, and overall mental health. The implications of this study include developing informational programs and tactics to help college students limit their time on social media.

Poster-105: Attitudes and Perceptions of Organ Donation Among University Students
Authors: Isabella Russo-Tiesi
Faculty Mentor: Rachel Annunziato
College: Fordham College at Rose Hill

More than 120,000 individuals are currently waiting for an organ in the United States due to the critical shortage of both living and deceased organ donors. The gap between organ-donor supply and demand can be explained by variables that include both ethical and legal implications, such as attitudes, certain religious beliefs or lack of regulation. The current study aims to examine the attitudes and beliefs of organ donation in a sample of undergraduate students at a medium-sized urban university. A survey containing a questionnaire on demographics and questions on attitudes towards organ donation was distributed and completed by 78 undergraduate students. Results revealed a willingness among undergraduate students to be an organ donor, both irrespective of circumstances (52.6%) and under special circumstances (37.2%). However, only 57.7%% of students were designated as organ donors on their license. Further, only 3.8% of students said they often engage in conversation regarding organ donation, while 88.5% percent of students called for a greater promotion of organ donation on college campuses. This suggests the need for organ donation education to be more fully integrated in the current curriculum of university students. Additional opportunities for outreach on organ donation and incentive suggestions are provided in the paper.

Poster-106: Trauma Exposure and Callous-Unemotional Traits as Correlates of Proactive and Reactive Aggression in Juvenile Offenders
Authors: Lena DeYoung
Faculty Mentor: Keith Cruise
College: Fordham College at Rose Hill

Many juvenile offenders demonstrate aggressive behaviors that have the potential to entangle them within the juvenile and criminal justice systems. To better understand how this aggression emerges, past research has suggested that aggression in youth can be linked to both past trauma exposure (TE), as well as the endorsement of callous-unemotional (CU) traits. This study investigated TE and CU as correlates of proactive and reactive aggression. The sample consisted of 66 detained 12-16 year old boys from two juvenile detention centers. Participant's self-report of TE was measured using the UCLA PTSD Reaction Index for DSM-IV (Pynoos et al., 1998), aggression was measured

using the Peer Conflict Scale (PCS; Kimonis, Marsee, & Frick, 2004) and callous-unemotional traits were measured using the Inventory of Callous-Unemotional Traits (ICU; Frick, 2004). Witnessing community violence and traumatic loss were the most common endorsed traumatic events (> 50% respectively) and the average ICU score was 25.21 (SD = 8.26) representing a moderate level of CU traits. CU traits were correlated with both reactive ($r = 0.48$, $p < .01$) and proactive ($r = 0.39$, $p < .01$) aggression. Total TEs was only correlated with reactive aggression ($r = 0.25$, $p < .05$). However, only CU traits significantly predicted reactive aggression, $F(2, 64) = 10.283$, $p < .01$ accounting for 22.5% of the variance. While TEs are associated with aggression, the results suggest that CU traits are a more robust predictor of both proactive and reactive aggression. Implications for assessment and intervention will be discussed.

Poster-107: Social Media Impact on Acceptance of LGBT Identities
Authors: Gabrielle Piela
Faculty Mentor: Ann Higgins-D'Alessandro
College: Fordham College at Rose Hill

Introduction: With greater LGBT visibility on social media sites, one might wonder if there is a tie between social media usage and acceptance of LGBT identities. We believe that the more an individual uses social media, the more accepting they will be, and that the more LGBT content they're exposed to, the more accepting they are. Methods: Data was collected via Qualtrics survey. Participants (N=124) were college students (mean age $x=20.1$, $\sigma=1.6$). Participants were asked to answer screeners to gauge their social media usage, acceptance of sexual orientations and gender identities, and perceived acceptance level. Results: A multivariate multiple regression was used to predict the scores on the lesbian, gay, and bisexual acceptance scale and the transgender acceptance scale, from score on the social media usage scale and LGBT content exposure. Results indicated that social media usage did not have a significant affect on LGB acceptance ($F(1, 112)=2.58$; $p=.111$) or Transgender acceptance ($F(1,112)=.74$; $p=.391$). However, a greater amount of LGBT content exposure did have a significant affect on both LGB acceptance ($F(1,112)=21.61$; $p< .0001$) and Transgender acceptance ($F(1,112)=19.47$; $p< .0001$). Discussion: The results indicate that a relationship exists between greater exposure to LGBT content online and acceptance of LGBT identities. Results of this study indicate that in the future, social media could be a useful educational tool for young people.

