CSI UNDERGRADUATE CONFERENCE ON RESEARCH, SCHOLARSHIP, AND PERFORMANCE*

Thursday, May 1, 2014
Center for the Arts, 1P-Atrium
11:00am - 4:00pm

*Sponsored by the Division of Academic Affairs with funding from the CSI Student Government, the Office of Alumni Relations, and the CSI Foundation
### Conference Schedule—Thursday, May 1, 2014

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CSI Undergraduate Conference on Research, Scholarship, and Performance

Message from the President

The conference theme, “Your Passport to Knowledge,” exemplifies the breadth and depth of knowledge and talent of our undergraduate students. This annual event showcases the intellect and talent of CSI students, as well as the commitment of our faculty to provide a world-class education for our students. It is through the guidance of and the collaboration with CSI faculty that our students are able to construct research, scholarship and performances of the outstanding caliber that you will enjoy today.

This year we have over 200 participants in the conference representing an extensive range of disciplines within the College. This year’s presentations include abstracts being presented either by individual students or groups of students, musical and dance performances, and student exhibitions of works of art. Today, you will have the opportunity to immerse yourself in creative musical and dance performances, rigorous analyses of social scientific and literary ideas and theories, and meticulous mathematical and scientific investigations and inquiries.

It is important to note that CSI Undergraduate Research Awards sponsored by the CSI Foundation supported 17 of our students’ research projects. This year we received additional funding from the CUNY Coordinated Undergraduate Education program which supported an additional 30 research projects. We are also extremely grateful to the office of Academic Affairs for their financial support.

I would like to acknowledge Kristen Lindtvedt, Meagan Derbyshire and Dr. Alan Benimoff, who have assisted our student participants by providing workshops and technical assistance that enabled them to enhance the visual components of their presentations; Jessica Stein, Delia Rios and Barbara Verteramo, Office of the Provost, all of whom created a great team that handled a myriad of tasks and details. Lastly, I would like to thank Charles Liu, Professor of Engineering Science and Physics and Jonna DeSantis, Office of Academic Affairs for coordinating the conference.

I would also like to thank the Alumni Association for donating tee shirts for the volunteers; Design Services; the Center for the Arts for their technical support; Media Services; members of the faculty review and the planning committee for the conference; and The Verrazano Honors School and Macaulay Honors College volunteers for taking the time to assist with the organization of this event.

I am indeed proud that this conference represents a true collaboration of the College community, and I appreciate the many roles played by all in presenting this conference, which highlights the critical research and experimentation that define and enhance the college experience.

Congratulations to each and every one of today’s participants!

Sincerely,

William J. Fritz, PhD
Interim President
The Department of Performing and Creative Arts

Presents

An Art, Dance, and Music Exposition

at

The 13th Annual
CSI Undergraduate Conference
on Research, Scholarship,
and Performance

The Atrium, The Recital Hall,
The Dance Studio, The Williamson Theatre,
and The Student Art Gallery

Center for the Arts
Thursday, May 1, 2014
Art, Dance, and Music Exposition

THE RECITAL HALL, 1P-120

CSI CHAMBER MUSIC RECITAL
11:15am –12:05pm

A showcase of chamber music featuring students of the CSI Music Program

Prof. Sylvia Kahan, Performance Coordinator (URC)

Program
Duo for Flute and Piano ................................................... Aaron Copland 1900-1990)
Jane Saunders, flute
Ah Ram Lee, piano

Sonata in E major, K. 380 ......................................................... Domenico Scarlatti
Sonata in E major, K. 531 .........................................................
(1685-1757)

Intermezzo in A major, Op. 118, No. 2 ........................................... Johannes Brahms
Rhapsody in G minor, Op. 79, No. 2 ...........................................
Shiyun Shang, piano

CSI MUSIC PROGRAM—CHAMBER MUSIC
2:30pm –3:00pm

A showcase of chamber music featuring students of the CSI Music Program

Prof. Sylvia Kahan, Performance Coordinator (URC)

Program
Vals Venezolano No. 4 ................................................ António Lauro (1917-1986)
Pepita Polka. ................................................................. Francisco Tarrega (1852-1909)
Timothy Adorno, guitar

Entr’acte .............................................................................................. Jacques Ibert (1890-1962)
Bordell 1900 (from History of the Tango) ............................................. Astor Piazzolla (1921-1992)
Allison Hasson, flute
Timothy Adorno, guitar

Clair de lune (L’ile joyeuse) ..................................................... Claude Debussy (1862-1918)
Shiyun Shang, piano
THE CSI GOSPEL CHOIR (CSIGC)
3:00pm–3:30pm

The CSIGC aims to enrich the lives of participants and listeners through inspirational music. We are not just a club, but a ministry!

Professor Sylvia Kahan, Faculty Advisor

The CSI Gospel Choir
Kessina Cheriza
Kayla Hill
Adar Johnson
Anastasia Johnson
Serena Medina
Ashley Pinnock
Miguel Valerion
Faith Walton

Stanton Estwick, artistic director/pianist

Let the Rain of Your Presence ................................................. Clarence E. McLendon
Hallelujah, Salvation and Glory ................................................ Various Composers
Chasing After You ................................................................. Various Composers
I Will Bless the Lord ............................................................... Byron Cage
God Is In Control ................................................................... James Hall

CSI JAZZ BIG BAND—featuring student arrangements
3:30pm–4:15pm

The CSI Big Band explores literature of that genre ranging from swing to modern with an emphasis on clarity and ensemble performance and development of each individual player's musicianship. Today's performance will feature original arrangements of standard jazz literature from students in Professor Michael Morreale's Jazz Arranging seminar as well as other material from this semester's work.

Prof. Michael Morreale, Director

Ensemble Members
Shaker Krit, Kayade Morris—alto saxophone,
Miles James, Andrew Robles, Folaranmi Aremu-Bashir—trombone
Al DeRosa, Jose Mendez, Toni Nostro—piano
Tim Adorno, Ari Parness, Anthony Surace —guitar
Stanton Estwick —bass
Sean Feldman, Rachel Lemoine, Brendan Woods—drums

Program
Desinfado ............................................................... Antonio Carlos Jobim, arranged by Jose Mendez
Sugar .................................................................................. Stanley Turrintine, arranged by Miles James
I Got It Bad (And That Ain't Good) ........................................ Duke Ellington, arranged by Grove Rune
You Brought A New Kind Of Love ......................................... Fain/Kahal/Norman, arranged by Toni Nostro
Darn that Dream ............................................................. James Van Heusen, arranged by Patrick Nowak
Doxy .................................................................................. Sonny Rollins, arranged by Darryl Todman

Other selections to be announced, subject to change
Art, Dance, and Music Exposition

THE DANCE STUDIO, 1P-220

CSI DANCE PROGRAM
3:00pm – 3:45pm

The Training of a Dancer

Professor Charles Thomas, Dance Coordinator (URC)
Professor Niambi Keyes, Dance Instructor

Featuring students of the CSI Dance Program

Contemporary Dance Technique (Dance 101)
Black Dance Workshop (Dance 122)
Improvisation I (Dance 171)
Choreography III (Dance 211)
Art, Dance, and Music Exposition

CSI STUDENT ART GALLERY, 1P-118B

UNDERGRADUATE RESEARCH CONFERENCE EXHIBITION
2:30pm–4:15pm

The Spring Art Program Exhibition is a student curated group exhibition representing the wide range of talent in the CSI Art Program. This year’s exhibition includes work in drawing, painting, sculpture, printmaking and photography. Curated by CSI Art Majors: Samantha Garbarino, Lali Partsvania, Cassandra Teixeira.

Faculty advisor: Professor Marianne Weil

Matthew Wojcik
Alexandra Barron
Danielle Ellis
Alana Rosario
Brigid Davies
Jing Xing Huang
Derrick Murrell, Jr.
Michael O’Shea
Ryan Nieves
Ariana Ti Smith
Brian Ortiz
Janet Gonzalez
Edyta Kostka-Makowska
Gabrielle T. Christopher
Cynthia Russo
Katy Ottomanelli
Cassandra Teixeira

Liana Joseph
Caitlin Spinelli
Alexander Williams
Wendell Cole
Cameron Rodriguez
Stephanie Betances
Olga Korovina
Ruth Li
Jennifer Vasque
Nicole Medina
Jessica Schorberl
Amanda Kow
Kimberly Morales
Cheyenne Rodriguez
Tanicka Guy
Lisa Aequan
Didem Yilmaz

Amber James
Piotr Debicki
Frank Valverde
Ayah Alkayyali
Dennise DeJesus
Susie Goldstein
Susa Huang
Kyle T. O’Neil
Darlene Livingston
Samantha Garbarino
Andrei Karpov
Nina Gidcobbe
Alex Medina
Roberta Berman
Lisa Fredericks
Michael Tobia
Alison Lopez

THE GALLERY OF THE COLLEGE OF STATEN ISLAND, 1P-112

FOREIGN TERRAIN: THE PAINTINGS OF YING LI
noon–4:30 pm
Art, Dance, and Music Exposition

CFA ATRIUM - THE GLASS CASE

CSI SCULPTURE EXHIBITION

2:30pm - 4:15pm

Prof. Marianne Weil, Asst. Professor of Sculpture

WOOD

For this year’s Undergraduate Research Conference, students from Intermediate and Advanced sculpture, ART 250/ART 350, investigate wood. In the projects presented, students create wood sculpture in a constructive manner, through means of laminating, joining and shaping. Lamination and Joining is the process by which the pieces are attached. Shaping wood is the basic alteration of wood by sawing, carving, and sanding.

Participants
Michael Crocitto
Stephanie Betances
Regina Carpasso
Samantha Garbarino
Maryna Incherchera
Andrei Karpov
Allison Lopez
Vianney Martinez
Rebecca Wheeler
Hector Ramos
Amy Xie
Lali Partsvania
Research Paper Presentations

Center for the Arts
2:30pm–4:15pm
Research Paper Presentations

1P-222
2:30pm – 4:15pm

**PAPER # 17**

**Descriptive Analysis of Physical and Visual Restraints in a Central Asian Cradling Practice**

Loye Tucker  
Faculty Mentor: Professor Lana Karasik  
Department of Psychology

Childrearing practices shape infants' experiences, which in turn affect infants' development. For example, childrearing practices that restrict infants' movements have been associated with motor delays. Some studies have linked dressing infants in bulky clothing or using heavy bed coverings to delayed onset ages. Restricting infants' exposure to the prone position and instead laying them supine was linked with later onsets for prone skills. Swaddling, which involves securely wrapping infants in cloth, also limits infants' movements, yet researchers found no evidence that swaddling delays motor development. This inconsistency in findings may be because previous studies have not adequately described restrictive practices: they often rely on maternal reports, a method that does not yield sufficient information about how exactly restriction affects development.

This study capitalizes on a rare chance to describe a unique childrearing practice that may elucidate effects of context on early development. It aims to quantify and describe the process of cradling infants from 0-24 months of age in Tajikistan. In the “gahvora” cradle, infants are dressed, laid supine, swaddled, and bound to the cradle. Instead of maternal reports, the practice was video-recorded for 50 mother-infant pairs. Preliminary analyses show that cradling is a multi-step process involving 3 to 7 (M=5) restrictive components, which take M=1.8 min to complete. Cradling is highly ritualized: the number and duration of components stays the same across age.

Subsequent analyses will examine which components are introduced and which are discontinued over age. These analyses will be used in future studies to examine how gahvora cradling affects motor development.

**PAPER # 18**

**Microfinance in India**

Danielle Datre (Macaulay Honors College)  
Faculty Mentor: Professor Vandana Chaudhry  
Department of Sociology, Anthropology and Social Work

Micro-financing has been hailed as an empowering way to help impoverished people become self-sufficient. Generally, interest free or low-fee loans are given to people so that they can start their own small businesses. Women make up a large portion of clients. This practice is common in rural India, and is spreading to more urban areas (Loomba, 2012). However, some criticize micro-financing, saying it has become too much about making profit and not enough about helping clients. For example, SKS, one of India’s largest micro-finance companies, went public in 2010. This led to a greater need for repayment of loans. The company was accused of strong-arm collection tactics that led some farmers to suicide (Kinetz, 2011). It is difficult to explore the truth about micro-financing, specifically in India.

How much does it help, and how much does it hurt? This project attempts to answer those questions. This is accomplished by examining research articles and a thesis by Dr. Vandana Chaudhry, professor at the College of Staten Island, who researched this topic in the Andhra Pradesh region of India.
**PAPER # 2**

**An Investigative Study of the Insulating Capacities of Light-Transmitting Concrete**

Pericles Stavridis  
Faculty Mentor: Professor Alfred Levine  
Department of Engineering Science and Physics

The purpose of this research project is to investigate the insulating capacities of samples of light transmitting concrete. Concrete of this nature is designed to allow light to pass through either side by running fiber optic cables through the length of the slab. Experimentation will be done by first measuring the insulating capabilities of a sample of non-insulated light-transmitting concrete, and then by applying insulating foam to the slab in a way that would not obstruct the light-transmitting properties of the slab. A heat source is to be applied in an insulated, isolated environment, with the only escape for heat to be through the concrete slabs. Should the research dictate that the design has been improved, it could be implemented in ways to provide structures a viable option for more natural light without significant loss of heat.

**PAPER # 6**

**A Portrait of Two American Families before WWII**

Vincent Garcia  
Faculty Mentor: Professor Suha Kudsieh  
Department of English

The Jungle by Upton Sinclair and As I Lay Dying by William Faulkner are two novels published before WWII. Both novels examine the role of family life and place it under a microscope, looking closely at some of the hardships and trials experienced at the time. Therefore, my class presentation will examine family dynamics and disintegration in both novels.

Upton Sinclair’s turn of the century novel The Jungle shows the disintegration of an immigrant Lithuanian family coming into America and trying to achieve the “American Dream”, a utopian familial lifestyle that is based on economical stability. Slowly, the hardships take their toll on the immigrant family, destroying their dreams. In contrast, William Faulkner’s 1930 novel As I Lay Dying shows a family born and raised in the South who can not form an ideal family bond under any given circumstance. This is a slap in the face to the Southern family ideals that have been closely associated with the South, a region where family ties are imagined and expected to be very close. To show a family, who hails from a place associated with such close-knit traditions, behave so differently compared to the way the South was viewed by the rest of the world underscores the disintegration of family values at the time.
PAPER # 8

Gender Struggles During the Witch craze of Early Modern and New England

Abeer Husein (The Verrazano Honors School)
Faculty Mentor: Professor Catherine Lavender
Department of History

Write about gender history as a man, get targeted as not offering a genuine and balanced account due to their sex. Write gender history as a woman and deemed as a radical feminist. In the fourteenth to mid-eighteenth centuries, England oversaw the increased development of education, economic and religion upheaval. With an unveiling of new ideas to an already long-established set of customs, more traditional mentalities met new changes with opposition. As religious factions split between Catholicism and Protestantism, and the increased gap between the class systems in regards to knowledge, allowed for a sense of paranoia to result in which the witch craze of the late fifteenth and sixteenth centuries spread throughout Europe and would ultimately spread to the New England colonies. As diabolism spread within continental witchcraft, English and New England witchcraft was embedded, not only within the differing class systems, but gender struggles.

As new systems allowed for more women to step out of their more traditional roles, they were able to gain a certain level of independence. As gender dichotomies became more distinct, more women were accused for malefic witchcraft due to their shift from the traditional norms. While historians like Christina Larner explained the high percentage of female witch persecutions as a result of male dominance over women in early modern society, evidence from numerous indictments published of the witch trials in England and New England shows it was not just a result of an already accustomed patriarchal society; the wide range of ideologies of the female “witch” stereotypes that developed within the fifteenth and sixteenth centuries also contributed to their increased level of persecution in England and New England.

PAPER # 9

Is Cote d’Ivoire entering the Phase of Efficient Recovery after the Civil War?

Belkissa Doumbia
Faculty Mentor: Professor Emmanuel Mbah
Department of History

This presentation examines the socio-economic and political attempts by Cote d’Ivoire to recover from the civil war that killed many of its people and indebted the entire nation during the last decade. The war resulted from popular resentment against the rule of previous autocratic leaders, many of whom had succeeded at creating xenophobia amongst the populace. In order to judge the effectiveness of the recovery attempts, we need to know what differentiates the new government from previous ones, how the economy functions today, as well as renewed efforts by the government to rebuild the nation.

Thus while the presentation will discuss the different phases of postwar recovery in Cote D’Ivoire, it will also address the following: It will provide a short discussion on the different issues/crises, such as the ideological crisis over ethnicity and autochthonism, that the country encountered before the war and a list of the presidents during the prewar years, and how their dictatorial policies preempted development; it will discuss the consequences of the war and the ethnic groups that were most affected.

The presentation will include some data in the form of pictures of development infrastructure, to elaborate on what the current government is doing to rehabilitate the nation; the data also serves to attract investors that could create more jobs, boost the economy, and re-unify Ivorian citizens. The different players in the post-conflict reconstruction process in Ivory Coast include the Cote d’Ivoire mission at the UN, some Ivorian and international NGO’s abroad who made donations to assist Ivorian citizens, foreign countries such as France and the USA, and Monetary Institutions such as the IMF and the World Bank. These players continue to help in the post-conflict reconstruction and rehabilitation processes in Ivory Coast. The current president, Alassane Ouattara, has pledged that the nation would be out of the crisis by 2015; and the country is moving slowly but surely toward that goal. Cote d’Ivoire is definitely entering the phase of efficient recovery.
PAPER # 1

Neural Network Kernel and C-Means Based Fuzzy Clustering –Topology, Learning, Cluster Validity Measures and Applications

Austin Krauza (Macaulay Honors College)
Faculty Mentor: Professor Natacha Gueorguieva
Department of Computer Science

Data clustering is the process of grouping similar points of data. Clustering algorithms partition a data set into several groups based on the similarity of the data values. These algorithms are used extensively to organize and categorize data, in addition to compress data and construction models.

Fuzzy logic (FL) techniques were developed for image-understanding applications such as the detection of edges, feature extraction, pattern recognition, data mining and clustering. Neural networks (NN) provide algorithms for learning, classification, clustering and optimization, utilizing fuzzy logic to handle issues such as forming impressions and reasoning on a semantic or linguistic level.

The goals of this research are to develop the topology and unsupervised learning algorithms for NN kernel and C-means based on fuzzy clustering, as well as to introduce new cluster validation measures (VM) by modifying some of the existing clustering methods such as K-means and ISODATA. Current research is based on the classical ISODATA algorithm, which incorporates the validation of Fuzzy C-means clustering (FCM), allowing the user to determine if the results produced by the ISODATA algorithm are correct and valid. We have implemented and modified the Gustafson-Kessel and Gath-Geva algorithms, which are based on UFPONG (Unsupervised Fuzzy Partition–Optimal Number of Classes) as further means of validation.

Additional cluster validity measures such as partition coefficient, partition entropy, compactness and separation, fuzzy hypervolume, average partition density and partition density will be included into the clustering package. We also propose an appropriate format for the “confusion matrix” in order to further test the proposed algorithms as a supervised one.

The efficiency of the new topology and proposed algorithms is thoroughly tested by using artificial and existing benchmark data sets. The results are analyzed and compared with those of NN without fuzzification (where possible).

PAPER # 10

Ibn Battuta: A Look at the Fourteenth Century Gentleman in the Medieval Islamic World

Abeer Husein (The Verrazano Honors School)
Faculty Mentor: Professor Bryan Averbuch
Department of History

In the mid eighth to fourteenth centuries, the medieval Islamic world oversaw the increased development of education, economics and religious growth. With an unveiling of new ideas due to the integration of the numerous cultural centers in the medieval Islamic Empire, the already long established set of customs brought about by the spread of the religion of Islam dominated the religion and brought about a major influence on society and etiquette of the time period. Within the parameters of the Islamic religion, a certain form of ethical code of manners and etiquette developed and with the wide spread of Islam, had been adopted by numerous people in the Muslim-dominated regions in the Afro-Eurasian world. Ibn Battuta’s travel narrative in the Rihla, journeying throughout the medieval Islamic world, displayed how the similar the morals and ideal character traits of etiquette in these rather diverse cultures centers were very similar. As a man of status and education, Ibn Battuta was able to show how a Muslim man of status was expected to act due to the already developed universal standard of ethics for men in the medieval Islamic world. While the religion of Islam dictates a strict guideline of ethics for the members of its society, providing a framework of the desired character, educated members of the medieval Islamic period expressed these character ideals in literary works, like Ibn Battuta, throughout the narrative of his travels. These character traits of modesty and humility cannot be proven to be consistently exhibited by Ibn Battuta; however, his constant reiteration of these themes of character in the Rihla dictates their importance of maintaining and exhibiting these traits, not only to promote the benefit of Islam, but also its necessity to the sound structure of society and its educated class.
PAPER # 1 2

The Fight for Staten Island’s Greenbelt: Engaging a Community

Samantha Coppola
Faculty Mentor: Professor John Wing
Department of History

The rapid development of Staten Island after the opening of the Verrazano-Narrows Bridge in 1964 spurred efforts to preserve open space and create the “Greenbelt,” now more than 2,800 acres of natural land and parks in central Staten Island. Far from an exhaustive treatment of the preservation of the Greenbelt, my paper analyzes important documentation held at CSI’s Archives in the Bradford Greene Papers related to a key turning point in the island’s environmental history. In 1965, in anticipation of the further development of the island, community leader and landscape architect, Bradford Greene, published an article in hopes of inspiring the preservation of Staten Island’s Greenbelt. A few years later, when the debate about the expansion of Richmond Parkway was at its height, the Staten Island Greenbelt Natural Areas League (SIGNAL), of which Greene was a member, printed a pamphlet advocating for the same ultimate goal as Greene’s earlier article. Both documents presented similar arguments, however their strategies for rallying public support varied.

Together, these documents indicate the multifaceted approach to gaining support for the protection of the Greenbelt. The efforts of Bradford Greene and SIGNAL serve as a useful example of how to engage a community in matters of local environmental preservation especially in a place as unique as Staten Island.

PANEL DISCUSSION

The Complications of Early Russian-American Relations: Two Clashing Perspectives, Evstaf’ev and Poletika

Nicole Balestriere
Faculty Mentor: Professor Susan Smith-Peter
Department of History

Russian-American relations have a lengthy, complicated history. Particularly in the 1800s, these two countries began to foster diplomatic relations by facilitating the exchange of diplomats. The early Russian diplomats were sent to the United States for various reasons. One of these reasons was to report on the American culture and society. Two diplomats who fostered Russian-American relations are Aleksei Evstaf’ev and Petr Poletika. Both of these diplomats created reports on the conditions in America as a part of their work. However, Evstaf’ev and Poletika have radically contrasting views on the conditions of the United States pertaining to its geographical success, the structure and purpose of its federal government, power of the government the judicial system, and finally, the American society as a whole. These contrasting points of view are heavily influenced by the sources used by each consul. Evstaf’ev bases his 1853 work, “The Great Republic Tested by the Touch of Truth,” on his experience throughout his time in the United States, and is strongly influenced by his conservative ideals, whereas Poletika bases his 1826 work, A Sketch of the Internal Conditions of the United States, and of Their Political Relations With Europe, on factual and statistical information while attempting to remain totally impartial. As for both Poletika and Evstaf’ev, this paper will illustrate how there were varying Russian both positive and negative perspectives on the United States, pertaining to experience and source material used while creating works about America and its society and government.
A Cossack and a Federalist Walk Into a Bar: A Comparative Argument

Joseph Perillo
Faculty Mentor: Professor Susan Smith-Peter
Department of History

Alexei Evstaf’ev was a Russian consul to Boston and later New York City who is known for his strong political beliefs regardless if they reached a wide audience or not. The Federalist Party on the other hand was created by Alexander Hamilton during the birth of the nation, and while they did have almost identical political beliefs to that of Evstaf’ev, they were and entirely different beast altogether. The former was a playwright out of his element, struggling to find his place in a country that did not like him; the latter was a dying breed of politicians with certain ideas that were disliked by the majority and had an end that was a long time coming.

However, these two entities were linked by the fact that they believe in the same concepts for the direction of a modern nation. Even after their destruction as a political party following the Hartford Convention, Evstaf’ev continued to argue for their platform on these shared foundation of political and social ideas.

To understand the connection between the Federalists and Evstaf’ev, however, it must be explained what exactly the Federalists stood for and why they collapsed. Alexei Evstaf’ev aligned himself with the Federalist Party upon his arrival to America due to their shared beliefs, such as a strong, centralized, and responsible government and a structured society, as well as their Anglophilic tendencies which ranged from Evstaf’ev’s fondness of the monarchy and government of Britain which was also shared by members of the Federalist party to increased relations between the two nations, all of which serves as an anchor for him in America.

Aleksei Evstaf’ev: The Diplomat who did not know he was a Historian

John Falcone
Faculty Mentor: Professor Susan Smith-Peter
Department of History

Officially Aleksei Evstaf’ev was a diplomat. More specifically, he was assigned by Tsar Alexander I of Russia as a Consul to the United States in 1809. Through the remaining forty-eight years of his life Evstaf’ev lived in America carrying out his duties, but he certainly did not remain idle while doing so. During his time in the United States he achieved varying degrees of success as a playwright, as a drama critic, and as an author.

Though these personal pursuits produced a solid body of work, much of which focused on matters of great historical importance, he never styled himself as a historian nor was he referred to as such in his time. However, an examination of Evstaf’ev’s writings would suggest that he was an historian whether he knew it or not. In addition to this, when his works are considered as those of an historian, two things become clear about Evstaf’ev: one is that he held a classic Russian-conservative belief in the validity of monarchical government, and the other is that he subscribes to the great man theory of history. Both of these points of view greatly influenced his analysis and accounting of the historically important topics he wrote about, but they are also what make studying this rather obscure Russian diplomat interesting.
3:30pm – 4:15pm

**PAPER #11**

**From Destruction to Restoration: The Rebirth of the Salonikan Jewish Community**

Jeff Cassorla

Faculty Mentor: Professor Mark Lewis
Department of History

This paper will analyze primary and secondary accounts of Salonikan Jews' experiences of day-to-day life under the Nazi occupation of Greece through authors such as Rozia Asser Pardo, Steven Bowman, Y’aakov Handeli, and Heinz Salvator Kounio. Using these works and other primary and secondary sources, this paper will portray the reactions of those who survived the Nazi occupation of Greece and the deportations to concentration camps.

The Nazi conquest of Greece in 1941 divided the country into several zones, as historian Leni Yahil describes in her book *The Holocaust: The Fate of European Jewry, 1932-1945* (Oxford, 1990). On the surface, Greece was still considered an independent state, and despite most of Greece's territory and population not being under direct German rule, the majority of its Jews resided in German-occupied areas—an estimated 77,000 within twenty-four communities and nearly 56,000 in the city of Salonika.

The early days of the German occupation relatively restricted anti-Jewish activities; Jews were treated similarly to the rest of the general population. But in the Spring of 1941, anti-Semitic propaganda increased.

Many Salonikan Jewish-owned apartments and libraries were seized by the Nazis, and all members of the Community Council were arrested.

Preparations for the deportation of the Salonikan Jews were made in January 1943.

According to Yahil, the Nazi policy towards Salonikan Jews shifted in July 1942 when they mobilized them for forced labor, with noncompliance equivalent to deportation to concentration camps. This paper will investigate the history of what happened after this point, with an emphasis on the survivors' accounts and life in Salonika directly after the Nazi occupation.

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**PAPER #13**

**The Second Coming of a White “god” in America**

Ross Terelle

Faculty Mentor: Professor Zara Anishanslin
Department of History

Many of the ideas scholars accept about Thomas Jefferson and slavery come from his descendants. Annette Gordon-Reed’s study on the Sally Hemings controversy illustrated how generations of historians had refused to adequately evaluate black oral history whilst simultaneously accepting the versions told by Jefferson’s white descendants. Gordon-Reed, however, dealt with a limited topic, and it stands to reason there are other problems within Jefferson scholarship. More than fifteen years after the accolades given for her contributions, has the profession dealt with its racial problems?

In the 1830s, historian George Tucker received a letter from Martha Jefferson Randolph, Thomas Jefferson’s sole surviving daughter. In it Martha narrated the return of her family from Paris in 1789. Martha depicted her father as a triumphant hero greeted by throngs of slaves expressing “euphoria.” Certain biblical and religious imagery is present, and there are clear racial undertones to the account. The scope of this paper is to analyze the extant primary sources, trace the story’s reproduction in the historical literature, and determine how contemporary scholars have treated this report. The goal is to determine if contemporary historians have applied Gordon-Reed’s lessons on fair racial treatment of historical figures. More than fifteen years after her work, no such literature review of this topic exists, but with a history of bias, one is overdue.
**PAPER #7**

**Sexual Assault in Mid-Atlantic Conflict Zones of the American War for Independence**

Christianne Nakhla  
Faculty Mentor: Professor Zara Anishanslin  
Department of History

Historical records from the Revolutionary-Era prove conclusively that sexual assaults were committed by British and Continental soldiers in the context of the American War for Independence. However, reports are rare and it is impossible to guess the actual number of attacks with full certainty. The examination of courts martial, individual reports of assault, and wartime propaganda from both sides of the conflict reveals the relations of power in Revolutionary-Era society in terms of gender, class, and race. However, the overall lack of victim complaints is far more telling than the few records of sexual assault.

The public and violent nature of rape during a conflict made it easier to prosecute than peacetime assaults that tended to be more coercive, but the vast majority were never reported or recorded due to the negative consequences of reporting an

**PAPER #3**

**Law procedure: Oil: An Antidote of Democracy**

Abike Owolabi  
Faculty Mentor: Professor Peter Keil  
Department of English

Democracy has been a major obligation for different nation who chose to participate and adopt a new vital role and share common idea and give it's people the right to express their thought and vote for who they want to represent them both local or international and especially making the right decision. Many countries had problem with democracy value which consist the development of a nation, free fair election, freedom of speech, taking responsibilities for decision making, stable government and other advantage of democratic value. There are different definitions for democracy”

Democracy is the basic representation or institution that citizen are entitle to practice religion, participate in election and share the same value; No one is above the law.
**The Failed Golden Rule of Marlowe’s Edward II**

Lyndell Matteo  
Faculty Mentor: Professor Michael Schuyler  
Department of English

Christopher Marlowe’s historical play Edward II captures the self-absorption and greedy obsession of King Edward II during his reign of England in the early fourteenth century. Edward, who inherited the throne from his deceased father, is ignorant of how to wear the crown—especially while his preoccupation is with Gaveston, his friend and lover. Marlowe’s portrayal of Edward is of a king who is self-centered and self-destructive as he continually ignores the religious authorities and noblemen of the court (thereby indirectly abandoning the people). Early in the play, one of the advisors of the court, Mortimer, expresses his contempt for Gaveston and compares him to the Midas of Greek mythology who got his greedy wish that all that he touched—including his food and drink—would turn to gold. In this paper, I will argue that Marlowe portrays King Edward as a sort of reverse Midas who thinks that by dispensing all he has been given as a monarch, including the kingdom’s gold, that he can enrich himself without consequences. All of a king’s decisions are not golden. By focusing on images and references to gold and golden things and on frequent comparisons to mythical King Midas, I will show how Edward ends in ruin and fails in his obligation to rule a most powerful nation at a most pivotal time as a result of his selfishness and overall greed of power.

**She Stoops To Conquer Class-Consciousness**

Natalie Tombasco  
Faculty Mentor: Professor Michael Schuyler  
Department of English

In this paper on the comedic play She Stoops to Conquer, I begin with two initial questions. Firstly, how does class structure affect each character differently in the text? Secondly, does Oliver Goldsmith, a well-known writer in the British Romanticism tradition, portray the characters’ notions towards class accurately to the real life society of eighteenth-century England? To draw conclusions to these questions, I apply a culture study theory framework to explore if Goldsmith stays true to his surroundings, and represents the dynamic of class differences accurately to a modern audience. I analyze how each character handles living in a class conscious society and whether it helps him or her to flourish into a well-developed character or if it ultimately stunts his or her growth.

Lastly, I scrutinize the decision by Goldsmith to abandon his previously used “sentimental comedy” for the “laughing comedy” genre. I examine if he makes this choice purposely so that he can relay a lesson about the virtues of romantic love and class to his audience. Perhaps, he employs this genre in order to bestow on audiences a moral lesson through lightheartedness and laughter as a means of disguising his educational intentions.
Music Streaming and Digital Piracy
Dominic Provenzano (The Verrazano Honors School)
Faculty Mentor: Professor Christopher Anderson
Department of Media Culture

The digital era has had a profound impact on the music industry. Beginning with the prevalence of music piracy programs like Napster in the early 2000's, the music industry has struggled to gain it's foothold within the world of the World Wide Web; and has sought new frontiers to remain a profitable industry. The industry shifted to selling singles and albums through digital marketplaces like iTunes, but the recent breakthrough of streaming technology has had a major impact on both music sales and music piracy. However, as CD sales continue to decline and streaming subscribers continue to rise, vinyl record sales have reemerged as a profitable physical form of music as sales increase worldwide every year.

There are a number of questions I want to answer through my honor's thesis, the first being whether or not music streaming is effective in preventing music piracy. The second is whether or not streaming is a profitable venture for both the industry and artists. The third is whether, in an era of increased digitalization and portability, have vinyl record sales increased drastically? By studying a number of texts, academic journals, documentaries, artist responses, and newspaper articles, as well as undergoing an ethnographic study, I hope to answer these questions and further understand the music landscape as it exists today. I believe that by understanding where the industry is today I can further grasp where it will go tomorrow as technologies continue to evolve.
An Exploration of Federal Regulation of Medicinal Drug Development in the U.S.: What do Small Labs and/or Companies Face?

Tzivya Weiss (Macaulay Honors College)
Faculty Mentor: Professors Richard Flanagan, Probal Banerjee
Department of Political Science and Global Affairs/Biochemistry

This project entails an exploration of the effectiveness and fairness (with regard to equality of opportunity) of federal regulation/support of medicinal drug development within small companies/labs—as opposed to connected, large labs or pharmaceutical companies—in the U.S. It draws upon research, first-hand lab experience, interviewing of researchers involved in medicinal drug development, and also on familiarity with political/socioeconomic structure—particularly in the context of capitalism—legislative processes, and organizational design, etc.

The first portion of this project explores the mission, goals, associated legislation, and modus operandi (in brief) of the FDA, as well as any further enacted or proposed legislation/processes regarding the development and regulation of medicinal drugs (for example, in connection with the NIH).

Additionally, any legislation meant to protect the interests of smaller labs/companies is emphasized here. The second portion of this paper introduces the process of drug development from the perspective of a small lab/company. It contains an evaluation of the level of difficulty that such a group faces in developing/refining a medicinal drug candidate, and in gaining research grants for clinical trials or safety testing. In addition, certain obstacles to, or reasons for, grant/application rejections—as well as discussions of their validity and acceptability—are explored here.

The final section of this paper contains an attempt to evaluate the general effectiveness of the existing legislation with regard to smaller labs/companies (in comparison to specific cases already explored) in order to determine the scope of observed inequalities. Additionally, it contains a brief exploration of what current political, economic, or social realities influence the effectiveness of existing legislation, drive for reform, opportunities for reform, and chances of reform.
Research Poster Presentations

Center for the Arts
Atrium
2:15pm - 4:15pm
### Research Poster Presentations

#### Poster Location by Department

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DEPARTMENT OF ACCOUNTING AND FINANCE
CONFERENCE LOCATION: EAST LOUNGE

POSTER #73
Small Business Insurance Coverage and Superstorm Sandy
Anthony Tucciarone
Faculty Mentor: Professor Cynthia Scarinci
Department of Accounting and Finance

The aftermath of Superstorm Sandy left many small businesses finding that they were without necessary insurance, or that their policies did not cover their losses. The purpose of this research project is to clarify Staten Island small business owners' insurance needs and requirements, to ensure more appropriate coverage for future disasters. This project will also examine federal and state governmental regulations on small business insurance coverage. In addition, an examination will be made of the types of insurance policies business owners held both prior to and post Superstorm Sandy with regard to price, deductibles, and maximum coverage. It will also include a review of the regulations governing brokers offering insurance options to small businesses. This project will measure the effectiveness of the federal and state and local regulations put in place for insurance companies, as well as extent of the policy holder's knowledge of their coverage. It is anticipated that the end result of this research will provide more clarity about the type of insurance small businesses should hold, as well as the anticipated coverage of losses from future disasters.

POSTER #5
Is Corporate America Being Too Creative with Strategies for Boosting Profits?
Dorothea Martin
Faculty Mentor: Professor Deborah Brickman
Department of Accounting and Finance

Profit maximization and increasing shareholders' wealth have always been main objectives for companies. Over time, they have embarked on creative ways to achieve this goal. This paper will research methodologies used by companies that enable them to drive down their tax liabilities as low as possible. One major strategy used is the 'Double Irish' technique. This involves utilizing the loophole provided by Ireland, the Netherlands, and other countries, whereby companies are allowed to open subsidiaries in foreign countries. This tactic allows them to increase profits through the payment of reduced taxes, and in some cases zero tax liabilities result. Consequently, the profits earned are sheltered from the US corporate tax rate of 35%. Many sophisticated technology companies such as Apple, Google, Facebook, and Amazon, are able to avoid the 35% US corporate tax rate by using this strategy. Is our existing tax system adequate to handle this age of globalization?

My research will focus on how multinational companies take advantage of globalization, by incorporating multi-layered subsidiaries in countries which are considered tax havens, in order to incur very low corporate tax rates. The ultimate result is base erosion and profit shifting by the parent company. Since governments depend on the collection of taxes to generate revenue needed for their planned operations and programs, such tax avoidance methods results in shortfalls of available tax revenue.
Research Poster Presentations

POSTER # 7
Fraud within Non-profit Organizations
Sally Mach (Verrazano Honors School)
Faculty Mentor: Professor Mary Recor
Department of Accounting and Finance

Why does fraud occur? With an overwhelming desire for personal gain, people who feel as though they aren’t being compensated enough will feel the need and desire to conspire to defraud their employers or the organization that they are associated with.

Certainly, fraud is attempted every day, but this project will focus on and examine cases concerning fraud within nonprofit organizations. Federal Form 990, Return of Organization Exempt From Income Tax, must be filed by tax-exempt organizations, nonexempt charitable trusts, and section 527 political organizations. Based on an analysis done by the Washington Post, they’ve identified that more than 1,000 nonprofit organizations have reported a significant diversion of the organization’s assets when they filed their Form 990. Furthermore, according to this analysis, a diversion is considered significant if it exceeds $250,000 or 5% of the organization’s receipts or assets. Thus, most diversions led to the loss of tens of millions of dollars to a single organization.

To add to the severity of the situation it should be noted that most nonprofit organizations actually receive federal grants to help further their cause. An examination of several cases will be undertaken. They will be discussed and compared and a determination will be made regarding which sections of the United States Code have been violated. In addition, the penalties associated with each case will be reviewed.