Poster-108: Just Community Intervention Follow-up: A Methods Study
Authors: Holly Russo and Kalilah Fajerman
Faculty Mentor: Ann Higgins-D'Alessandro
College: Fordham College at Lincoln Center

This poster reports investigations into the validity, reliability, and sensitivity of two qualitative interviews, moral self, and moral reasoning, to assess change over time from adolescence to adulthood. Using adolescent data and follow-up adult data from a prior pilot, we are conducting a methods study, as a core requirement for the larger project in order to validate, and ensure the reliability and sensitivity of the qualitative coding schemes of moral self and moral judgment for both ages, necessary for the study of change over time and across age periods. The larger project is a long-term follow-up study of the effects on adult life of an intensive, civic democratic high school intervention conducted in two Bronx schools from 1985 to 1990. The Just Community democratically-governed (one person, one vote) program of 75+ students and 5 teachers discussed and voted for rules that established norms embedded in the sense of justice as fairness and of community for attendance/participation, stealing/cheating, integration/diversity, etc. (Power, Higgins, & Kohlberg, 1989). early assessments were done of moral reasoning, moral self, and attitudes toward school for JC and comparison groups. The larger project hypothesizes more positive effects of JC than normative high school experiences on adult life parenting styles, work leadership initiatives, and civic engagement. Specifically, we report the theories, techniques, and training for two qualitative methods, 1. Structured analysis based on Guttman scaling of moral self-interview, and 2. Cognitive structural analysis of moral reasoning interview, and initial results. Second, we report on current development of a thematic analysis of the past-to-current life interview using the pilot adult data. Initial results support cross age validity of both measures.

Poster-109: How Does Cold and Hot Executive Functioning Predict Self-Reported Productivity in College Students?

Authors: Itunu Ademoyo and Natasha Chaku
Faculty Mentor: Lindsay Hoyt
College: Fordham College at Rose Hill

Executive functioning (EF) refers to a set of mental skills involved in emotional regulation, decision-making, and problem solving (Aron, 2008). Recent studies split EF into two processes: "cold" and "hot" EF, each with key implications for productivity (i.e., the quality of one's end product while performing a task). Cold EF involves inhibition, planning, behavior monitoring, and working memory that are reflected during analytical testing, while hot EF is generated in situations that provoke motivation, emotion, and long-term goals (Peterson & Welsh, 2014). This study aims to examine how varying EF skills in colleges students may predict productivity in their everyday lives. I hypothesized that both cold and hot EF would predict self-reported productivity, but that cold EF would be a stronger predictor of productivity than hot EF. The sample consisted of 30 college students (64% female; 41% White; mean age = 19.0 SD = 1.09). All participants completed a 3-item productivity scale and a battery of hot (e.g Emotional Stroop Test) and cold (e.g., Wisconsin Card Sorting Test) EF tasks on a computer in the 3D Lab at Fordham University (Epstein et al., 2016). Regression results revealed that, in line with my hypothesis, cold EF predicted higher productivity ($\beta = 0.045$, $p = .019$) controlling for college year, GPA, gender, race, and family income. The findings suggest cold EF, but not hot EF, was a predictor of self-reported productivity. Implications on how businesses can integrate these findings to help improve productivity will be discussed.

Poster-110: Gender Differences in the Association between Perceived Discrimination and Mental Health and Subjective Social Status in College Students

Authors: Fatima Khan
Faculty Mentor: Lindsay Hoyt
College: Fordham College at Rose Hill