POSTER # 97
Can Bike Share Usage Demonstrate Service Gaps Based on Geographic Location of Neighborhoods and Their Relationship to Income
Shenuque Tissena (Macaulay Honors College)
Faculty Mentor: Professor Jonathan Peters
Department of Accounting and Finance

Bike share programs have been created in America to provide an affordable travel alternative option for all Americans living in cities. This research project looks to answer the question of whether bike share data exhibits service gaps by geographic locations of neighborhoods and its relationship to income. The author plans to use quantitative models and analysis taken from data sets from the Citi Bike and the Boston Hubway programs to explore the aforementioned question.

We plan on using the data sets from Boston and New York to uncover quantitative metrics of service gaps by income level. We intend on using the variables of docking and undocking of bikes as a measure of use for both cities. After quantitative data is uncovered, Geographic Information Systems (GIS) will be used to map this data to demonstrate the usage divide between various neighborhoods. We plan on also using Census data and GIS to map income distribution of neighborhoods.

We will compare the two cities to find similarities and differences within the data sets. By comparing this data for both the New York program and the Boston program we will explore the unique aspects of bike share usage that may relate to a particular urban area. We intend on analyzing these events in order to get an accurate visualization of how income and geography impact bike share usage.
**POSTER # 6**

**Airline Consolidation in the U.S. Market and its Effect on Consumers, Workers, and the Industry**

Zachary Crespi (Macaulay Honors College)

Faculty Mentor: Professor Jonathan Peters

Department of Accounting and Finance

After the passage of the Deregulation Act in 1978, the U.S. airline industry has changed dramatically. Poor management decisions, increased competition, and financial struggles have forced many carriers to adapt to the versatile environment. Through consolidation, the amount of airlines in the U.S. has shrunk to a limited number in order to better react to the pressures and challenges within the market. As a result, travelers, airline employees and cities served have all been affected in both negative and positive ways.

The recent mergers of airlines has drawn heavy criticism from labor unions, public advocacy groups and even the Department of Justice (DoJ) for failing to maintain healthy and stable competition. Using information concerning the approved merger between U.S. Airways and American Airlines, as well as data collected from various sources relating to post-merger activities in the last decade, this project provides an overview of both sides of the consolidation argument and explains how mergers of airlines are good for competition, the general public, and the industry as a whole.

**DEPARTMENT OF BIOLOGY**

**CONFERENCE LOCATION: BOTTOM CENTER**

**POSTER # 101**

**The Impact of Historical Climate and Environmental Change on the Population Structure of the Short Tailed Snake (Lampropeltis extenuata)**

Amanda Finnerty

Faculty Mentor: Professor Frank Burbrink

Department of Biology

Lampropeltis extenuata is one of the rarest snakes and generally occupies an exceedingly small range in central Florida. However most phylogeographic and population genetic studies on squamates have been conducted on generally wide-ranging taxa. As such, very little is known about population structure, population size, potential cryptic species, or gene flow among fragmented populations of this rare endemic snake. This research will represent one of the first to examine population structure and historical demography of a very localized snake in an area that has been subjected to extreme climate and environmental change since the Miocene. This study will not only help us understand phylogeographic history, population size and migration in this species, but will help determine what environmental features contribute to structuring populations of rare species localized to central Florida. I will be sequencing multiple nuclear and mitochondrial genes and conducting coalescent population genetic analyses and ecological niche modeling to test hypotheses that suggest size of populations and their structure have either not been impacted by environmental change or have been impacted in a positive (growth) or negative (decline) way. Therefore, this will be one of the first studies to determine how the unique subtropical environments of Florida have structured populations of endemic species and biological communities. Its likely that the geographically distinct populations of L. extenuata have experienced recent gene flow or are only recently disjunct from one another as initial screening of a mitochondrial locus reveals ~0.5% sequence divergence among the sampled populations.
Understanding Historical Processes that Generate Species of Kingsnakes in the Southern U.S. and Mexico

Anthony Borruso, Rosalie Zawadzki (Macaulay Honors College)
Faculty Mentor: Professor Frank Burbrink
Department of Biology

It has been known since the 1980's that single widespread species are often composed of multiple, geographically restricted cryptic species—that is species that are morphologically indistinct but genetically unique. Using molecular phylogeographic techniques, where species are sampled genetically over their range and estimates of the evolutionary relationships among populations has increasingly revealed that even large vertebrates are actually composed of multiple undescribed and deeply divergent species. In addition, these molecular phylogeographic techniques permit us to objectively test when species originated and what biogeographic features (i.e., rivers, changes in habitat) generated these species and how they responded to climate change. While this has been performed throughout the USA and knowledge of the location of biogeographic barriers that were responsible for generating many different kinds of species is becoming well known, very little is known about the population structure and if cryptic species are found in taxa inhabiting the more remote regions of the U.S. and Mexico. Here we examine the phylogeographic history of the Mexican Kingsnakes (Lampropeltis alternata and L. mexicana species complexes), a group of snakes widely distributed throughout Mexico and parts of the southern U.S. to determine 1) if multiple cryptic species are present, and 2) what environmental or biogeographic processes generated these species. We will extract DNA and sequence it for five loci from 56 individuals and apply population and coalescent computational methods to test the number of species present and determine what biogeographic features in North America are responsible for generating these species. Ultimately this research will help us understand what features in the environment of the southern U.S. and adjacent Mexico commonly produce species when this happened and if this is associated with climate change.

Construction and Screening of Yeast Chromatin Remodeler and Histone Acetylase/Deacetylase Knockout Strains

Christine Huynh (The Verrazano Honors School), Dilakshi Mampitlya (The Verrazano Honors School), Jwala Alex, Kristi Russo, Michelle Esposito, Suzanne Ahmed (The Verrazano Honors School)
Faculty Mentor: Professor Chang-Hui Shen
Department of Biology

Eukaryotes have a highly complex transcriptional regulation process that involves a wide array of interactions among various proteins recruited to the upstream regulatory regions of genes. Chromatin remodelers and histone acetylases are two major categories of proteins involved in this regulation. In eukaryotes, genes are not expressed unless they can be accessed by RNA polymerase and proteins known as transcription factors. Chromatin structure is characterized by tight coiling which limits access to these factors. Chromatin remodelers play a major role in gene activation by physically loosening this coiling to make DNA more accessible. Histone acetylases also help make DNA more accessible by neutralizing the positive charge of lysine residues of histones and thus weakening the interaction of the DNA with the histone proteins.

In order to study the interactions of these regulatory proteins with each other and their significance in gene regulation, we needed a series of mutant yeast strains to be made in which particular remodelers, such as INO80p or Snf2p, or histone acetylases/deacetylases such as Rtt109p, Sas2p, Sas3p, Hat1p, Gcn5p, Rpd3p, Hos4, Sir2, and Hda1p were knocked out. Ultimately, we will be able to use these mutants to observe how transcription and coactivator recruitment is impacted in the absence of each regulatory protein. These mutants were engineered using plasmid miniprep, homologous recombination polymerase chain reaction (PCR) and electroporation. Mutant colonies were successfully isolated on selective media. Once these mutants were engineered, genomic DNA was isolated and PCR primers were designed to confirm the target mutants. Next the genomic DNA will be subjected to PCR with these primers to determine whether each target gene is still present or if they have been successfully replaced by the selectable marker of our homologous recombination construct.
**Health Analysis of Staten Island Turtles: Blood Hematology and Biochemistry**

Danielle Riili (Macaulay Honors College)
Faculty Mentor: Professor Eugenia Naro-Maciel
Department of Biology

This project is concerned with population and community ecology, looking specifically at the relationship between turtles and their physical environment, and focusing on freshwater ponds at the Freshkills reclaimed landfill and the Long Pond reference site, both on Staten Island. My research involves analyzing blood lab results taken from turtles in the summer of 2013 and comparing them to the previous 2012 results (n = 55 samples total). The blood tests being examined are from three turtle species: native painted and snapping turtles, as well as invasive red-eared sliders, sampled in 2012. By doing this blood examination, the turtles’ health can be analyzed, which can be a good indication of the environmental characteristics. The analysis requires looking at various chemical levels such as calcium, phosphorous, globulin, and AST (SGOT) or Aspartate Aminotransferase, and attempting to establish accurate baseline parameters.

The method used to establish baseline ranges involved finding the mean and standard deviation of each parameter. Values two standard deviations away from the mean vary greatly from the average values and may indicate that the turtle is out the baseline range, and thus may be less healthy. Comparing the turtles’ parameters to the draft baseline ranges, about five turtles from 2012 and two from 2013 had values more than two standard deviations away from the mean, indicating that most of the turtles at both Long Pond and Freshkills were relatively healthy. The results also show that there is no significant difference between 2012 and 2013 results, and no significant difference between the results from the two sites. Next steps will include further exploration of methods to define baseline ranges.

**Regulation of the Saccharomyces Cerevesia Phosphatidate Phosphatase Encoded by the PAH1 Gene**

Dhiwya Alex (Macaulay Honors College), Christine Samuel, Ekrem Yetiskui (The Verrazano Honors School), Goldie Sherr
Faculty Mentor: Professor Chang-Hui Shen
Department of Biology

Phosphatidate (PA) phosphatases play a crucial role in the Saccharomyces cerevesia phospholipid biosynthetic pathway. PA phosphatases are key enzymes that catalyze the reaction which dephosphorylate PA to form diacylglycerides (DAG), the first step in the synthesis of triacylglycerols. There are a number of PA phosphatases in yeast including those encoded by DPP1, LPP1, APP1, and PAH1. There have been a number of studies showing how the PA phosphatase encoded by PAH1, Pah1p, is involved in regulating genes in the lipid biosynthetic pathway. However, there have not been many studies involved in understanding how the PAH1 gene is regulated itself. Therefore, the aim is to better understand the regulation of PAH1 gene expression. In order to accomplish this, experiments will be done to determine the presence of chromatin remodelers and histone modifying enzymes at the PAH1 promoter.

Chromatin remodelers play a crucial role in modifying and restructuring the nucleosome, one of the most basic levels of DNA packaging that consists of DNA wrapped around eight histone proteins. As such chromatin remodelers are responsible for making the highly packaged DNA accessible so that transcription can occur. They therefore play an essential role in the regulation of gene expression. Real time PCR has been conducted to determine which chromatin remodelers and histone modifying enzymes possibly play a role in regulating PAH1. Overall, studying the regulation of PAH1 allows for a greater understanding of phospholipid homeostasis in yeast and eukaryotic cells.
**Research Poster Presentations**

**POSTER # 89**

**Anti-cancer Extracts Isolated from Clerodendrum Viscosum**

Diane Narouz (Macaulay Honors College)

Faculty Mentor: Professor Jimmie Fata
Department of Biology

Drugs that originate from renewable resources like plants often can be used right after isolation or after effective chemical adjustments and a large percentage of current drugs contain extracts derived from pant roots. The Fata lab and Raja lab recently collaborated to examine the anti-cancer potential of extracts isolated from Clerodendrum viscosum (Cv), which is a shrub that grows in India. Prior to their findings, Cv had been effectively used to treat woman with cervical cancer, the third most widespread cancer in women in the world. In published findings, Drs. Fata and Raja found that extracts from Cv were effective in reducing proliferation and migration as well as inducing cell death in a number of human cervical cancer cell lines.

These findings indicate that Cv extract contains a potent anti-cancer agent against cervical cancer. In the current study I aim to test this extract against human breast cancer cell lines MCF-7, SKBR3, and MDAMB468 to see whether Cv extract is specific for cervical cancer or has a broader inhibitory effect against other cancers. In the near future, the findings of this experiment may be implemented in clinical trials as a new form of cancer treatment.

**POSTER # 148**

**The Behavioral Effects of Gestational Exposure to Low Levels of Di-n-butyl Phthalate in Mice**

Don Wisidagama (The Verrazano Honors School)

Faculty Mentor: Professor Abdeslem El Idrissi
Department of Biology

The effect of DBP as an endocrine and a reproductive disruptor are well established; however, there are only few studies that address the effects of low levels of DBP. Additional research analyzing the low-dose effects of these endocrine disruptors need to be further investigated, since it is most unlikely for humans to be exposed to high concentrations of DBP.

The aim of this study was to determine the neurodevelopmental effects associated with gestational exposure to low levels of DBP. The outcome of this proposal will allow for an elucidation of the molecular, biochemical, electrophysiological and endocrine effects of DBP that lead to the neurobehavioral alterations observed with gestational exposure to DBP. These data are critically important for the understanding of gene-environment interactions and have the potential to be extrapolated to other environmental risk factors with common mechanisms of action.

Our preliminary data suggest that gestational exposure to low doses of DBP causes male-specific neurobehavioral abnormalities in the offspring which may be mediated by altered maturation of neuronal circuits associated with these behaviors. To determine the effects of DBP on early brain development, we injected pregnant mice with DBP (1mg/kg i.p) on gestational day 10 and assessed the neurobehavioral effects in the offspring when they reach 2 months of age. Interestingly, the neurobehavioral phenotype elicited by a single injection of adult mice could be reproduced in the offspring of DBP-injected pregnant mice.

Additionally, these mice showed heightened fear-potentiated freezing response, reduced socialization and a significant decrease in learning as measured by the acquisition and retention of a passive avoidance task. Some of these effects, such as learning of the passive avoidance task, were male-specific. The neurobehavioral effects elicited by exposure to DBP were consistent with altered inhibitory function in the brain of these mice.
**Freshkills: A Reclaimed Ecosystem**
Edita O'Brien
Faculty Mentor: Professor Eugenia Naro-Maciel
Department of Biology

Freshkills: A Reclaimed Ecosystem is an educational lesson that allows students to understand the reclamation of Staten Island's infamous former landfill and its transformation into Freshkills Park, through the lenses of different stakeholders. These lesson plans allow students to research the ecological science of Freshkills Park, while learning about stakeholders' roles, responsibilities and interactions. Classroom teachers who use this lesson can tie it into high-school “Living Environment” courses that allow students to understand some of the necessary science behind ecosystem degradation and reclamation.

The Mini-unit is broken down into three lessons. In the first lesson, students are introduced to the history of Freshkills. Here we examine how pollution destroys ecosystems and communities. Students take on the roles of separate stakeholders involved in the process of reclaiming Freshkills.

Students begin to study the park through several articles and videos, assuming the roles of environmental ecologists, local residents, and urban park planners. In the second lesson, students then venture to Freshkills Park on a field trip in order to interact with an expert park representative, and ask questions from the perspective of their designated stakeholder role. The final lesson in the unit allows students to present their findings to the class through the perspective of their stakeholder role, and to offer constructive ideas for the future of Freshkills Park.

All lessons for this unit are aligned with New York State “Living Environment” Standards and offer multiple writing and reading exercises with the necessary rigor required by the Department of Education.

**Transgenic Drosophila: Models To Study Tau-Induced Neurodegeneration**
Elaina Lei (Macaulay Honors College)
Faculty Mentor: Professor Alejandra Alonso
Department of Biology/Neuroscience

The tau protein is a major microtubule associated protein (MAP) that is particularly abundant in neurons of the CNS and is responsible for the stabilization of microtubules in the brain. Defects of the tau protein can impair its ability to stabilize axonal microtubules and result in dementias, such as Alzheimer's Disease. Tau proteins control microtubule stability in two ways, one of which is phosphorylation. If multiple phosphorylation sites are fully saturated, hyperphosphorylation occurs. It has not been proven as to whether neurodegeneration is the cause or a consequence of tau phosphorylation. However, in vitro studies have shown that hyperphosphorylated tau promotes neurodegeneration and that the combination of phosphorylation at Thr 212, Thr 231, and Ser 262 produces a toxic effect in the cell. To investigate the toxicity of hyperphosphorylated tau, an in vivo study was conducted using Drosophila flies and an in vitro study was conducted using cells.

In the first experiment, transgenic Drosophila was generated to express the normal and pathological forms of tau. The tau gene was incorporated into the Drosophila genome by inserting the gene into a pUAST plasmid to generate transgenic flies. The transgenic flies were crossed with flies that possessed an inducer transgene that expresses Gal4 in the Drosophila eye, which induces an expression of tau or PH-Tau in the eye. However, it was difficult to detect the location of tau. In the second experiment, the tau gene and a reporter gene called green fluorescent protein (GFP) was incorporated into pUAST using PCR, restriction enzyme digestion, gel electrophoresis, gel extraction, and ligation. When exposed to ultraviolet light, GFP exhibits a bright green fluorescence that allows us to better visualize tau under a fluorescence microscope. After transforming competent E. coli cells, the gene insert is to be isolated and used to generate transgenic flies with tau that is more easily identified.


**Research Poster Presentations**

**POSTER # 1 2 1**

**Whole Mount in Situ Hybridization of Transcription Factors in Hydroides Elegans**

Jasmine Calle (Macaulay Honors College), Krystal Baird, Winnie Darius  
Faculty Mentor: Professor Cesar Arenas-Mena  
Department of Biology

Exploring Gene Regulatory Networks (GRNs) enables researchers to understand an organism’s development. Using the indirectly developing polychaete Hydroides elegans, we will examine an organism’s GRN to see the contribution of specific genes to the overall body plan. For comparison, we will also be using the GRNs of certain species of sea urchins distantly related to Hydroides elegans which, like the polychaete under study, develop indirectly and gastrulate by invagination. The gene under study is Snail, which codes for a zinc-finger transcription factor. Snail has many functions, such as to convert epithelial cells into migratory mesenchymal cells, and it is extremely important during embryonic development. To identify the endogenous spatial mRNA expression of Snail at different points in development, whole mount in situ hybridization of Hydroides elegans will be done. To do this, specific probes for this gene will have to be made.

First, we will make primers for the gene based on a cDNA library using software such as ApE and IDT Oligo Analyzer. Then, a polymerase chain reaction (PCR) will be employed to amplify the desired DNA sequences for Snail. This project will give us critical knowledge on the expression patterns of this gene for use in future experiments, such as the cis-regulatory analysis of Snail. For completion and confirmation of past projects, other genes that will be analyzed in this experiment include: HeGATA1/2/3a, HeGATA1/2/3b, and HeGATA4/5/6.

**POSTER # 7 2**

**The Early Bird Comes Even Earlier: Trends in the Spring Arrival Dates of Neotropical-migrant Landbirds in New York State, 1988-2013**

Jasmine Calle (Macaulay Honors College)  
Faculty Mentor: Professor Shaibal Mitra  
Department of Biology

Climate change has been shown to affect animal lifestyles and biological phenomena worldwide. However, new data is arising everyday that further reveals the extent to which life is affected. This project will be focusing on the change in spring arrival dates for neo-tropical migratory land birds in New York State from 1988-2013 in hopes of offering up the information for future research. It is widely recognized that climate change has an effect on the arrival schedules of birds by affecting the seasonality and abundance of the resources they rely on as well as changing cues they look for in the weather, but this project will seek to quantify the rate of change, which is expected to be negative. Furthermore, a comparison between long-distance and short-distance migrants will be done, in part to reveal how versatile databases such as The Kingbird could be. The expected outcome would be that short-distance migrants arrive earlier, as they have the advantage of assessing their changing environment more directly. The resulting graph of this part of the experiment will also be analyzed to draw further conclusions on the effects of climate change.
**POSTER #51**

**Microsatellite Analysis of Painted Turtles**
Jenna Pantophlet (Macaulay Honors College)
Faculty Mentor: Professor Eugenia Naro-Maciel
Department of Biology

Microsatellites are short repeating sequences of DNA, which occur in non-coding regions of the genome. Such sequences vary in length from organism to organism, yet can be conserved from parent to offspring unless there is a mutation. In this investigation, these markers will be utilized to determine relationships between individuals in local populations of Chrysemys picta, or the painted turtle, as well as out of state populations across the native range, such as British Columbia, Indiana, Nebraska, and Wisconsin. For this investigation painted turtle samples were retrieved, their DNA extracted, and then amplified using Polymerase Chain Reaction. The product was analyzed by fragment size and interpreted through the bioinformatics program Geneious. As the project is in its early stages, the corpus of data has not fully been analyzed, however the procedure to retrieve fragment sizes has been successful and a total of 285 samples have been sized. This project hopes to uncover relationships of painted turtles so as to discern the historical movements of the species between states, and for the maintenance of diversity in the future.

**POSTER #106**

**Effect of the 3’ UTR on H2A.Z Transcript Stability**
Justin Gurges
Faculty Mentor: Professor Cesar Arenas-Mena
Department of Biology

H2A.Z is a histone protein variant that plays a role in embryonic development, and is involved in the multipotency of cells in the embryo. The 3’ untranslated region (UTR) of the H2A.Z transcript may play a role in the stability of its mRNA. To determine if this is the case, a green fluorescent protein (GFP) reporter gene is used to report where H2A.Z is expressed. The GFP mRNA has a Simian virus 40 (SV40) 3’ UTR, which does not differentially repress the translation of the transcript in the embryo. The SV40 UTR will be replaced with the endogenous 3’ UTR of the H2A.Z transcript to see if this UTR has a role in transcriptional stability. This new construct will be microinjected into purple sea urchin (Strongylocentrotus purpuratus) embryos. Expression of GFP will then be observed and compared to the expression of the construct with the SV40 3’ UTR. If the H2A.Z 3’ UTR affects transcript stability by, for example, resulting in mRNA degradation, then expression of GFP will decrease. If the H2A.Z 3’ UTR enhances transcript stability, GFP expression will increase when compared to expression of the construct with the SV40 3’ UTR. We will monitor the expression differences using Quantitative PCR and fluorescence microscopy.
**P O S T E R  # 2 9**

**Cellular Effects of Pathological Human Tau Expression**

Kawsar Ibrahim (Macaulay Honors College)

Faculty Mentor: Professors Alejandra Alonso and Dan McClosky

Department of Biology/Neuroscience

The microtubule associated protein, tau, is an important protein in a neuron’s cytoskeleton because it stabilizes microtubule structure. With this in mind, we predict that an abnormality in tau causes a deficiency in maintaining microtubule structure, thereby contributing to a neuron’s structural breakdown, a hallmark of Alzheimer’s Disease (AD). Thus, this project aims to understand the effect of a pathological form of tau on Chinese Hamster Ovarian cells (CHO cells) after the cells have been transfected with this form of tau. The form of tau we are using has been mutated via site-directed mutagenesis at positions Ser199, Thr212, Thr231 and Ser262 to Glutamic acid. We have named this form of the protein Pathologic Human Tau (PH-Tau). These mutations allow us to mimic the negative charge found at those phosphorylated sites in AD. We have found that the expression of PH-Tau in CHO cells induces processes such as microtubule breakdown and retraction, PH-Tau nuclear translocation, and PH-Tau detachment from microtubules. Membrane blebbing is irregular membrane aggregation. And, caspase-3 is an enzyme that monitors the well-being of the cells: if it is active, the cell has initiated the program to cell death (apoptosis). Observing these phenomena further supports the detrimental effects we hypothesized PH-Tau would have on CHO cells.

**P O S T E R  # 1 4 1**

**Taurine Protects Pancreatic Beta Cells from Induced Apoptosis**

Keegan Fernandes, Christina Cuttitta, Justin Atos (The Verrazano Honors School), Michelle Donohue, Blaze Fraser (The Verrazano Honors School) Abdeslem El Idrissi

Faculty Mentor: Professor William L’Amoreaux

Department of Biology

Development of the pancreatic islets is regulated through mechanisms that include cell differentiation, β-cell expansion, and apoptotic remodeling. Previously, we have shown in mice that perinatal hypertaurinem ia results in a significant increase in the number and size of pancreatic islets compared to controls. Here, using an established β-cell line (Hit-T15) we wanted to determine if pre-treatment with taurine would prevent induced apoptosis. Cells were either treated with 1 mM taurine for 24 hr prior to inducing apoptosis or untreated to serve as controls.

Cultures were then exposed to either staurosporine (0, 0.5, 1 or 2 mM) for 4 hr or hydrogen peroxide (0, 0.5, 1 or 2 micromolar) for 1 hr. For the H2O2 group only, the cells were returned to culture media for 3 hr prior to immunocytochemical analyses. At the end of the induction period, cultures were assayed for active caspase 3/7 complex (CellEvent® Caspase--3/7 Green Detection Reagent, Molecular Probes/Invitrogen) or for changes in mitochondrial membrane potential (JC-1 Mitochondrial Membrane Potential Probe, Molecular Probes/Invitrogen). We provide evidence that 1 mM taurine is effective in reducing apoptotic cell death in this cell line.
Will Staurosporine Induce Apoptosis Under the Presence of Taurine as a Protective Agent?

Keegan Fernandes
Faculty Mentor: Professor William L’Amoreaux
Department of Biology

During the development of the endocrine pancreas, there is a fine balance between β-cell expansion and apoptosis. This regulation results in an appropriate number and size of pancreatic islets, thus an appropriate concentration of plasma insulin. During neonatal hypertaurinemia, our laboratory has demonstrated a significant proliferation of beta cells, such that the number and size of the islets are increased. We proposed that excess taurine concentrations during a critical developmental window may prevent apoptotic cell death, which would lead to hyperinsulinemia and hypoglycemia. Our study will analyze the effects of induced apoptosis in pancreatic beta cells using staurosporine to induce apoptosis, and compare our results to cells pre-incubated in low concentrations of taurine (1–5 micromolar). We will compare the expression of caspase 3/7 (activated enzymes during apoptosis) and mitochondrial membrane potential. We will also determine relative levels of insulin production during treatments.

A Behavioral Study of the Eastern Mudsnail, Ilyanassa Obsoleta Before and After Exposure to Chemical Pollutants

Kristina Lam (The Verrazano Honors School)
Faculty Mentor: Professor William Wallace
Department of Biology

The Eastern Mudsnail, Ilyanassa obsoleta, is commonly used as an indicator of toxicity in aquatic environments. The focus of this study is to examine the behavioral changes undergone after exposure to standard chemical pollutants such as cadmium and mercury. Previous studies on estuarine organisms have shown that long-term exposure to chemical pollutants are linked to reduction in prey capture. Snails were taken from local environments, (Great Kills Park, Staten Island), and were maintained in laboratory culture. Each experiment had three replications of a sample size of eight organisms (n=8). Snails were left to depurate for three days and were then exposed to metal for four days. Organisms were exposed to different concentrations of cadmium and mercury separately using the LC50 (lethal concentration) values from previous studies. The behavioral changes in the exposed organisms were evaluated via video surveillance using measurements of, but not restricted to, travel length, travel speed, and path traveled. Current results show that exposed samples tend to have a decrease in overall movement and decline in overall speed in comparison to unexposed samples. The impairment of mobility can directly affect the organism’s ability to find food and/or mates, and thus can impact the species at the population and community level.
Duration of Stopover in Relation to Date of Arrival in Vagrant Western Kingbirds: Is Vagrancy Mis-oriented Migration, Long-distance Dispersal, or Sometimes One and Sometimes the Other?

Lucinda Zawadzki (Macaulay Honors College)
Faculty Mentor: Professor Shaibal Mitra
Department of Biology

The Western Kingbird (Tyrannus verticalis), an abundant migratory bird that breeds in western North America, has a peculiar migratory pattern that has caught the eye of ornithologists. While these flycatchers winter primarily in Central America, a small but growing winter population has been forming in Florida and adjacent states, more than 1000 kilometers from its regular migration routes. This vagrancy has been interpreted variously as misoriented migration, displaced migration (e.g., by weather systems), or as a form of long-distance dispersal. We sought to test these hypotheses by analyzing available Western Kingbird records along the Eastern Coast of the United States, using the web-based repository known as eBird. For every bird, the date of its first occurrence was recorded in relation to the duration of its visit, and these patterns were analyzed in comparison to normal migratory behavior of the species. From our data (collected during the months of August to February), we were able to conclude that dates of first occurrence of East Coast vagrants extended over a longer period and later into the fall than expected if these birds were only misoriented or displaced migrants, who should only stay for a short period of time before returning to their normal migratory patterns. The average duration of stay was significantly longer among individuals first detected later in the fall as opposed to those first detected earlier in the fall, closer to the species’ normal migratory period. These results suggest that vagrant Western Kingbirds are not misoriented migrants but instead appear to be undertaking a more complex form of long-distance movement, perhaps exploring the East Coast as possible new wintering grounds.

Beta Catenin Expression

Mahaliah Sejour
Faculty Mentor: Professor Abdeslem El Idrissi
Department of Biology

The purpose of this study is to measure beta-catenin protein levels in the brain at different age stages. Beta-catenin is necessary for the adhesive function of classical cadherins. This protein is to mediate the canonical Wnt signaling pathway and regulate gene transcription. This study uses brain tissue from wildtype mice and knockout mice. The knockout gene in the mice is FMR1 gene. It is a protein most commonly found in the brain. Mutations of this gene can lead to fragile X syndrome, mental retardation, premature ovarian failure, autism, Parkinson’s disease, developmental delays and other cognitive deficits. The anticipated outcome of this lab is the identification of which phenotype and age stage of the mice will have the most expressed level of beta catenin.
**Complex Interactions in Heat Shock Response in the Malaria Parasite**

Nejsi Lleshi  
Faculty Mentor: Professor Jianying Gu  
Department of Biology

Malaria is a serious infectious disease that affects 300-500 million people globally, and it is caused by parasites Plasmodium. *P. falciparum* is the most deadly form and it has developed resistance to multiple antimalarial drugs over the past decades. The development of new drug and vaccine is in urgent need. The proteins involved in heat shock response have long been considered as promising vaccine and drug targets due to their important roles in stress response, signal transduction, cell cycle regulation, parasite invasion, and pathogenesis. In this study, we focused on the exploration of the heat shock response network in *P. falciparum* using a systems biology approach, with a hope to identify key network components for new drug and vaccine development.

Heat shock proteins were searched using two complementary approaches: (1) All-vs-all mutual BLAST searches were performed between *P. falciparum* proteins and known heat shock proteins in other species. (2) Querying the *P. falciparum* genome annotation for Gene Ontology terms related to heat shock response. Our sequence similarity and ontology based searches predicted a list of 155 heat shock proteins, constitute about 2.8% of the entire genome.

This list was expanded from a list of 97 proteins that were previously reported. And further more, our comprehensive network analysis using protein-protein association data revealed that 103 out of 155 predicted heat shock proteins were associated with 980 other proteins. The biological processes that are over-represented in this network includes, not surprisingly, response to heat shock, and other previously under-characterized processes such as gene silencing, protein import, signal transduction, cytoskeleton organization, RNA processing, regulation of transcription, proteolysis, DNA replication, DNA recombination, chromatin remodeling, and vesicle-mediated transport.

**Expression of Neuronal Tau in Candida Albicans Strain 36232**

Nicholas Ferraro  
Faculty Mentor: Professor Elena McCoy  
Department of Biology

Neuronal protein Tau is a Microtubule Associated Protein (MAP) that works in binding and bundling of microtubules in the mammalian nervous system. Tau protein is a important factor in neurodegenerative diseases such as in Alzheimers disease. Candida albicans is a dimorphic, opportunistic fungal pathogen in which cell adhesion and filamentation contributes to host tissue invasiveness. Filamentation and polarized growth in yeast, are associated with an actin cytoskeletal network and microtubule interactions. In this current study, we have generated a tau derivative strain of *C. albicans*. In other studies, in the model yeast *Saccharomyces cerevisiae*, it has been show that Tau expression is toxic when the cells are transfected with the Tau plasmid. With respect to Candida albicans 36232 using Leica confocal imaging we have shown that Tau expression does not result in toxicity however effects on filamentation, a virulence factor, has been demonstrated. These results indicate that the *C. albicans* maybe used as a important model system for studying biological activity associated with the Tau protein.
Research Poster Presentations

POSTER # 98
Staten Island's Freshwater Turtle Communities: A Focus on Feeding Ecology

Robert Pashayan
Faculty Mentor: Professor Eugenia Naro-Maciel
Department of Biology

Freshkills Park, once the world’s largest landfill, is now being transformed into a park planned to benefit humans and wildlife alike. In order to monitor restoration and ecological recovery at the site we will be researching Freshkills freshwater communities in comparison to other sites, including Long Pond Park also on Staten Island. We are focusing first on turtle communities because these chelonians are sedentary, long lived and feed higher up in the food chain. Through stable isotope analysis of carbon and nitrogen we will be able to determine trophic position, as well as diet and/or habitat information. We will also be looking at species diversity and community composition through morphological analysis. From this analysis we will be able to more fully understand the turtles feeding ecology. From the stable isotope analysis it was found that the turtles at Freshkills may occupy a higher trophic position and consume more non-meat items than those at the Long Pond Park reference site. This can be deduced because the $\delta^{15}$N signatures and $\delta^{13}$C signatures were higher from the Freshkills region. To better understand the stable isotope results, I started to identify prey items morphologically. We were able to find an invasive species present in Freshkills. This would be the mosquito fish, which is generally used as pest control but that has a varied diet and will survive through many other food sources. In contrast, blue gill sunfish were only found at Long Pond. I am now classifying invertebrates from the different sites, and have identified midge fly larvae of two subfamilies: Tanypodina and Orthocladiinae. This is a key prey item due to its abundance and availability. This tells us that the turtles from Freshkills have different prey items on their menu, which inadvertently means different sources of nitrogen and carbon when compared to the turtles from Long Pond Park.

POSTER # 115
Burrowing Behavior of the Invasive Freshwater Bivalve Corbicula Fluminea

Rosalie Zawadzki (Macaulay Honors College)
Faculty Mentor: Professor Rebecca Chamberlain
Department of Biology

Bivalves are among the ecologically most important and most endangered creatures inhabiting North American freshwater environments. One factor influencing the abundance of indigenous freshwater bivalves is the invasive Asiatic clam, Corbicula fluminea, which competes with native species for resources and habitat. Corbicula has successfully invaded waterways in the tri-state area, including Staten Island, and therefore, has become an immediate threat to the region’s native species of freshwater bivalves.

Burrowing is vital to the survival of bivalves, as it is a behavior that enables them to avoid predation, optimize reproductive potential, and maximize access to food. Yet little is known about the burrowing behavior of freshwater bivalves, including Corbicula. I investigated Corbicula burrowing behavior by making time-lapse videos of live animals burrowing in sediment lined aquaria. Animals covering a wide range of shell size were hand collected in local ponds and rivers and tested in aquaria with sediment of measured grain size. Cameras positioned near the test aquaria and remotely controlled using Granite-Bay time lapse software, made pictorial records of burrowing activity.

Frame-by-frame analysis using Bersoft mensuration software provides data on burrowing success as a function of specimen size, sediment grain size, burrowing velocity, burrowing angle, and rocking behaviors. Analysis of the data reveals that burrowing velocity increases as sediment grain size decreases, with Corbicula only being unable to burrow in gravel (grain size > 4 mm). Burrowing velocity does not vary significantly with shell size over the size range investigated. Burrowing angle, rocking behavior, and siphon extension did not vary significantly with sediment grain size. This ability to burrow without much difficulty across a wide range of fine to medium grained sediments helps to explain Corbicula’s high invasive capability.
**POSTER #95**

**Effect of Hyperphosphorelated TAU on Cognitive Behavior**

Shumaila Irshad (Macaulay Honors College), Sulayman Mughal (The Verrazano Honors School), Andrew Rizkalla, Goodnews Nkama (The Verrazano Honors School)

Faculty Mentor: Professors Alejandra Alonso
Department of Biology/Neuroscience

Accumulation of the abnormally hyper phosphorylated Tau, has been linked to a common mechanism in dementia is collectively known as Tauopathies.

Previous data provides compelling evidence to propose that Tau is a key molecule in the neurodegeneration process primarily seen in Alzheimer’s disease (AD). We have generated a transgenic mouse exercising pseudophosphorylated Tau in Ser199, Thr212, Thr121, and Sec 262, that we called pathological human tau (PH-Tau) as the model organism. This study aims to see the results of phosphorylated tau and how this causes slow steady degeneration of the synapse. Achieving the study’s goal will shed light on AD’s progression and identify new therapeutic targets for neurodegenerative diseases. Behavioral studies test transgenic mice to see if they express abnormal Tau in their brain by observing changes in their brain structures and behavior. In animals, cognitive functions are accessed through experimental models that test memory. In the object recognition test, a mouse is initially presented with two similar objects, six hours later; one of the objects is replaced by a new object. The amount of time the mouse spends exploring each object is then recorded, this is then used to determine the animal’s index of recognition memory. This test was effective as we found that mice with the induced expression of the pseudophosphorylated tau gene spent about the same amount of time with both objects while the mice with the suppressed gene spent more time with the new object. This research establishes a relationship between hyperphosphorylated tau and memory impairment.

**POSTER #88**

**The Role of NHE1 in Maintaining Mammary Tissue Architecture**

Sophia Varriano (Macaulay Honors College)

Faculty Mentor: Professor Jimmie Fata
Department of Biology

Dr. Fata has previously developed three-dimensional (3D) tissue cultures to accurately image the morphogenetic development of mammary gland branches by using pieces of isolated ducts from the mouse mammary gland.

Over the years, we have used this model system to study the role of Na+/H exchanger type 1 (NHE1) in the maintenance of mammary tissue architecture.

We inhibit NHE1 function, which itself is responsible for maintaining intracellular pH at about 7.0, with a drug of the amiloride family, specifically, (N-Methyl, N-isobutyl) amiloride (MIA). Dr. Fata’s group has also shown that NHE1 is expressed in this model system, to the exclusion of other subtypes of this exchanger, and that it functions as a critical regulator of branching morphogenesis (Jenkins et al., 2012). We have also recently shown that NHE1 inhibition disrupts branched tissue architecture and that it is essential in maintaining mammary tissue architecture (Jenkins et al., 2013). The loss of architecture has been characterized by examining tissue polarity, which has been achieved by immunostaining for cyto-keratins, characteristics of cell types in the mammary gland, as well as for NHE1 itself.
Research Poster Presentations

**POSTER # 37**

The Mitochondrial Genetic Analysis of Green Sea Turtles (Chelonia mydas), at Florida's National Parks

Vincent De Souza (The Verrazano Honors School), Rabia Ali, Rossana Cruciat (Macaulay Honors College)

Faculty Mentor: Professor Eugenia Naro-Maciel
Department of Biology

A species’ dispersal pattern may significantly impact its conservation status, along with efforts to protect it. Green sea turtles (Chelonia mydas), are classified as globally endangered by the International Union for Conservation of Nature (IUCN). As grazers on sea grass beds, they significantly affect this marine ecosystem. Sea grass is a breeding ground for many marine species, and by grazing on it green turtles assist in the maintenance of the overall health of these habitats. Green Sea Turtle populations use Florida’s National Parks as feeding grounds; however, the connection between these parks and other nesting and feeding sites is insufficiently understood. By studying the genetics of these turtles, and targeting specific regions of the mitochondrial DNA, we can further illuminate this issue. Once the DNA is extracted we use PCR (Polymerase Chain Reactions) to amplify the DNA, check our results through gel electrophoresis, and then send it out for sequencing. Sequences were edited and classified using the DNA Subway program. We are focusing on a microsatellite repeat in the mitochondrial DNA, and are comparing it to the control region, to study the connectivity of Florida’s National Parks in relation to sea turtles who graze there. We found high variability in the microsatellite repeat, including entirely novel repeat sequences. By using the mitochondrial DNA as a tool to differentiate the turtles within the dispersed population, we can find out from which specific population they originated.