Prior research suggests that depressive symptoms are higher in young adults who are female, not employed, and living with a lower income. Little is known about the role of discrimination in understanding gender differences in mental health and social status outcomes in young adulthood. The current study explores gender differences in perceived discrimination and seeks to understand the association between perceived discrimination, mental health, and subjective social status (SSS). The study was guided by three hypotheses:(1) women would report greater overall discrimination than men; (2) women would report greater gender-based discrimination than men;; and (3) gender would moderate the association between discrimination and depressive symptoms (but not SSS), such that discrimination would have a greater impact on women's mental health. The study sample consisted of students from five colleges across the U.S. (73.6% female, 26.45% male). Students completed an online survey with self-report of all key constructs. There were no gender differences in overall discrimination ($t(1) = 1.07$, $p = .284$). women (36.1 %) report significantly more gender-specific discrimination than men (28%) ($\chi 2$ (1)=36.43, $p<.05$), supporting Hypothesis 2. A regression analysis was used to test Hypothesis 3:results suggest that discrimination has a stronger association on depressive symptoms in women, although the interaction was only significant at a trend-level ($\beta = -.094$, $p<.10$). There was no gender difference on the influence of discrimination on SSS. Further research should examine long term influences of discrimination on mental health and SSS in men and women.

Poster-111: Pathways to Spiritual Experiences in Personal Narratives of Young-Adult Survivors

Authors: Emily Abate
Faculty Mentor: Mary Procidano
College: Fordham College at Rose Hill

This study investigated the antecedents and nature of spiritual experiences reported by young-adult survivors of cancer. Diagnosis and treatment of cancer represent physically and psychologically traumatic experiences, and studies of cancer survivorship demonstrates potentially long-term physical and psychological effects of cancer. Spirituality has been identified as a possible psychological protective factor; however, little is known about the antecedents or nature of meaningful spiritual experiences in this population. As part of a larger study of pathways to resilient development, 92 young-adult survivors of cancer, residing throughout the US, were asked to identify a moment in which they felt a sense of God or some almighty force, or a feeling of oneness with nature, the world or the universe. Using a grounded-theory approach, transcribed interviews were examined for personal spiritual or religious tradition in life history, the nature of the experience, and specific features of the experiences. About 34% of participants noted having been raised with a particular religion; 13% referred to a general spiritual tradition; 18% reported not having

any previous spiritual/religious tradition; and 28% did not mention their religious/spiritual histories. The specific features of the experience included positive emotions (88%), gaining personal strength (86%), inspiration/ guidance, personal strength, personal transformation, divine intervention, strengthening of faith, questioning faith, anger at God, and others (most of the experiences included many of these features). Results are discussed in terms of future research on populations who experience traumatic stressors, assessment of spirituality and religiosity, and implications for integrating spirituality into psychotherapy.

Poster-112: The Narratives of the Working-Mother Experience for Ethnic Minority Women: An Analysis of Burden, Conceptualization of Social Support and Spirituality, Intimate Experiences and Life Satisfaction
Authors: Jodi-Ann Raphel
Faculty Mentor: Mary Procidano
College: Fordham College at Rose Hill

The present ethnocentric study aims to qualitatively analyze the narratives of 11 African American working mothers (ages 25-82), who mostly are immigrants or decedents of Caribbean immigrants. It was hypothesized that these mothers, being immigrants and of lower SES, will be more susceptible to burden and guilt. However, their expression of emotional well-being, within the contexts of burden and stress, is expected to be buffered by their idea of perceived social support and their connection with spirituality. Individual interviews were used to formulate narratives centered on the dual-role for minority mothers, which was then methodologically examined using the grounded theory and Dan McAdams' themes of agency, communion, and redemption. These methods established the themes of burden and guilt, perceived social support, the role of spirituality, the contexts of the mother's intimate experiences (e.g. with children) and sense of happiness for qualitative analysis. Overall, the contextual expression of the narratives of their "working mother" experience is embedded within their perspectives of those themes and their children.

Poster-113: Effect of Sex and BMI on Measures of Motivational Factors in High School Physical Education Students
Authors: Olivia Jones
Faculty Mentor: Amy Roy
College: Fordham College at Rose Hill

In order to make school based physical activity interventions last after children leave school and to combat obesity through increased physical activity, researchers must understand the psychology of motivation. Two lenses through which to view success in sport are the two major motivational theories in sports psychology, Achievement Goal Theory (AGT) and Self Determination Theory (SDT). This study surveyed 290 students in Bronx and Manhattan high schools. Two surveys were administered, one to measure AGT variables and one to measure SDT variables. After conducting an independent samples t-test to investigate the effect of sex, we found that males had significantly higher scores on many factors of motivation, including ego-involved orientation and intrinsic motivation. After conducting a second independent samples t-test, we found that overweight or obese students had significantly lower levels of intrinsic motivation than underweight or healthy weight students, but similar levels of amotivation. We also used a two-way Analysis of Variance (ANOVA) to test the combined effect of sex and Body Mass Index (BMI) on levels of motivational factors and found no significant results. In sum, these results reveal the need for a greater understanding of not only the effect of motivational factors on P.E. participation and success, but also the effects of sex and BMI on these motivational factors. Shifts in P.E. education emphasizing the role of sex on motivation are indicated by this research, but further investigation into the impacts of sex and BMI is needed.