**POSTER # 86**

The Effects of Chronic Taurine on Memory Consolidation and Retention in the Active Avoidance Task

Yevgenly Furman, Navita Madan

Faculty Mentor: Professor Abdeslem El Idrissi
Department of Biology

Taurine has been implicated as an essential neuroprotective molecule with particular roles preventing age-dependent memory impairments. Our lab has focused on evaluating how taurine modulates memory and its coordination with particular emotional responses driven by the limbic system. Such evaluations could implicate the invaluable role of taurine as a potential pharmacotherapeutic drug in the treatment of anxiety and emotional memory disorders. The active avoidance test, a cognitive test in which mice have to learn the association of cue avoiding and/or escaping foot shocks has been used as a valid model of testing emotional memory, yet taurine has never been evaluated in this behavioral assay. We trained mice through two sets of learning trials (i.e. 10 or 20 exposures) as a baseline, then re-tested them 1 hour, 24 hours and 1 week post training to assess taurine effects on memory formation, consolidation, retention and fading as a function of time, learning trials, and taurine treatment. Taurine treated mice did not differ from controls in escape latency, yet taurine mice showed significant improvements in escaping and avoiding shocks with far less learning errors. In addition, taurine showed more robust effects on learning performance when 20 trials were used when compared to 10 trials. Taurine showed little to no memory enhancement during the short-term consolidation phases of learning 1 hr following training. Interestingly, 24 hours and 1 week later taurine showed marked improvements on memory consolidation as evidenced by greater memory retention when compared to controls. These findings suggest that taurine improves the long-term stabilization of emotional memory and validates the active avoidance testing procedure as a valid behavioral assay to screen neuropharmacological sites of action of taurine in elucidating its physiological properties in regulating memory stabilization and prevention of age and time-dependent decay.
POSTER #168

Development of a Convenient Protein Assay for Chlorophyll Containing Organisms

Roland Latiz-Hackett
Faculty Mentor: Professor Robert Corin
Department of Biology

The importance of biofuels is expanding due to environmental concerns (production of greenhouse gasses and global warming), and the practicality of economic growth and dependence upon finite diminishing resources i.e. fossil fuels. The capacity of photosynthetic organisms to accumulate energy storage molecules (polysaccharide and lipid inclusions) made from the greenhouse gas CO₂ has the potential to obviate the aforementioned energy issues ecologically as well as economically (Brennan and Owende, 2010). Our lab is interested in algal physiology to better understand the microalgae as a potential fuel source and replacement for fossil fuel. Chlamydomonas reinhardtii cells, our model microalgae, has a number of distinct morphological and physiological states. These states vary with respect to: starch and lipid inclusion content; cell size, density, and morphology; chlorophyll content and extractability (Mahony and Corin, unpublished). Our attempts at colorimetric measurement of cell protein presented a problem due to overlap with chlorophyll absorption with protein reactive reagents e.g. Bradford reagent. We have extracted chlorophyll prior to protein assay, however, the efficient extraction requires relatively large volumes of solvent (methanol) per cell and it becomes impractical to measure proteins also extracted with the chlorophyll. We have also successfully bleached cell associated chlorophyll with sodium hypochlorite. However hypochlorite reacts with protein assay reagents rendering this procedure insensitive to practical. We have settled upon bleaching cell associated chlorophyll with H₂O₂ and then removal of H₂O₂ with a trace quantity of purified catalase. We are able to successfully bleach the chlorophyll and produce a sensitive protein assay. This finding is important to our study of C. reinhardtii biology to better understand this organism to exploit it as source of biofuel.

DEPARTMENT OF CHEMISTRY

POSTER #140

Antimicrobial Effects of Curcumin Derivatives and Conjugates

Andrew Mancuso
Faculty Mentor: Professor Krishnaswami Raja
Department of Chemistry

Curcumin is a diphenol isolated from the root of the turmeric plant. It has many therapeutic properties that have been observed in vitro including anti-fungal and anti-bacterial activity, but its solubility in water is extremely low. Here, we have determined the relative effectiveness of various Curcumin-containing compounds as antimicrobial agents. The simple derivatives of Curcumin include Curcumin mono-carboxylic acid, di-carboxylic acid, mono-galactose and mono-alkyne; which were synthesized directly from Curcumin. Curcumin mono-N-hydroxysuccinimide (NHS) was synthesized from Curcumin mono-carboxylic acid. We have also prepared larger Curcumin conjugates; which were synthesized by coupling multiple Curcumin molecules to larger hydrophilic molecules. These conjugates maintain the beneficial properties of Curcumin and extend their hydration shell to bring Curcumin into an aqueous solution. The BSA-Curcumin conjugate was synthesized by incubating Curcumin mono-NHS and BSA in dimethyl sulfoxide (DMSO) and phosphate buffered saline (PBS). The Curcumin brush polymer-conjugate was prepared from incubating Curcumin mono-carboxylic acid, and a copolymer of PEG-methacrylate and Glycidyl methacrylate; with triethyl-amine in DMSO and water. Un-modified Curcumin and all of these Curcumin derivatives, except Curcumin mono-NHS, where tested for their bactericidal activity against the bacteria E. Coli. The Curcumin-containing compounds were also tested for their fungicidal activity against the yeast C. Albicans. For each species of microbe and Curcumin containing compound the MIC (minimum inhibitory concentration), and MBC/MFC (minimum bacterial/fungicidal concentration) were determined by the measurement of colony forming units (CFU) after incubating the microbes with the different Curcumin compounds at multiple concentrations.
**POSTER # 70**

**Responsive Polymer-carbon Nanoparticle Hybrid Nanogels for Fluorescent Temperature Sensing, Near-infrared light-Responsive Drug Release, and Cell Imaging**

Anton Mararenko (Macaulay Honors College)
Faculty Mentor: Professor Shuiqin Zhou
Department of Chemistry

Fluorescent carbon nanoparticles (FCNPs) have been successfully immobilized into the poly(N-isopropylacrylamide-co-acrylamide) [poly(NIPAM-AAm)] nanogels based on a one-pot precipitation copolymerization of NIPAM monomers with the hydrogen bonded FCNP-AAm complex monomers in water. The resultant poly(NIPAM-AAm)-FCNP hybrid nanogels can combine functions from each building block for fluorescent temperature sensing, cell imaging, and near-infrared light (NIR) responsive drug delivery. The FCNPs in the hybrid nanogels not only emit bright and stable photoluminescence (PL) and exhibit up-conversion PL property, but also increase the loading capacity of the nanogels for hydrophobic curcumin drug molecules. The reversible thermo-responsive swelling/shrinking transition of the poly(NIPAM-AAm) nanogel cannot only modify the physicochemical environment of the FCNPs to manipulate the PL intensity for sensing the environmental temperature change, but also regulate the releasing rate of the loaded anticancer drug.

In addition, the FCNPs embedded in the nanogels can convert the NIR light to heat, thus an exogenous NIR irradiation can further accelerate the drug release and enhance the therapeutic efficacy. The hybrid nanogels can overcome cellular barriers to enter the intracellular region and light up the mouse melanoma B16F10 cells upon a laser excitation. The demonstrated hybrid nanogels with nontoxic and optically active FCNPs immobilized in responsive polymer nanogels provide a promise to develop a new generation of multifunctional materials for biomedical applications.

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**POSTER # 35**

**Biosynthesis of MARCH5 in Escherichia Coli**

Austin Cleveland
Faculty Mentor: Professor Leah Cohen
Department of Chemistry

MARCH5 is a mitochondrial E3 ubiquitin ligase and a critical regulator of mitochondrial dynamics that consists of four predicted transmembrane domains and an N-terminal RING finger domain (Karbowski 2007). While the complete function of MARCH5 remains to be clarified; it has been observed that the loss of MARCH5 induces cellular senescence. A particular point of interest for MARCH5 is its possible role in the prevention of cellular senescence when acting as a regulator of mitochondrial quality control (Karbowski 2007).

To study the possibility, this project focused on the expression and purification of MARCH5 for structural analysis, using the method of heterologous expression of two plasmids in Escherichia coli. The gene for MARCH5 was cloned into two different expression vectors, pET28 and pET30.

MARCH5-28 and MARCH5-30, respectively. Cultures were induced at three temperatures (37˚C, 30˚C, and 22˚C) and three concentrations of IPTG (1 mM, 0.5 mM, and 0.1 mM) at four hour and overnight intervals. The levels of protein expression were analyzed by polyacrylamide electrophoresis and western blot analysis. Subsequently, the results revealed that in comparison to MARCH5-30, the expression of MARCH5-28 had higher protein yield, especially at lower temperatures. (30˚C and 22˚C). In the future, further experiments will be conducted to generate more protein to be studied for structural analysis by nuclear magnetic resonance (NMR).
**POSTER #46**

**Taxol-Taxol Interactions Using Molecular Dynamics**  
Dennis Lam (Verrazano Honors School)  
Faculty Mentor: Professor Sharon Loverde  
Department of Chemistry  

Taxol, formally known as Paclitaxel, is an important pharmaceutical drug used against ovarian, lung, and breast cancer. As a mitotic inhibitor, it stops mitotic division and prevents cancer cells from multiplying infinitely. Due to its hydrophobic properties, it “blends well” with the amphiphilic structure of cell membranes in organisms. However, there is still much to be done to understand the logistics of the Taxol-membrane interactions, as a way to deliver the anti-tumor drug to its target cancer cells – in addition to the interactions between Taxol molecules. To understand this, computational chemistry and molecular dynamics simulators – such as NAMD (Nanoscale Molecular Dynamics) and VMD (Visual Molecular Dynamics) – are used to virtually analyze and observe changes in Taxol behavior. Methods such as SMD (Steered Molecular Dynamics) and ABF (A Biased Force) show that Taxol has a minimum work value of 0.055 kcal/mol at around 12.2 Angstroms (Å) when the molecules are 10 to 20 Å apart. In high concentration of 0.1 M Taxol in water, Taxol molecules are loosely packed and in high entropy.

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**POSTER #87**

**Poly(ethylene glycol) Functionalized Amphiphilic Macromolecules Displaying Selective Antibacterial Activity**  
Edward He (Macaulay Honors College)  
Faculty Mentor: Professor Nan-Loh Yang  
Department of Chemistry  

Bacterial resistance towards antibiotics is a forthcoming issue. To overcome such obstacles, synthetic polymers which mimic physical characteristics of natural antimicrobial peptides have been shown to exhibit highly antibacterial activity via an alternative mechanism. However, these polymers also demonstrated hemolytic activity. A synthesis by copolymerizing a six spacer arm amine functionalized acrylate monomer with Poly(ethylene glycol)methyl ether methacrylate (PEG-MA) monomer demonstrated high antibacterial activity and low hemolytic potential. We varied the mole ratio of PEG-MA and the length of PEG side chains in order to optimize the selectivity of the polymers towards bacteria over red blood cells (RBCs).

This approach led to the synthesis of a polymer with 111 times selectivity towards E. coli over RBCs. The selectivity of polymers is defined as the ratio of HC50 value (lowest polymer concentration required to lyse 50% of RBCs) to the Minimum Inhibitory Concentration (MIC, lowest polymer concentration to inhibit 100% bacterial growth) of polymers.
**Research Poster Presentations**

**POSTER # 108**

**Fluorescent Conjugated Donor-Acceptor Polymers**

Hamid Ardolic (Macaulay Honors College)
Faculty Mentor: Professor Ralf Peetz
Department of Chemistry

We present the synthesis and characterization of novel fluorescent conjugated polymers for potential use in photovoltaic materials. Such polymers constitute an active area of research due to properties such as flexibility, fluorescence, semi-conducting and good processability. Electron donor acceptor moieties were synthesized using thiophene and benzothiadiazole blocks. The benzothiadiazole acts as a strong electron acceptor whose $\pi-\pi$ electron interactions help to promote charge transfer.

It is coupled with two thiophenes that act as moderately strong electron donors and are substituted with hydrocarbon chains to increase solubility and the resulting polymer's processability. The monomers are built using thiophene, benzothiadiazole and phenylene units and subsequently polymerized using acyclic diene metathesis (ADMET) and Suzuki polycondensation.

The goal of this research is to establish a library of polymers emitting in a wide range of the visible light spectrum and to then test them as potential materials in photovoltaic devices. Earlier polymers synthesized fluoresce in the blue region and current research has shifted through the spectrum, now focusing on high molecular weight polymers fluorescing in the red region.

The resulting polymers are designed to have high molecular weight and form homogenous films while maintaining thermal stability and covering a wide range of the visible spectrum. Synthesized precursors and the polymers are analyzed using proton and carbon NMR spectroscopy for identity, UV-Vis and Fluorescence spectroscopy for photo optical properties, TGA and DSC for thermal stability and GPC for molecular weight.

**POSTER # 123**

**Silicon-Containing Fluorescent Conjugated Polymers**

Hosea Mak (Macaulay Honors College)
Faculty Mentor: Professor Ralf Peetz
Department of Chemistry

There has been a great interest for conjugated polymers due to their various applications in organic electronics. In particular, silicon-carbon hybrid materials are of high consideration due to their flexibility, good electrical resistance, low glass transition temperatures, extended $\sigma-\pi$ conjugation, and tunable electro-optical properties. These properties can be adjusted in the choice of fluorophores. These materials have been successfully employed in light-emitting diodes, transistors, biosensors, and photovoltaics. While our previous studies have focused on the synthesis of polymers having homologous aromatic blocks on both sides of the silicon, this research study aims to produce a segmented silicon-containing conjugated polymer featuring alternating distinct fluorophores.

The fluorophores phenylene and thiophene have previously been effective in organic electronics. These blocks can be polymerized using acyclic diene metathesis (ADMET), a preferred reaction due to its mild reaction conditions and a relatively less complicated process. The structures have been identified by NMR spectroscopy, while optical properties of the compounds have been analyzed by UV-Vis and fluorescence spectroscopy. The polymers have been found to be highly fluorescent in the blue region with a quantum efficiency of 0.51. Thermal properties have been characterized via TGA and DSC experiments. The polymers were found to be thermally stable up to 300°C. Further studies will involve the synthesis of such polymers employing different fluorophores and study their interactions by their photophysical properties.
**POSTER # 82**

**Unsymmetric Substitution toward High Charge Carrier Mobility**

Jiahui Yu  
Faculty Mentor: Professor Shi Jin  
Department of Chemistry

The goal of the proposed research is to explore a method to finely tune the intra-column rotation angle in discotic columnar liquid crystalline (DCLC) materials. DCLC materials are promising charge/energy transport materials as they combine the excellent processability with a respectable transport performance. One key parameter that controls the charge transport performance of a DCLC material is the frontier orbital overlap, which depends critically on the rotation angle \( \theta \) between adjacent \( p \)-conjugated discotic cores. Despite the obvious importance of \( \theta \), there are no reported approaches by which \( \theta \) can be systematically tailored for optimum performance.

The microphase segregation between two chemically incompatible flexible tails was successfully utilized to double the \( \theta \) of a DCLC material from 30° to 60°, such an approach cannot be applied to access other angle values. In contrast, the approach proposed here is capable of generate a large range of \( \theta \) angles by utilizing unsymmetrically substituted flexible side chains with different space demands.

To test the viability of the approach, an unsymmetrically substituted perylene tetraester PE will be synthesized according to the procedure depicted in Scheme, followed by the phase and structure characterization. Note that the conformational preferences of diethylene glycol chains (blue) and n-heptyl chains (red) are quite different. In a disordered state, a diethylene glycol chain is significantly larger than a n-heptyl chain. The tuning principle is illustrated in Figure 1. When DCLC molecules forming columns, the rigid aromatic cores prefer an inter-core spacing around 3.5 Å while the flexible tails are much more space-demanding. For instance, the preferred inter-chain spacing of liquid-like n-alkyls chains is around 5.0 Å. To maximize the attractive p-stacking interaction of adjacent aromatic cores and avoid the steric hindrance of the flexible tails, the flexible chains (or group of flexible chains) of adjacent discotic molecules must be arranged in a staggered fashion. For a symmetrically substituted discotic molecules with two-fold symmetry, like the one shown in Figure 1A, a 90° \( \theta \) (an angle considered to be worst for charge transport) \( \theta \) results. However, if the space demands of flexible chains at the two sides of the molecule are different, the \( \theta \) angle will be larger than 90°, as shown in Figure 1b. The unique advantage of this approach is that the angle \( \theta \) could potentially be finely tuned by installing different combinations of flexible chains that can generate variable space demands from two sides of the discotic molecule.

**POSTER # 118**

**Targeted and Lipid-Complexed Forms of Curcumin as a Remedy for Brain Tumors**

Juliet Nana Esi Baidoo (The Verrazano Honors School)  
Faculty Mentor: Professor Probal Banerjee  
Department of Chemistry

The culinary spice turmeric contains a polyphenol, curcumin (CC), anticancer property of which is believed to be responsible for the significantly less incidence rates of certain cancers in Southeast Asia. This study will develop an effective and safe strategy by targeting CC to eliminate brain tumors. The mouse models we used so far were created through orthotopic implantation of B16F10 melanoma or GL261 glioblastoma (GBM) cells in the brain of syngeneic C57BL6 mice. Coupling of CC in a releasable form to tumor cell-selective antibodies caused a 120-600-fold increase in its anticancer potency, prolonged life, and rescued 10-20% of these mice. A more clinically relevant mouse model that spontaneously developed GBM was not available, but we obtained and included the C57BL6-Tg(NeuroD2-Smo*A1) mouse model that spontaneously developed medulloblastoma (Mb). To target the GBM tumors, we used an antibody against the GBM surface antigen CD68. CC has been reported to eliminate Mb cells and Mb-specific antibodies like CD46 could enable us to target these tumors. In addition to intracranial delivery of the CC-antibody adduct (CCAb), we used the non-invasive intranasal route of delivery, which enabled a near-IR dye-CD68Ab adduct to efficiently label the brain tumor in our GBM model. We monitor tumor progression and regression by post-mortem brain scanning in parallel sets of antibody or CCAb-treated mice after tumor labeling with a near-IR dye-linked antitumor antibody. CCAb is followed by free or lipid-complexed CC infusions (systemic) to purge residual cancer cells. By potentiating the anticancer property of the food-derived natural agent CC, our targeting strategy brings the promise of replacing chemo- and radiation therapy, which cause serious side effects without actually curing the disease.
**POSTER # 60**

**Carbon Nanoparticles Interacting with Lipid Membranes**

Justin Atos (The Verrazano Honors School), Getuarc Duka (The Verrazano Honors School), Ali Piracha (The Verrazano Honors School)

Faculty Mentor: Professor Arben Jusufi
Department of Chemistry

The translocation of carbon nanoparticles through lipid bilayers of varying compositions along with associated free-energy values is the primary focus of our project. Using fully atomistic simulations via the Gromacs molecular dynamics software package, we have simulated DMPC and DOPC lipid bilayer systems containing carbon nanoparticles called fullerenes in two different sizes, C540 which contains 540 carbon atoms, and C60 which contains 60 carbon atoms. Four systems in total were created, DMPC or DOPC with either a single C540 or C60. In each case the lipid bilayer center of mass (COM) was used as a reference point for the fullerene which was harmonically restricted from moving in the Z-axis (normal vector of membrane surface) at decreasing distances from the COM using an umbrella sampling potential with intervals of 0.1 nanometers. At each interval, a total simulation run of 40 nanoseconds was completed where the fullerene was free to move in the lateral direction (X-Y plane). A harmonic restraint function in the z-axis was put in place to determine the potential of mean force (PMF) which are extracted from the series of umbrella sampling simulations and are then derived to calculate the Δ$G^\circ$ binding-energy curve. Our results have concluded that there is negligible difference in the free-energy plots in either DMPC or DOPC when subjected to either a C540 or C60. However, qualitative differences have been seen in systems with C540 coated by lipids upon when C540 are forced to leave the membrane. This fullerene-lipid complexation has not been seen in C60.

**POSTER # 111**

**Antibacterial Activity of Cationic, Amphiphilic Polyacrylates**

Kevin Lee (Macaulay Honors College)

Faculty Mentor: Professor Nan-Loh Yang
Department of Chemistry

The concern of antibiotic-resistant bacteria is progressively elevating. An alternative method to eradicate antibiotic-resistant bacteria involves the use of cationic, amphiphilic polymers. These polymers act on bacteria by creating pores of the bacterial membrane. This phenomenon can be attributed to a combination of both the positively charged spacer arms and amphiphilicity of the polymer. This is able to cause attraction of the polymer to the bacteria, which has a negative surface charge, and ultimately lysing it through hydrophobic interactions. The monomers copolymerized in the experiment were 2-((tert-butoxycarbonyl)methyl amino)ethyl acrylate and 2-((tert-butoxycarbonyl)amino)hexyl acrylate (P6) to give rise to the polymer, CP6. The bacteria subjected in this experiment were E. coli and S. aureus, which represents Gram-negative and Gram-positive bacteria, respectively. Antibacterial activity was measured by minimum inhibitory concentration (MIC) and toxicity levels were measured by hemolytic concentration 50% (HC50), which is the concentration of antibacterial agent that causes 50% of red blood cells to be lysed. The research revealed that the presence of cationic charge on all repeating units, and the addition of a moderately active, but non-toxic, cationic monomer to a highly active and toxic 6 carbon spacer arm monomer can lead to extremely active and non-toxic polymers. Such molecular design may be applied in various polymer structures and could lead to a wide variety of polymers with selective antibacterial activity.
**POSTER # 21**

**Molecular Dynamic Simulation of Supramolecular Nanosstructures Formed by Anticancer Drug Assembly**

Larisa Solovyova  
Faculty Mentor: Professor Sharon Loverde  
Department of Chemistry

Molecular Simulation of Supramolecular Assembly focuses on continuation of research using peptide amphiphiles of anti-cancer drug camptothecin (CPT).

The molecule in question is qCPT-Sup35, a peptide with four CPT molecules.

The π-π bond interactions between the CPTs will play an integral role in the self-assembly of the molecules. This will help us to improve its structure. Molecular dynamics simulation will be performed to construct the qCPT-Sup35 molecule and observe it in a simulated environment similar to our bodies. The qCPT-Sup35 will be observed in a water box with concentration of 12.6 mM. By calculating how the molecules form cylindrical carriers, the energy needed, as well the concentration best suited for the process we can have higher accuracy control of the release of the drug and minimization of the negative side-effects.

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**POSTER # 113**

**Segmented Conjugated Polymers with Strong Fluorescence**

Mark Montano  
Faculty Mentor: Professor Ralf Peetz  
Department of Chemistry

Conjugated polymers with donor-acceptor moieties provide higher conversion efficiency for solar cells in photonic applications. These conjugated polymers provide characteristics such as tunable physical features, mechanical flexibility, stability, and electrical conductivity in photonic devices. In this work we report the synthesis and characterization of a segmented polymer containing paraphenylene and benzothiadiazole as alternating conjugated segments. Divinyl functional monomers were designed and synthesized using Suzuki coupling. Monomers were then polymerized by ayclic diene metathesis (ADMET) polycondensation. The polymers were confirmed to demonstrate the presence of trans-configured vinylene bonds.

The structure was further analyzed by 1H and 13C NMR Spectroscopy. The GPC number average molecular weights were estimated to be around 5500 g/mol. The UV-vis absorption maxima were observed at 364 nm and 440 nm and the fluorescence maximum at 593 nm.
**Poster #17**

**NMR Structural Analysis of the Teretoxin Arg-58**

Matthew Emsak  
Faculty Mentor: Professor Sebastien Poget  
Department of Chemistry

The teretoxin Arg-58 is a highly toxic peptide that comes from the venom of a type of predatory marine snail called a terebrid snail (or an auger snail) of the family Terebridae. This toxin is likely to be bioactive, but it has not yet been extensively studied. We are embarking on a study of Arg-58 to obtain insights into the potential function of this toxin. We are using NMR spectroscopy to investigate the three-dimensional structure of Arg-58, which consists of 22 amino acid residues. The structure may guide the search for the functional target receptor. We collected 2D NMR spectra of this peptide, specifically the “TOCSY” as well as the “NOESY” experiments. We processed the raw NMR data using the software NMR-pipe and then used the software “CCPN analysis” to analyze the spectra. Through “TOCSY,” we identified spin systems of coupled protons and aligned these spin systems sequentially through the “NOESY” experiment. We then assigned the carbon chemical shifts to the peptide using a referenced database of the known chemical shifts of the amino acids that comprise this protein and attempted to map stretches of sequential assignments to their correct position in the sequence. After examining three separate samples of the data, we were unable to see any patterns indicative of defined three-dimensional structure and thus, we have determined that Arg-58 in the form we have analyzed is not structured.

**Poster #65**

**Preparation of Nano Particles Loaded with Black Cohosh Extract**

Nechama Averick (Macaulay Honors College), Andrew Mancuso, Linda Einbond, Krishnaswami Raja  
Faculty Mentor: Professor Krishnaswami Raja  
Department of Chemistry

Green drugs are those that originate in renewable resources such as plants, which can be used either directly after isolation or after efficient chemical modification. According to some estimations, over 61% of drugs used today have their roots, almost literally, in natural products. Black cohosh, a perennial plant native to North America, is sold today as a dietary supplement in the United States used for menopausal symptoms and was used by Native Americans for a variety of ailments including gynecological disorders, kidney disorders, rheumatism, and several other maladies.

Poly (DL-lactic acid) [PLA] polymers and nanoparticles are used for controlled drug delivery, where these polymers exhibit excellent biocompatibility and biodegradability. Plain nanoparticles were prepared by the salting out method and black cohosh loaded nanoparticles were as well with a slight modification to improve the drug encapsulation efficiency. Once these nanoparticles are synthesized, their efficacy will be tested against breast cancer cell lines to determine selectivity.
**Poster #151**

**Elimination of HPV-Mediated Cervical Cancer and Neck Tumor Cancer Via Triple Combo and Investigation Into The Immuno-modulation Role of Curcumin**

Peter Halat  
Faculty Mentor: Professor Probal Banerjee  
Department of Chemistry

From our previous publication, it was shown that the triple combo drug consisting of curcumin, epicatechin, and resveratrol is effective against HeLa cells. Our objective now is to see the cellular protein levels in HeLa cells after treatment with the triple combo in appropriate concentrations and solo drugs in a combinatorial manner. Overexpression and underexpression data on NFκB, EGFR, P53, Rb, and pRb would give information on the cell-signaling pathway affected primarily by these drugs. Also, we plan to see mRNA levels after drug treatment to access the status of these cells on the RNA levels. We are also using another cell line called TC-1. We are implanting mice with TC-1 cells to generate neck tumors. We are then treating them with the triple combo to rescue them. We plan to do immunological studies on tumor implanted control mice. Immunostimulatory role of curcumin is highly debated. We plan to see if curcumin enhances activity of immune cells like NK cells and macrophage. Also, status of cytokines like IL-4, IL-2 in these tumor implanted mice will be assessed. Immune cells assisted tumor killing via apoptosis would be investigated. Immunohistological sections would be assessed for immune markers like CD4 and CD8 using confocal microscopy. We plan to synthesize liposomal encapsulated triple combo to increase the stability, efficacy, and bioavailability of the drugs.

**Poster #110**

**Aggregation of Folic Acid**

Phu Khanh Tang (The Verrazano Honors School)  
Faculty Mentor: Professor Sharon Loverde  
Department of Chemistry

Cancerous cells uptake folic acid actively due to up-regulation of the folate receptor. Therefore, using folic acid as a tag-molecule can help new anti-cancer drugs to target these cells better. However, the aggregation of folic acid itself can interfere with the drug activity. In the article "3 Self-Assembly of Nature and Synthetic Drug Amphiphiles into Discrete Supramolecular Nanostructures," folic acid has a low solubility in pure water but a high solubility in ethanol. The authors report that with different molar mixtures of ethanol and water, folic acid can possess different self-assembled structures: "nanofibers" in pure methanol and "microlozenges" in the presence of water. There are 5 stages of proposed self-assembly pathways. We utilize NAMD, a molecular dynamics simulation program, to simulate 0.04 M of folic acid in water for a total of 100 ns. We hypothesize that the water facilitates self-assembly in layers, but impedes tetramer formation. To form tetramers, ethanol must be present. We will set up three simulations with different molar fractions of ethanol and water to investigate the kinetics of forming "microlozenges" structures. The aggregation behaviour of folic acid needs to be further investigation. Maybe, it holds the key to find the successful treatment to numerous cancers.
**POSTER # 14**

**A Crystal Garden Approach Toward Mimics for Early Multi-cellular Life**

Salsabeel Allan, Kamia Punia, Michael Bucaro, William L’Amoreaus, Krishnaswami Raja

Faculty Mentor: Professor Krishnaswami Raja

Department of Chemistry

This project describes a seminal approach towards generating biomimetic versions of multi-cellular life: coral/sponge mimics and protein incorporated tubes that will serve as scaffolds for producing artificial blood vessels (vascular grafts) and in future bone implants. In the construction of sponge/coral mimics we produce silicate-phosphate constructs incorporating proteins (that provide flexibility and promote cell adhesion) on which various cell lines (including stem cell lines) can be assembled.

Sponges are an example of early multi-cellular life and are primarily composed of calcium carbonate/silica associated with the protein spongina (a modified collagen) and cells (choanocytes; these flagellated cells closely resemble the unicellular marine eukaryotic organism, the choanoflagellate). In this proposal we reverse engineer sponge scaffolds to produce intercalating networks of proteins with carbonate/silicate.

The synthesis of these biomaterials and their characterization via transmission electron microscopy, scanning electron microscopy and Infrared spectroscopy will be presented. The biocompatibility of these constructs was established by growing mammalian cell lines on the scaffolds and the cell viability was established by advanced microscopy. These results will also be presented. To put it in a nutshell, in this research project we employ protein incorporated variations of crystal garden constructs to produce mimics of early multi-cellular life resembling corals/sponges and also lay the groundwork for creating bioengineered tissues.

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**POSTER # 163**

**Synthesis of Curcumin Derivatives**

Vyshnavi Rajendra, Kamia Punia, Andrew Mancuso, Wei Shi, Krishnaswami Raja, Mario Castellanos

Faculty Mentor: Professor Krishnaswami Raja

Department of Chemistry

Curcuma longa is used as a spice in South Asian cooking and in ancient Ayurveda. Curcumin is the bioactive component extracted from the rhizome of Curcuma longa. There has recently been tremendous interest in curcumin, [(1E, 6E)-1, 7-bis (4-hydroxy-3-methoxyphenyl) hepta-1,6-diene 3,5-dione] because it has been shown to have antioxidant, anticancer, anti-inflammatory, anti-Alzheimer’s disease activity and antibiotic activity. However, its poor solubility in water has restricted its development as an effective therapeutic agent.

In this project, I propose to develop a synthetic technology to produce curcumin derivatives with water soluble groups including synthetic polymers and proteins which can potentially enhance the therapeutic efficacy of curcumin. We will synthesize mono-functional derivatives of curcumin in which one of the phenolic groups of curcumin will be chemically modified with reactive groups such as Carboxylic acid and NHS ester. The synthesis mono-functional curcumin derivatives allow us to produce the soluble conjugates whereas bifunctional derivatives would result in insoluble cross-linked products and will also provide one free phenolic group which is necessary for the biological activity of many antioxidants like curcumin. We will characterize the curcumin derivatives by proton NMR and ESI-MS. These mono-functional derivatives of curcumin will then be attached to synthetic polymers and targeting proteins.
Effect of TiO_2 Polymer Composite on Bacterial Deactivation
BiBi Ghafari, Yamina Kezadri, Yuanyuan Zhao, Hosea Mak (Macaulay Honors College), Yang Liu
Faculty Mentor: Professor Alan Lyons
Department of Chemistry

Access to clean drinking water is a perennial challenge in third-world countries. Problems resulting from poor education, health, infrastructure and weather extremes all play a role and contribute to the difficulty in maintaining good water quality. Our project is focused on studying the effectiveness of a solar-activated photocatalytic film to kill microbes responsible for water-borne diseases. Our approach leverages an established method called Solar Water Disinfection (SODIS) that uses sunlight and heat to kill pathogens in water using filled plastic bottles that are kept on rooftops for a span of 6 hours to 2 days (1). Because of the long times required to insure that standard SODIS is effective, compliance is difficult to insure. By inserting a low-cost polymer film containing photocatalytically active titanium dioxide (TiO_2) particles into the bottle, the time required to disinfect the water is decreased. The faster purification times are expected to increase user compliance and provide an inexpensive and reusable source of safe drinking water to remote areas in underdeveloped countries.

The goals of the research are to quantify the rate of e.coli deactivation as a function of different experimental variables including initial organism concentration and morphology of the TiO_2 particle-embedded film surface.

Control surfaces will be used so that the effectiveness of the photocatalytic film can be compared against polymer films containing no catalyst as well as the conventional SODIS process. An artificial light source will be used in the laboratory tests. By the end of spring, outdoor tests will be conducted using natural sunlight. With this data our research team plans to write a publication and use this preliminary study to open a dialogue with foreign institutions looking for novel, low-cost methods of sanitizing water.

3D Printing of Conductive Ink Posts for Inexpensive Electrode Arrays
Cody Cimbal (Macaulay Honors College)
Faculty Mentor: Professor Alan Lyons
Department of Chemistry

The goal of this project is to print an array of electrically conductive posts that can be used as electrically conductive electrode arrays for mapping neurons. While these types of arrays already exist, they are expensive and difficult to clean and re-use. The arrays that will be fabricated for this project consist of low-cost materials. These arrays will also be aimed at being disposable, so the need for cleaning them can be eliminated.

Challenges of the project include making sure the fabricated electrodes are electrically isolated from each other and tall enough to penetrate the cells without having conductive solution contact the base. The electrodes should be 1000 microns tall and have a small diameter of about 100 microns so they do not make contact with the others around them.

The material components that are used in the ink need to be balanced carefully to maintain a viscosity low enough for the ink to easily be dispensed by the printer, but high enough so that the ink can stack up vertically and not slump. There are several aspects of this problem that will be presented: ink formulation, substrate surface preparation and printing parameters. I systematically varied the relative concentrations of components in the ink to achieve the desired viscosity. Adding silica nanoparticles increased the apparent viscosity of the ink. I modified the surface chemistry of the substrate to ensure that the ink wets sufficiently well and that it is transferred from the syringe to the surface, but that the wetting does not cause the ink to spread too far. Also, I systematically adjusted printing parameters, including dispense volume (pressure and time) and dispense height so that the ink builds a post with uniform diameter. The effect of ink formulation and printing parameters on post dimensions will be presented. An understanding of these parameters is necessary to define a robust process for printing low-cost electrode arrays.
Inhibition of Bacterial Adhesion and Biofilm Formation by the use of Superhydrophobic Surfaces

Martin Lapinski (Macaulay Honors College)
Faculty Mentor: Professor Alan Lyons
Department of Chemistry

Combating the growth of bacteria and other potentially undesirable microorganisms has long been of importance in medicine, industry, food, and other fields. Large-scale use of antibiotics has produced an undesired side-effect, namely an increasing number of resistant organisms. Alternate, indirect methods of bacterial inhibition are important for reducing the proliferation of antibiotic resistance, and for combating those that are already resistant. Bacteria in sufficient density may form a biofilm, adhering strongly to each other and to their environment. These biofilms are often resistant to antibiotics and to physical removal. The purpose of this project is to examine the usefulness of superhydrophobic surfaces for reducing the number of adhering bacteria and their ability to form a resistant biofilm.

The superhydrophobic surfaces tested in this project feature a hierarchical structure consisting of a grid of “posts” separated by trenches, and a nanoparticle film covering the surface. Fluid in contact with the surface will ideally only make contact on parts of the post tops, while the trenches are filled with an air layer. This has the potential to limit bacterial adhesion to small and separate portions of the surface, thus interrupting the adherence of a strong, continuous biofilm. Superhydrophobic surfaces also facilitate cleaning, as water easily “slips” on almost any incline, rather than sticking to a single location. To test the antibacterial properties of these surfaces, a solution containing E.coli was allowed to rest on a variety of surfaces in order to provide the bacteria an opportunity to adhere to them. The solution was then removed, and the bacterial concentration and location was analyzed by confocal microscopy, and the general appearance by scanning electron microscopy. Based on the results of this project, areas for future research include constant or automated surface cleaning, and alternate surface structures or methods of production.

Dynamic Molecular Simulation of Polycaprolactone With Membranes

Mirna Abdelsayed (The Verrazano Honors School)
Faculty Mentor: Professor Sebastien Poget
Department of Chemistry

For my independent study, I perform molecular dynamics simulations for computational chemistry. Specifically, I simulate all atoms in a polymer, measuring their end to end distances, and the radius of gyration of the polymer. Some atoms will include all Carbon, Hydrogen, and Oxygen molecules; others will just be in clusters. The polymer that I have been using is polycaprolactone (PCL). PCL is a biodegradable polymer which is used for biodegradable applications such as drug delivery and tissue scaffolds. I have been simulating different lengths of PCL in a phospholipid bilayer. Different PCL lengths should show some differences but should not react too differently from each other. However, the bilayer, a longer strand should stretch out more than a shorter strand. My presentation will describe through words, graphs and images the different ways PCL behaves in and out of the membrane after running a simulation. Using VMD to view and capture images of the polymer, I am able to analyze and interpret how the polymer behaves. Through previous research I simulated polycaprolactone and tested the polymer’s absorption into a phospholipid bilayer in water. According to past research, Polycaprolactone absorbed into the phospholipid bilayer and collapsed; proving the hypothesis correct. I then measured the end to end distances of different lengths of the polymer (7 and 22 monomers). To do so I used LAMMPS (Large-scale Atomic/Molecular Massively Parallel Simulator) molecular dynamics software from Sandia National Laboratory.
DEPARTMENT OF
COMPUTER SCIENCE
CONFERENCE LOCATION: BOTTOM FRONT

POSTER # 59

Analysis of RNA Secondary Structures Using a Graph Theoretical Model
Brian Wong (The Verrazano Honors School), Jonathan Parziale, Juan Gabriel Munoz
Faculty Mentor: Professor Louis Petingi
Department of Computer Science

RNAs secondary structures can be represented as tree graphs, thus graph theoretical tools and mathematical formulations can be used to address problems such as RNAs Folding, Partitioning, and Prediction. Our goal is to study physical/biological properties of RNAs by applying Graph Theoretical algorithms based upon Linear Algebra techniques to analyze Partitioning of large RNAs into smaller structures. These techniques can be embedded into a Graphical User Interface to allow efficient visualization of RNAs partitioning.