Poster-114: The Effects of Smartphone Technology on Sleeping Patterns
Authors: Emma Spoldi
Faculty Mentor: Karen Siedlecki
College: Fordham College at Rose Hill

Sleep deprivation is common among many adolescents and adults, and research has shown that poor sleep can impact daily functioning and or mental health. For this reason, it is important to examine potential risk factors to further understand how these contribute to poor sleep habits. In particular, technology may be a potential factor that impacts sleep, especially since cell phones and computers are consistently used today. The current study examined the association between the usage of technology before bed and sleeping habits. 533 participants between the ages of 18-71 years completed a questionnaire asking about their cell phone and sleeping habits, along with depressive/anxiety symptoms. Results suggested that there is a relationship between how often an individual scrolls on their phone when they get into bed for the night (ranging from every night to never) and how much time they spend doing so (zero

minutes to over an hour) with an individual's sleeping patterns. Namely, individuals who more often scrolled through their phone while in bed, and spent more time doing so, took longer to fall asleep, had more bad dreams, and less enthusiasm to get things done. Results also suggested there was a relationship between bedtime phone use and higher levels of reported anxiety and depressive symptoms. This research is important in helping understand the contribution of technology use (especially bedtime phone use) to sleep-related problems, and may help individuals modify their nightly routines and improve their quality of life.

Poster-115: How Ruminative Responses Exacerbate the Effects of the College Transition
Authors: Jason Dufour
Faculty Mentor: Tiffany Yip
College: Fordham College at Rose Hill

The transition that college freshmen undergo is one that can involve many challenges, such as emotional adjustment as well as a drinking culture and academic rigor (Kneeland & Dovidio, 2019; Lopez & Gormley, 2002; Rodgers et al., 2018). Despite these challenges, the research on this transition into young-adult life is rather sparse. The need for further investigation on this topic developmentally critical due to the plethora of unique challenges associated with this transitional milestone. Research finds that stress and rumination are two constructs that may exacerbate the college transition. This poster explores the associations between stress and rumination, and whether sleep and social support serve as protective factors in the first two weeks of the college life transition.

Poster-116: Right Temporal Lobe Degeneration: Cognitive And 18F AV-1451 Imaging Phenotypes
Authors: Madison Shyer
Faculty Mentor: Molly Zimmerman
College: Fordham College at Rose Hill

The right temporal lobe variant (RTLV) of frontotemporal dementia (FTD) is uncommon. Its clinical and imaging features are well-defined, distinguishing it from other types of FTD including semantic dementia. We evaluated three patients with RTLV of FTD and analyze the clinical features, reflecting the anatomical distribution of atrophy and 18F AV-1451 tau PET uptake. All patients were amyloid-negative. 18F-AV-1451 images from 80 to 100 min were averaged, and standardized uptake value ratios were calculated using the mean activity in the cerebellar gray matter as the reference region. The patients had a detailed neuropsychological assessment, including a facial and object recognition battery. Patient 1 exhibited greater atrophy and 18F AV-1451 uptake in the anterior portion of the right temporal lobe; patient 2 showed atrophy and 18F AV-1451 uptake in the mid-portion of the inferior temporal and fusiform gyri; patient 3 showed greater atrophy and 18F AV-1451 uptake in the posterior portion of the right temporo-occipital (TO) region. Compared to the other two patients, patient 3 had the most severe prosopagnosia and incapable of recognizing faces, including family members. Emotion recognition was also affected with more posterior involvement. Naming was markedly affected in the patients. Although prosopagnosia from ischemic and other lesions in the right posterior temporal region is common, amyloid-negative primary progressive prosopagnosia has been described mostly with involvement of the right anterior temporal region. As exemplified by our third patient, prosopagnosia of an apperceptive nature with posterior temporal involvement can be more severe than when the temporal tip is affected.