POSTER # 145

Brain Modeling and Dynamics: Simulating Brain Interaction of Synaptic Potentials and Postsynaptic Inhibition
David Brady (Macaulay Honors College)
Faculty Mentor: Professor Natacha Gueorguieva
Department of Computer Science

Information processing in the brain results from the spread and interaction of electrical and chemical signals among neurons. The equations that describe brain dynamics generally do not have analytical solutions. The growing inspiration from experimental neuroscience and the design of new neural models largely motivates the use of spiking neuron models, rather than the traditional rate-based models. The most popular models are Hodgkin-Huxley model and Leaky integrate-and-fire model (LIF). The Hodgkin-Huxley model describes the spiking behaviour and refractory properties of real neurons and serves as a paradigm for spiking neurons based on nonlinear conductance of ion channels while LIF’s replace the rich dynamics of Hodgkin-Huxley type models by essentially one-dimensional fire-and-reset process. The Hodgkin-Huxley model is a conductance-based model where current flows across the cell membrane due to charging of the membrane capacitance, and movement of ions across ion channels. It is one of the most biological plausible models in computational neuroscience. This neuron models represent the characteristics of the responses of real neurons, hence their parameters are biophysically meaningful and measurable.

The NEURON simulation environment will be used as it provides a powerful and flexible setting for implementing biologically realistic models of electrical and chemical signaling in neurons and networks of neurons. Since it was designed specifically to simulate the nerve cells, it allows the user to deal directly with concepts that are familiar at the neuroscience level.

The research concerns how synaptic potentials interact, the influence of excitatory and inhibitory neurotransmitters on the conductance changes as well as on the threshold of the action potential. We concentrated our attention on GABA (gamma aminobutyric acid) neurotransmitters as many mental disorders are thought to be due to disturbances in postsynaptic inhibition.
**Poster #84**

**Analyzing Procedural Learning and Emotion Recognition in Children Using Serious Games**

Jonathan Parziale, Edward Peppe  
Faculty Mentor: Professor Deborah Sturm  
Department of Computer Science

Difficulties with procedural learning are associated with language and grammatical problems in individuals with specific language impairment (SLI). Our game implements a serial reaction time (SRT) task that assesses this mode of learning. Participants are asked to touch the location of a visual stimulus trial by trial. Decreased response times during the pattern are taken as evidence of learning as the participants learn to anticipate where the next stimulus will appear. The results can be used to study whether SRT task performance can account for some of the individual differences in language and grammar learning as well as problems of individuals with SLA second serious game assesses emotional perception deficits that are often noted in children with Autism Spectrum Disorder (ASD). We developed this game for a mobile platform to implement facial emotion analysis and training for children with (ASD). The game displays varying facial expressions and records individual recognition skills and decision-making patterns. The goal of the game is to both monitor a child’s individual perception patterns and implement customized remediation procedures. The game runs on a touch-capable mobile platform with an easy-to-navigate user interface, extensive administrative controls, and verbose experiment results.

**Poster #103**

**Developing Model Safety Materials for Vulnerable Populations in Response to Disaster Preparedness Gaps**

Ariana Zuberovic (Macaulay Honors College)  
Faculty Mentor: Professor Michael Kress  
Department of Computer Science

Superstorm Sandy devastated the Staten Island area, leaving homes destroyed and evacuation centers filled to capacity. With the chaos that ensued, the city’s vulnerable population was left helpless. Post Sandy, New York City was sued in a class action lawsuit. The Vulnerable Evacuation Court Case Against New York City encompasses the frustration various organizations of New York felt about the mistreatment of persons with disabilities. Did the city of New York do its best in evacuation and the aftermath of Superstorm Sandy? Was the City of New York found responsible for failing to address the needs of the vulnerable population? The horror stories of the witnesses served as the motivation for improved preparedness materials tailored for this population. The vulnerable population depends on timely preparedness in order to ensure safe evacuation. Meetings with field experts and evacuation volunteers have been essential in deciding on what items should be provided to people with disabilities.

This study seeks to explore and develop a model rescue pack for the vulnerable population based on interviews and literature review; the authors seek to establish what affordable content could be contained in a small waterproof wallet, the intent is to provide enhanced safety and comfort for individuals with special needs. The model packs will be field tested by distribution to a sample disabled population for their evaluation and review.
Identifying Vulnerable Populations for Disaster Evacuations and Key Information Communications

Elisa Csorba (Macaulay Honors College)
Faculty Mentor: Professor Michael Kress
Department of Computer Science

My research regarding Staten Island’s vulnerable population was prompted by the Willowbrook State School Consent Judgment passed in 1975. Following Superstorm Sandy, Staten Island’s vulnerable population was not given the proper attention or care required by this particular group of people. The City of New York failed to both locate the vulnerable population and evacuate them to sufficiently accessible evacuation locations. How can the City’s shortcomings be rectified? How can I prevent the vulnerable population from being dismissed in the event of another emergency situation?

My research has three components: to identify the locations of the vulnerable populations based upon the Census data; to identify the individualized needs of each of the six disability content areas (Hearing, Vision, Cognitive, Ambulatory, Self-Care, and Independent Living); and to tailor those specific needs to facilitate a safe evacuation process. Within this evacuation process, it is vital to be aware of the available housing options that provide accessibility measures for the vulnerable population.

I will be conducting research based on the 2010 Census data in order to collect information regarding the location of the members of the vulnerable population by Census tract. Based upon the geographic locations and the census disability categories provided, I will then develop informational content and a brochure to facilitate the safe evacuation of the vulnerable population. The informational content will consist of suggestions detailing the type of items one should have on them in the event of an emergency situation my work will focus on research done by FEMA and in speaking with experts from the field. This information and content delivery will be evaluated in a field event to validate the methods and information materials.


Jennifer Freund (Macaulay Honors College)
Faculty Mentor: Professor Michael Kress
Department of Computer Science

Superstorm Sandy left Staten Island in shambles after it slammed into its shores on October 29th, 2012. Many Staten Island residents experienced significant damages to homes, loss of personal property such as vehicles, and the death of twenty-two civilians, the highest death count of any county in The United States during this event.

Over recent decades Staten Island has experienced population growth away from existing transit lines, and no large scale modifications in modes of public transportation have occurred; therefore many residents rely on private vehicles for transportation. My research is focused on devising a four step plan to evacuate residents’ vehicles to “high ground”.

The first step will be to identify target parking areas for relocating evacuation vehicles in elevated areas and also identifying viable routes (not flood prone) for vehicle travel. The second step will be to model how vehicles will travel from flood prone areas to “high ground” parking locations. With the use of Transmodeler (a traffic flow modeling software) we hope to be able to illustrate that moving of over seventeen-thousand cars is attainable within an eight hour time period. The third step is to create a guide for residents to guide them as to optimal routes and timing of travel. The final step is developing an implementation plan in the case of another natural disaster for emergency management groups. The results of this study will inform The New York Staten Governmental Commission “New York Rising” and it is slated to be part of the final evacuation plan.
DEPARTMENT OF EDUCATION
CONFERENCE LOCATION: EAST LOUNGE

POSTER # 138
Young Scientists
Sarah Guirguis
Faculty Mentor: Professor Judit Kerekes
Department of Education

Science is an essential part of a child’s life. Children begin using scientific strategies as soon as they begin speaking. They start to explore people, animals, and objects around them. Exposing children to scientific terms will expand their vocabulary. Performing simple science experiments will increase their cognitive skills. Cognitive skills will improve children’s thinking, processing, as well as guiding them to be better learners.

It is a challenge to facilitate children ages five through seven as they learn to scaffold their science skills. It is essential for young children in the kindergarten through second grade level to have a deeper understanding of the scientific method. The six steps of the scientific method are: questioning, researching, constructing a hypothesis, testing the hypothesis, analyzing data, and reporting results. If young children comprehend and apply the steps of the scientific method, they will be able to conduct science experiments.

Helping children analyze information, support research with proper experimentation, and drown in-depth conclusions at an early age, will provide them with a strong foundation to learn to be scientists.

DEPARTMENT OF ENGINEERING AND PHYSICS
CONFERENCE LOCATION: BOTTOM FRONT

POSTER # 71
Emergence of Chaos in Coupled Multi-Spin Classical Dynamic Systems
Antonio Grasso (Macaulay Honors College)
Faculty Mentor: Professor Vadim Oganesyan
Department of Engineering Science and Physics

It is a well known fact in physics that classical dynamics of small generic systems are chaotic. This means that the motion of the particles have no set periodicity and future positions cannot be determined from previous information except by brute force integration of Newton’s equations. On the other hand, when particles do not interact the dynamics is strictly periodic. We devised a method to locate strongly chaotic and nearly periodic regions in many-body phase space of interacting clusters of few spins using density of states (DOS) as a guide – initial conditions with energies near the peak of DOS are strongly chaotic, while minima of DOS usually host periodic trajectories. We characterize different types of trajectories in terms of their power spectra.
POSTER #155
Gas Leak Detector
Giuseppe Gambino
Faculty Mentor: Professor Chang min Kim
Department of Engineering Science and Physics
To notify the home owner that there is a gas leak by sending a text message to their cell phone and to install an automatic shutoff valve to close the main gas line if there is a gas leak.

POSTER #154
Automatic Pet Door with ID Selective System (APD)
Ilker Catal
Faculty Mentor: Professor Chang-min Kim
Department of Engineering Science and Physics
Most people have pets in their houses and pets need to go out everyday. In suburban areas houses have doors usually in their kitchen door for pets to enter and leave. But, many times other animals (potentially dangerous animals) can enter the house. I saw a need for APD which will make the pet door safer so you will have a piece of mind which animal gets in who gets out decided by algorithm and sensors.
Research Poster Presentations

POSTER # 158

Automation for Optical Transmission Testing Platform
Karl Francis
Faculty Mentor: Professor Jessica Jiang
Department of Engineering Science and Physics

In most parts of the world, computers are being used to control the flow of information in the form of electrical and LASER light signals. Previously electrical signals dominated as the main communications medium. Currently there is a need for faster and larger volumes of information (data) flow.

Fiber optics research throughout the world indicates fiber optic technology can be implemented to address this need. The proposed project is to develop an automation system to automatically reconfigure and test various optical transmission systems on a state-of-art, high speed optical transmission testing platform, sponsored by the National Science Foundation and CSI.

Project Description:

The state-of-art, versatile, programmable experiment platform is located in the Engineering Building at the CSI Campus. The test platform will support high speed optical transmission testing at 40Gbps, 100Gbps, or higher speed.

This is a flexible test bed which can support arbitrary advanced modulation formats, including conventional modulation formats such as IMOD NRZ (non-return-to-zero), RZ (return-to-zero), DB (dual-binary), CSRZ (chirp-suppressed RZ), DPSK (Differential Phase Shift Keying), QPSK (Quadrature phase shift keying), QAM (Quadrature amplitude modulation) and OFDM (Orthogonal frequency division multiplexing), as well as user-specified formats.

The automation system requires building an Ethernet network to connect via computer with various devices and equipment components of the test platform.

A control computer will communicate with those components to send commands or take data. A graphical user interface will be developed to allow various system configurations to be easily set and tested. This will provide desired testing flexibility.

Once the design of the physical network has been completed it will be tested via software developed on LABVIEW, to ensure control of the various subsystems.

POSTER # 100

Geochemistry of Sedimentary Rocks Affected by Contact Metamorphism from the Intrusion of the Palisades Sill
Sean Thatcher
Faculty Mentor: Professor Jane Alexander
Department of Engineering Science and Physics

The Newark Supergroup, a geologic formation comprising the area around New York City, northern New Jersey, and eastern Pennsylvania, formed when Pangea began to break apart. In this area a Rift Valley formed, and Lake Lockatong began to develop as the land thinned and stretched. A new outcrop has recently been excavated in North Bergen New Jersey, clearly shows the sedimentary sequences between the Palisades Sill and the Lockatong Formation. Sedimentary structures, such as ripple marks and cross bedding, indicative of the Stockton Formation were observed, although not seen in the Lockatong Formation, along with areas that appeared to be metamorphosed by intrusions associated with the Palisades Sill.

In this outcrop, two sedimentary logs have been made to provide a general description of the geologic formation, different strata layers, their composition, and the locations of collected samples. Gathered samples have been analyzed in the lab to discern their mineralogical composition and to discover the extent of metamorphism between sedimentary layers. Emphasis has been placed on looking for volcanic ash deposits by searching for major, trace, and rare earth elements that act as a unique chemical fingerprint for these types of deposits.

This is the first study of its kind to fully analyze the contact area between the Lockatong Formation and the Palisades Sill, which will provide a detailed transect of the formation and a chemical analysis for major, trace, and rare earth elements. Another important application for this project is to search for volcanic ash to account for rare earth elements, indicative of volcanic ash, that were discovered in a nearby location, and is now unfortunately inaccessible. This should confirm the previous finding, and allow for future research throughout the Lockatong Formation. The final application of this project will accurately determine the boundary between the Stockton and Lockatong Formations.
**Poster #143**

**Wave Finder**

Thomas Rodberg (Macaulay Honors College), Dawid Dziuba (Macaulay Honors College)

Faculty Mentor: Professor Chang-min Kim
Department of Engineering Science and Physics

In many applications and problems, determining direction or position of an object is important. A GPS tag can be placed on such an object to be tracked, but that requires ability to connect to a GPS satellite, an unobstructed view of the sky, and a system that can get the signal back from the satellite to show you the location of the tag. An alternative way to determine direction would be to use an RF tag on an item, and detect its signal locally with a receiving device. There are several ways in which this can be done. The objective of this project is to design and build an RF antenna and receiving device that will show the user the location of the transmitting tag and point the user in the right direction.

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**Poster #135**

**Origin and Age of Fluvial Sediments, Charleston, Staten Island**

Victoria Rivelli

Faculty Mentor: Professor Jane Alexander
Department of Engineering Science and Physics

The goal of this research is to determine if sediment found in a new outcrop in the southern part of Staten Island is part of the Pensauken Formation or is part of the more recent glacial outwash. This research focuses on a small outcrop of sediment Charleston, Staten Island representative of sediment from the Atlantic Coastal Plain that are Cretaceous in age, overlain by more recent surface deposits of glacial outwash and till. This outcrop consists of cross-beded sands and massive gravels whose origin and age (being either of the Pensauken Formation or Quaternary glacial outwash) have been disputed in previous studies. The sediments are comprised of interbedded gravels and sands that are not all laterally continuous and represent migrating stream channel deposits. The composition of clasts and gravels includes red sandstones and siltstones which are associated with similar Quaternary glacial outwash deposits in neighboring parts of New Jersey. Our analysis suggests that this outcrop and the sediment it represents was deposited during the Wisconsinan deglaciation.
**Research Poster Presentations**

**POSTER # 156**

**Magic Broom**
YuanHong Hu
Faculty Mentor: Professor Chang-min Kim
Department of Engineering Science and Physics

Magic Broom is a portable outdoor sport device that can give you motion power for your skateboard or roller-skate. Magic broom contains a simple and unique design. A 5'6" pole attached on a powerful DC motor along with a special design speed controller and chain sprocket, which can provide greater torque power and allows user change the speed of the Broom.

The idea for the design was come from a skateboard accident a year ago.

The day I was riding on my skateboard going a deep downhill, skateboard was accelerated to a very high speed that I unfortunately lost control of it and fall on ground. After the accident I decided to build a machine which can keep me a constant speed when I going downhill, but at the same time I don’t want to wastes the energy so a rechargeable battery can take the energy from gravity while I maintaining the speed on the incline, and use this energy I collected to push me uphill later.

There are similar system exist in the market which one of well-known brand in automobile Toyota’s hybrid car, where they use the break force to recharge up the battery. However, as small portable outdoor sport device Magic Broom is the first one existing!

**DEPARTMENT OF ENGLISH**

**CONFERENCE LOCATION: BOTTOM BACK POSTER # 93**

**Futures for Sale: The Real Cost of Education**
Christine Fisher
Faculty Mentor: Professor Stephen Fried
Department of English

You’d be hard-pressed to find someone in the current generation who has not felt pressured by the overbearing tenet that higher education is essential to earning an even somewhat respectable living. This indoctrination is pervasive and thrives on all fronts - from parents, guidance counselors, peers, and partners - turning well-intentioned advice into self-evident truth. Consequently, non-traditional matriculates have entered the ivory towers and are now proliferating within academia.

Scholarship sits on the back burner as millions of Americans anxiously grasp at the possibility of gaining an edge in the ever-increasingly competitive job market by checking off the box that reads "Do you have a college degree?" However, this current state of affairs has left more questions than solutions. Why did Americans collectively and suddenly decide that college was indispensable? Does a degree really matter? And most importantly, who is benefiting from this? In researching the for-profit sector of higher education and the spillover of its ideologies into traditional institutions, I set out to clarify these issues for myself, and hopefully others.
POSTER #120

Are There Recent Changes in Basking Shark Migration that Can Be Attributed to Their Food Sources Response to Warming Oceans?

Marissa Dreyer (The Verrazano Honors School)
Faculty Mentor: Professor Alison Bardsley
Department of English

Basking sharks, Cetorhinus maximus are a large species of filter feeding sharks that are widely distributed across the world’s temperate oceans. The diet of C. Maximus mainly consists of plankton, krill, and other small marine crustaceans. Autotrophic phytoplankton make up a large portion of the Basking shark diet; however, due to rising ocean temperatures, research has shown that these organisms are changing their migratory patterns to inhabit cooler waters. The purpose of this research is to study how the changes in the migratory patterns of phytoplankton are affecting the migratory patterns of C. Maximus.

Existing statistical data on the movements of phytoplankton and basking sharks will be collected and analyzed, as will possible connections between the two. This study is important in that it can provide evidence for how rising ocean temperatures have an effect on marine ecosystems. There are broad implications that basking sharks may be moving into new habitats as a result of the movement of phytoplankton. Previous research has indicated that the introduction of a new species to an ecosystem can have a negative impact on that ecosystem and may lead to the ecosystem’s collapse.

POSTER #116

Despite Fluctuations in the Market, Investment Vehicles may Remain the Better Option than Savings Accounts

Michael Siozios (The Verrazano Honors School)
Faculty Mentor: Professor Alison Bardsley
Department of English

This study will test this hypothesis in the context of extreme market fluctuations. It will create mock portfolios of randomized investments; it will then calculate the profitability in percent return of these mock portfolios for the years 2003-2008 and 2008-2013. It will then compare these results to the value of assets in conventional savings for the same periods.

It will establish whether the difference in returns outweighs the associated risk, as determined by varied algorithms established for this purpose.
Language and Communication in Autism
Nicole DiMeglio (The Verrazano Honors School)
Faculty Mentor: Professor Jason Bishop
Department of English

Autism is a neurodevelopmental disorder that varies in degrees and can affect both social interaction and verbal/non-verbal communication. This research will review the aspects of language that are affected in people with autism. There are certain aspects of language that are affected with children who have autism and neurotypicals such as lexical knowledge, syntax, morphology, and the use of deictic terms. The use of deictic terms such as pronouns, indexicality, and anaphora are affected; for example, children with autism will sometimes reverse their pronouns because they have trouble changing reference between the roles of the speaker and listener. Children with autism may exclude particular morphemes as well, such as articles (a, the). Echolalia is also a common language aspect affected in children with autism. Echolalia is repetition with a related tone of words, or phrases that someone else has said. Additionally, I will discuss how paralinguistic and prosodic features of language, such as voice quality, intonation, and stress, also seem to be affected by autism. This overview will lead to the description of an experimental study, to be carried out in the new CSI Speech Laboratory; this experiment will explore how autistic-like characteristics actually exist in the general population, and how these characteristics influence the perception of prosodic features in spoken language.