Poster-117: Sleep Quality and Working Memory in College Students
Authors: Daniella Toto
Faculty Mentor: Molly Zimmerman
College: Fordham College at Rose Hill

This study investigated the relationship between sleep quality and working memory in young adults. Wrist actigraphy using the Actiwatch Spectrum PRO by Respironics Phillips, Inc. was used to obtain standardized measurements of participants' sleep quality the night before neuropsychological assessment. In particular, we focused on sleep onset latency (how long it takes to fall asleep) and total sleep time. Additionally, the One-Back Task and Two-Back Task were used to obtain measurements of the participants' attention and working memory, respectively. After controlling for gender and estimated IQ, we found that participants who took longer to fall asleep had reduced working memory functioning. Working memory is essential for successful learning. Therefore, college students' grades may be suffering due to lack of sleep and impaired working memories.

Poster-118: Examination of Teacher Internalizing Symptoms as a Mediator of the Associations between Fidelity and Quality of Teacher Coaching in Social and Emotional Learning and Classroom Aggressive Behavior

Authors: Gabriela Cabral
Faculty Mentor: Joshua Brown and Amy E. Lowenstein
College: Fordham College at Rose Hill

Higher levels of emotional exhaustion among teachers has been associated with poorer student achievement (Klusmann, Richter & Lüdtke, 2016). Consequently, recent research has investigated whether coaching teachers can improve student outcomes. Teacher coaching has been shown to reduce teacher stress, depression, and anxiety, and improve classroom behavioral climate (Greenberg et al., 2016; Kraft & Blazar, 2017). Coaching has become an important component of social emotional learning (SEL) programs. Although a lot is known about overall SEL program effectiveness, less is known about whether and how variation in teacher coaching is related to children's aggressive behavior. This study examines associations between the quality and fidelity of coaching received by teachers across one school year and overall levels of classroom aggressive behavior assessed in late spring, and examines teachers' internalizing symptoms as a potential mediator of this relationship. The study draws on intervention-group data from 7 program coaches, 151 third- and fourth-grade teachers, and 2,332 students in 31 NYC public elementary schools participating in an efficacy trial of a coaching-based SEL intervention. Coaching fidelity was negatively associated with spring levels of classroom aggressive behavior ($B = -0.66$, $p < .05$), and coaching quality was negatively associated with spring levels of teacher depression ($B = -0.75$, $p < .05$) and anxiety at a trend level ($B = -0.55$, $p = .055$). Results suggest that better coaching may lower subsequent classroom aggression and teacher internalizing symptoms, even after controlling for baseline levels of these outcomes and teacher/classroom characteristics. Implications are discussed.

Poster-119: Associations Between Fidelity and Quality of Teacher Coaching in a Social and Emotional Learning Program and Classroom Interactional Quality

Authors: Jennifer Levine
Faculty Mentor: Joshua Brown and Amy E. Lowenstein
College: Fordham College at Rose Hill

This study examines a coaching program (MTP: MyTeachingPartner) that has been implemented to promote teachers' systematic utilization and implementation of a social and emotional learning (SEL) program (4Rs: Reading, Writing, Respect & Resolution) in upper elementary school classrooms. Wildman and colleagues (1992) distinguish between mentoring: which is aimed to improve teaching strategies by providing teachers with general advice, and coaching: which has the same goal to improve teaching strategies but is focused more on individual interactions between a teacher and a trained coach. The current study specifically examines how the quality of coaching received by teachers affects observed classroom interactions between teachers and children within the same framework that guides the content of the coaching. This study draws on data from 151 third- and fourth-grade public elementary school teachers and 2,332 students from 31 NYC public elementary schools that were randomly assigned to the integrated SEL and coaching intervention (4Rs+MTP) as part of a larger efficacy trial. Significant, positive association between coaching quality and classroom Emotional Support were found ($B = 2.40$, $p < .05$), suggesting higher levels of coaching quality received by teachers was associated with higher levels of emotionally supportive interactions in the classroom, even after controlling for baseline Emotional Support and other key covariates. Understanding links between coaching quality and domains of teacher-student interaction quality can help provide effective supports for teachers based on evidence of improvements in the quality of learning-focused interactions.

Poster-120: Relations between Teacher Stress and Aggression-Related Classroom-Level Social Cognitions

Authors: Adam Payne-Reichert
Faculty Mentor: Joshua Brown and Amy E. Lowenstein
College: Fordham College at Rose Hill

Hostile attribution bias (HAB), the tendency to interpret ambiguous social interactions as motivated by hostile intent, has been shown among children to have robust associations with later aggressive behavior. However, extant research on HAB has paid little attention to classroom settings, an important social environment for children. This is surprising, given the sustained interpersonal relationships with peers and their teacher students must navigate throughout the school year and the perceived threats that these relationships may create. To fill this gap and to further understand HAB's etiology, this study examines whether teacher stress in the fall/winter is significantly, positively, and linearly related to classroom-aggregated HAB in third- and fourth-grade classrooms in the spring. Study participants are 331

teachers (91% female; 64% non-White) and 5,112 children (Mage = 8.80 years; 52% female; 94% non-White; 84% FRPL) from 60 NYC public elementary schools that were part of a randomized-controlled efficacy trial of a social-emotional learning and literacy program. Longitudinal data were collected using self-report surveys completed independently by teachers and in supervised classrooms by children. Final regression models yielded a small, non-significant negative association between fall/winter levels of teacher stress and spring levels of classroom-level HAB (B = -0.03, p = 0.07), after controlling for baseline levels of HAB, relevant teacher demographic variables, and treatment/control group status. This negative relationship persisted even when alternative data modeling techniques, such as the use of cut-points and of quadratic terms, were employed. Implications for the understanding of stress contagion and the etiology of HAB are discussed.

Poster-121: Parent-Child Interaction Therapy for Internalizing Disorders
Authors: Mia Behrens
Faculty Mentor: Joshua Brown
College: Fordham College at Rose Hill

Parent-child interaction therapy (PCIT) is a psychotherapeutic treatment that was originally designed for the treatment of young children between the ages of two and seven that present with disruptive behavior disorders (DBDs), such as attention deficit hyperactivity disorder, oppositional defiant disorder, and conduct disorder, and externalizing disorders, characterized by noncompliance, social deviance, and disruptiveness. PCIT focuses on the dynamic which takes place between parent and child and highlights the evidence-based theory that an alteration in parenting style will subsequently lead to change in children's behavior. While the reported rates of disorders associated with internalizing behaviors are lower than those of externalizing disorders, it is important to note that internalizing symptoms are not as easily seen, and thus have the potential to go undiagnosed throughout adolescence. Further, when left untreated, these symptoms have the potential to impact academic performance, family functioning, and social relationships along with a range of other crucial developmental factors. Through a review of current empirical studies on adaptations to Parent Child Interaction Therapy as a treatment for internalizing disorders, my research findings indicate that they serve as an appropriate and effective treatment for both externalizing and internalizing symptoms associated with a wide range of disorders, including separation anxiety, social anxiety, generalized anxiety, depression selective mutism, and specific phobias. In researching the efficacy of these treatments, my review highlights the grounding of PCIT as an evidence-based treatment and supports its growing implementation among populations of youth with internalizing disorders.

Sociology

Poster-122: Moved Out: Patterns of Forced Move in New York City
Authors: Nicole Sanchez
Faculty Mentor: Emily Rosenbaum
College: Fordham College at Rose Hill

The highest rates of housing instability and involuntary move are seen in cities. According to Desmond, between 2009 and 2011 more than 1 in 8 renters in Milwaukee experienced what he calls a forced move. In this research, I use Desmond's research on "forced move" to identify and explore this experience in New York City. By comparing households that were forced to move with those who were not forced to move this research highlights the specific demographics that are most likely at risk of being forced to move as well as the effects of this risk. According to the New York Community Service Survey in 2017, landlords filed 230,000 residential evictions and city marshals executed 21,000 evictions. Using the New York City Housing and Vacancy Surveys from 2011 and 2014, I was able to reassure previous research on which descriptive factors —such as gender and race and ethnicity— make people at-risk of forced moves. Additionally, this research explores the effect of forced moves. For example, I found that people who experience forced moves are most likely to have large defects in their homes, such as rat infestations, clogged pipes, etc. Research on eviction and forced move is important when considering housing policy. Eviction rates have a high correlation to homelessness rates in New York City, and needs to be considered when making policies that aim to reduce homelessness. Policymakers should consider that if one is unable to obtain a stable housing environment then they are unable to maintain a stable life.

INDEX