Soft Sell for Hard Men: Changes in Print Ads from the 90's to Now
Roshani Udugampola (The Verrazano Honors School)
Faculty Mentor: Professor Alison Bardsley
Department of English

This study will investigate whether changing gender roles are reflected in the images of men portrayed in print advertising from the 1990's to the present. It will engage in feminist analysis of advertisements for mainstream consumer products, based on the dress, positioning, skin tone, hair style and physique of the men pictured. Further, it will compare the marketing appeals and techniques used, to determine whether sales methods that have historically been used for women (soft sell, emotional appeal) are becoming more prevalent in male advertisements.
DEPARTMENT OF MANAGEMENT
CONFERENCE LOCATION: EAST LOUNGE

POSTER # 134

Perceived Barriers to Business Start-up in Malaysian Undergraduate Students: Can Entrepreneurship Education Make a Difference?

George Plagiannakos
Faculty Mentor: Professor Heidi Bertels
Department of Management

This study looks at the perceived barriers that hold undergraduate students back from starting their own business. Data was collected both at the beginning and the end of the Fall 2012 semester from 209 undergraduates taking an entrepreneurship course at a major university in Malaysia. We also collected data from 130 students that were not enrolled in the entrepreneurship course. We found that by the end of the semester a higher overall percentage of the students in the experimental group had changed their responses. Furthermore our analysis showed significant differences in the reduction of perceived barriers amongst the two groups. In particular we found that the experimental group was overwhelmingly responsible for the reduction in the barrier category pertaining to confidence and exclusively responsible for the reduction in the barrier category pertaining to experience and skills.

DEPARTMENT OF MARKETING
CONFERENCE LOCATION: EAST LOUNGE

POSTER # 125

Integrated Micro-Learning Library Search using Cyber Security Ontology

Amy Luo (Macaulay Honors College)
Faculty Mentor: Professor Soon Ae Chun
Department of Marketing

The Internet and its resources have significantly advanced information sharing and fostered learning around the world, but it has also posed challenges for cyber security and privacy. Educating the coming generation about the knowledge and skill sets of the cyber security field is a problem we collectively face. The growing MOOC (Massive Online Open Courseware) movement is one viable solution, allowing students the freedom for a more self-paced learning environment. However, while the “micro” education resources are widely varied and plentiful, including videos, slides, articles, blogs, etc., they are also intimidating in volume and inconveniently scattered over the web. Generic search engines, such as Google, are unspecialized and may bring irrelevant results for a student’s learning needs. Finding and delivering a coherent set of relevant, conceptually connected micro-learning resources in different formats from different data sources is a challenging problem for information integration.

The purpose of this project is to create a cyber-security learning ontology—a knowledge base of security concepts and relationships—that can function as a foundation of cyber security learning. Based on the ontology, micro-learning resources related to cyber-security are gathered across different data domains and semantically annotated and linked for searching and ranking. We use the Semantic Web technology to integrate the resources and implement link-based searching to find and rank them by concept. We aim to provide the system architecture, system components, functionalities, and algorithms necessary to realize this integrated search of multi-formatted cyber security micro resources for the purpose of facilitating learning. We will demonstrate a prototype system for searching the resources in a mobile and cloud security scope, and show how it, with our SLOB system (Cyber Security Ontology Browsing and Search), can be used to explore cyber security concepts.
The World Trade Organization: A Dispute Resolution Process

Joseph DeSimone
Faculty Mentor: Professor Alan Zimmerman
Department of Marketing

The World Trade Organization is a group of 159 nations who observe fair trade, trade openings, and serves as a forum for governments to negotiate trade settlements in a peaceful manner. The WTO encourages fair trade amongst the nations within the WTO through negotiations and agreements. These negotiations and agreements are under constant change and scrutiny due to new technological advances, differences in trading customs between nations, and new members joining the WTO. As a result of the ongoing global change, some trade practices come into question between members of the WTO.

The World Trade Organization settles these disputes via a panel of members of the WTO who begin negotiations between the feuding parties. This panel then sends the case to neutral members of the WTO, where it is “Endorsed” or “Rejected” by these members. A case is considered “Endorsed” when members of the neutral panel agree that there is a considerable dispute amongst the disagreeing nations. If a case is “Rejected” it is not brought to the neutral panel’s attention and is left in a limbo like state. This limbo like state is where the disagreement will remain until it is seen as a legitimate dispute. Once the case is endorsed, the dispute follows a set of established procedures and a time limit in which it has to be reviewed. 453 cases have been brought to the WTO to be analyzed and many have different outcomes. As a result, these cases amongst the WTO are settled, undisputed, or unsuccessfully settled. This paper will describe three specific cases and analyze the WTO settlement process.

19th Century Activists: Words as Images

Allison Scully
Faculty Mentor: Professor Michael Mandiberg
Department of Media Culture

I will be designing a series of 6-10 posters (18in x 24in in size) for events that occurred in American History with homage to Michael Bierut. The events that I will be focusing on may include: The Moon Landing, The Great Depression, The Declaration of Independence, The First President of the U.S., The Revolutionary War, September 11th, Emancipation Proclamation, Pearl Harbor, American Industrial Revolution, and Women’s Suffrage. Bierut is one of the many designers that I have learned about throughout the Digital Design Media courses I have taken at the College of Staten Island.

Over the course of this project, I will be researching and learning about Bierut and his career as well as his design works. I chose to work with this designer because the style of his works is eye catching, and has become one of my favorites.

The inspiration for this assignment has come from a past assignment I did in COM 250 – Typography and Design. The idea is to mimic poster styles of a specific artist, but using different information. I want to make these posters to show my talent, skills, and what I am capable of. After working on and making designs for different formats, I enjoy poster design the most.

Rather than just using actual images to get the message across, I plan on using typography as the main image(s) for most of these posters. In most of Bierut’s work, typography is the image, but there is also a handful of works that have a single image accompanying typography. For my research, I will be looking at information about Bierut, his career, design works, as well as information on the American History events that I will be working with. I will obtain my research information by online sources as well as books.
PAPER #149

Passion for the Arts
Stephen Torres
Faculty Mentor: Professor Tara Mateik
Department of Media Culture

Passion for the Arts is a 10-15 minute video that tells the stories of CSI students pursuing a degree in media, creative, or performance art. Each senior or junior (a filmmaker, a painter, and a dancer) will be surveyed about their decisions to pursue art practice within an academic setting and how they intend to integrate what they learn into a career. Interviews will be recorded on location in the television, dance, and painting studios. Questions will include “How did you choose your major? What or who led you to your medium: dance, film, or painting? Did you come up against any obstacles when you decided to major in art? What classes helped you the most? What projects are you currently working on?” I intend to screen my video, Passion for the Arts, during New Student Orientation at the College of Staten Island in the summer 2014.

During the conference, I will screen a rough cut of my documentary, Passion for the Arts. In addition, I will recruit possible interview subjects in performing and visual arts.

POSTER #18

How Does Computer-mediated Communication Affect Interpersonal Communication?
Veronica Shi (Macaulay Honors College)
Faculty Mentor: Professor Bilge Yesil
Department of Media Culture

My research question is How does computer-mediated communication affect interpersonal communication? As we move into an era of digitization, our methods of communication have significantly expanded. While we instantaneously connect with family and friends, we also have the ability to connect with others globally. Popular computer-mediated communication methods—such as e-mail, instant messaging, and social media—also allow businesses and celebrities to reach out to consumers and audiences, and keep them updated. Given these significant changes in our communication patterns, my research focuses on whether the way we communicate digitally brings people closer or strips the intimate connection that is associated with face-to-face communication.

Previous surveys revealed that females (59%) use instant messaging more than males; 66% of all participants use the Internet to stay in touch; and shy individuals are more likely to communicate through the Internet versus those less shy. As part of my research, I will conduct a survey to better understand how the effects of computer-mediated communication on social relationships vary among males versus females and young adults (18-25) versus the older generations, as well as how it affects their social well-being. At the conference, I will present my findings from this survey and situate my conclusions within existing research.
DEPARTMENT OF NURSING  
CONFERENCE LOCATION: EAST LOUNGE  
P O S T E R  # 1 3  
Gracias Mama: Pro-Bonding  
Alexa Zuffante(The Verrazano Honors School)  
Faculty Mentor: Professor Regina Lama  
Department of Nursing  
The populations studied in this project are postpartum women of the public health system in Costa Rica (La Caja) in comparison to postpartum women of the private health system in the United States. The data was gathered by touring and observing the operations of Hospital de las Mujeres Adolfo Carit or The Women’s Hospital and Hospital Dr. Calderon Guardia during a three week study abroad course on Transcultural Nursing and Global Health. With the help of trustworthy translators provided by the Universidad De Iberoamerica (UNIBE), data was collected and later analyzed by interviews with staff members and patients of both hospitals, which are located in San Jose, Costa Rica. The witnessed immediate relationship between a mother and her newborn was amazing and warranted further research. Findings from San Jose were expanded and compared from the time spent abroad to literature and evidenced-based practice on bonding here in the United States. Costa Ricans have a higher regard for the bonding period than Americans do, which allows time for the mother and her newborn to form an emotional relationship.

The purpose of this project is to explore the mutual relationship between childbirth and bonding. Bonding is a close attraction between the mother and her infant, which includes breastfeeding and skin-to-skin contact. Births in Costa Rica (CR) are mostly vaginal births as opposed to a much lower percentage in the United States (US). During the visit to Hospital Dr. Calderon Guardia, the Nursing Administrator, Yorleny Rojas Sandi, stated that 80-90% of births were vaginal as opposed to 32.8 % cesarean section deliveries in the United States (CDC, 2011). This gives Costa Rican mothers a greater opportunity to bond with their infants earlier. As soon as a Costa Rican mother gives birth to her newborn, he/she is transported directly to the mother's breast where he/she feeds and bonds to the mother right away. This is beneficial to the health of both the mother and the infant. There are no nurseries in CR; the infant stays with the mother the entire postpartum admission unless there is a complication at birth. The babies are cared for by their mothers in their beds. In the United States, breastfeeding is not as socially and/or publically acceptable therefore one does not see much of it. In Costa Rica, there is a 95% rate of breastfeeding.

P O S T E R  # 1 2  
American West Nile vs. Costa Rican Dengue  
Gabrielle Ambrosio (The Verrazano Honors School), Elena Haber (The Verrazano Honors School)  
Faculty Mentor: Professor Regina Lama  
Department of Nursing  
Mosquito-born viral infections have been an increasing nuisance to certain parts of the world. As the West Nile Virus has been an issue in America, a similar outbreak is occurring in Costa Rica, a virus known as Dengue. These mosquito-borne diseases in fact come from the same virus genus and family: genus Flavivirus and the family Flaviviridae. Although both West Nile and Dengue can cause major health problems, only 1% found in each case will develop serious, fatal complications. Education prevention for both West Nile and Dengue is essential in order to keep the inhabitants of America and Costa Rica well informed and healthy. This is especially true because of the lack of testing to confirm either disease as well as medical treatment available. Health care teaching and disease prevention for both are done very differently. In America, a lot of disease teaching and prevention is done through the media; however, in Costa Rica this is not the case. Health care providers, in Costa Rica, teach and inform the “infected” neighborhood, only a 200- meter radius, about the outbreak of the illness.

The focus of this research is on the cultural differences between the American and Costa Rican teaching and prevention plan. It is also focusing on the prevalence of these diseases, differences in signs and symptoms, and the morbidity and mortality rates when left untreated.
**POSTER #160**

**Cancer Pain Management at the National Children's Hospital of Costa Rica**

Grace Ireri

Faculty Mentor: Professor Regina Lama

Department of Nursing

This poster discusses pediatric cancer pain management at the National Children's Hospital of Costa Rica. Data from an original study carried out by the pediatric palliative care and pain control clinic of the hospital from 2000 to 2008 will be provided. Pain is identified as the primary symptom why patients and family seek healthcare services at the clinic. The role of the World Health Organization in making palliative care and pain control more available in Costa Rica will be presented. Healthcare policy signed into law by the Costa Rican government to support and implement palliative care and pain control will be discussed. Costa Rica is a member of the international outreach program provided at St. Jude research center to improve cancer patient care outcomes. The interdisciplinary role of the nurse as clinician, diagnostician and advocate in pain management will be discussed. Specialty specific education received by the oncology nurse in Costa Rica will be presented.

**POSTER #131**

**Reduce Waste and Control Costs with Reusable Personal Protective Equipment**

Jessica Berlan

Faculty Mentor: Professor Regina Lama

Department of Nursing

The purpose of this project is to explore appropriate infection control measures using reusable medical equipment. The United States (U.S.) produces billions of tons of medical waste each year with disposable medical equipment. Less wealthy countries like Costa Rica (CR) rely more commonly on reusable medical supplies as a means of cost control. In CR, personal protective equipment (PPE) such as gowns, surgical clothing, and booties are made of durable cotton cloth that can be cleaned and reused instead of disposable material. This paper will assess whether or not reusable PPE is sufficient to reduce the spread of disease. Both the U.S. and the CR abide by the same protocols prescribed by the U.S. Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) for PPE in regards to contact, droplet, and airborne precautions. Each country has its own variation of the equipment. Because PPE do not penetrate the skin, reusable equipment should be safe to use, wash, and reuse. This paper will provide alternatives to reduce waste and control costs which are important for nurse managers to monitor. The populations studied in this paper are public hospitals in CR and teaching hospitals in the U.S. The data was collected by touring and interviewing hospitals in San Jose, CR as well as Staten Island, U.S. as part of a Cultural Immersion in Global Health study abroad course in partnership with Universidad de Iberoamerica (UNIBE) of CR.
**Medication Adherence Program for Psychiatric Patients**

Laren Encarnacion  
Faculty Mentor: Professor Marie Giordano  
Department of Nursing

Medication non-adherence is a major contributor to psychiatric re-hospitalization. Close to 75% of hospitalized psychiatric patients fail to take their prescribed medications after they are discharged. This often results in relapse and readmissions. In addition to the patient concerns, healthcare costs increase an average of threefold for patients with prior relapse.

A patient centered education program was developed to address this problem.

This program is designed to educate patients while hospitalized, with the goal of medication adherence to thereby decrease the prevalence of psychiatric readmissions. The program is supported by evidence from the literature and will be measured by JCAHO standards. The quality management program would monitor outcomes toward achieving the goal of medication compliance during hospitalization. A pre & post test tool was designed to measure cognitive understanding of medication administration. In addition, demonstration of self medication accuracy will be observed. Monitoring readmission will also contribute to outcomes measurement and success of the program.

Some theoretical frameworks regarding leadership and management facilitate compliance in the healthcare community regarding their role in program success. These include change, motivation, and time management theories. A comprehensive formula of JCAHO standards, nursing literature, and theoretical frameworks will help dissipate the prevalence of psychiatric re-admissions and optimize quality patient care.

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**The Costa Rican Nurse: What is Unique About the Nurses' Role in the Labor and Delivery Process?**

Nicollette Oricchio (The Verrazano Honors School)  
Faculty Mentor: Professor Regina Lama  
Department of Nursing

Humans have been created and brought into the world since the beginning of time and millions of babies are born every day. Today, Nurses play a large role in the birthing process. Nurses care for patients before, during, and after pregnancy. In the United States, Registered Nurses assist the physician or Certified Nurse Midwife during delivery by caring for the mother’s needs and safety, as well as the child after he or she is born.

Certified Nurse Midwives, on the other hand, have the opportunity to be even more involved in the delivery process. Certified Nurse Midwives are further educated to deliver babies themselves. Citizens of the U.S. are accustomed to the roles of Certified Nurse Midwives and Labor and Delivery Nurses, but not all Nurses across the world take part in these roles the same way when welcoming new humans into the world. Costa Rica, a small third world country in Central America, educates their nurses much differently than the U.S.. Labor and delivery Nurses do not exist in Costa Rican, and Midwives are not taken very seriously. The role of what they call the Obstetric Nurse in Costa Rica encompasses the responsibilities of both the Labor and Delivery Nurse and Certified Nurse Midwife in the U.S.. In Costa Rica, the laboring and delivery, as well as child care after delivery, is structured in such a way that makes it possible for the Obstetric nurse to accomplish the tasks of a Labor and Delivery nurse and a Certified Nurse Midwife. The roles nurses take on are forever changing. Becoming familiar with the role of the Obstetric Nurse can help influence what the future roles of both Labor and Delivery Nurses and Certified Nurse Midwives may become.
DEPARTMENT OF PERFORMING AND CREATIVE ARTS
CONFERENCE LOCATION: BOTTOM BACK

POSTER #23

Silver Water: A Musical Depiction of the Liquecent, Ever-Changing Mirror of Self-Examination

Bryan Paul Nebel
Faculty Mentor: Professor William Bauer
Department of Performing and Creative Arts

If there is a goal, a reason, a meaning behind human life, it dwells in the act of striving toward greater self-awareness, for this quest provides the means to achieve truer self-expression. My work here attempts to depict the experiences of one individual on such a path. The music illustrates various mind states that he encounters during his journey. For example, at points, a given performer will be asked to improvise; thus, the musician must personally seek out the notes that are most meaningful to him—in the moment—just as the protagonist searches for his most meaningful actions in life. The title, Silver Water, calls to mind the element mercury. This metallic, reflective substance can be likened to a mirror—a liquid mirror.

Unlike an ordinary looking glass, however, mercury does not present a fixed image; it casts an ever-changing representation of its subject. This symbolism could signify the ongoing process of self-exploration, which inevitably leads to wrong turns, dead ends, confusion, realizations that long-accepted truths were simply delusions. But, it also leads to the great joy that comes with seeing a deeper connection to everything.

Silver Water intends to stimulate motivation when one is exhausted from carrying out daily responsibilities or grows lackadaisical during periods of habitual, unmindful activity. At the same time, it serves as an ally, offering comfort during a journey that is, at times, terrifying. The piece is a musical and lyrical rendering of one man’s struggle to become more aware, more complete—more human.

POSTER #15

Live Processing for “MacKenzie Falls”

Joseph Bushman (Verrazano Honors School), Charlie Connelly, John Conte, Grove Rune, Jeanmarie Lewandowski
Faculty Mentor: Professor Izzi Ramkissoon
Department of Music

I will be investigating how modern technologies, especially the Internet, have changed and threatened the structures of the television and advertising industries. I will be specifically focusing on how the use of streaming services, like Netflix and Hulu, DVRs (digital video recorders), and other interactive media have drastically undermined the television and advertising industries and forced them to rethink their current strategies and change them according to the ever-increasing digital age. I will also be highlighting audiences of some popular digitally engaged programs to showcase exactly how television and advertising professionals have begun to integrate digital technologies into their existing business models. Some case studies that I will examine include the use of live Internet-feed viewing with CBS reality show Big Brother, the use of text messaging to make audiences feel like a part of ABC Family teen-drama Pretty Little Liars, and how the use of streaming services and DVRs have exponentially increased audience figures for CW series The Vampire Diaries and The Originals.
FDNY
Luke Crisali
Faculty Mentor: Professor Chris Verene
Department of Performing and Creative Arts

I began photographing in 1993. I started photographing the Fire Department of New York when I stopped by Ladder Co. 8 in Manhattan, also famously known as The Ghostbusters Firehouse, in the spring in 1999. In kindergarten, 1988, to be specific, I went on a class trip to the firehouse of Engine Company 159 up the street from the school. As the trip ended, they received a call, and as they jumped on the truck and tore out of the house, I became immediately enthralled. I knew I wanted to become a firefighter. However, I have gained far more in regards to both life and photographic experience. As for gaining access, it depends on how well I know the firefighters at the particular house I’m photographing.

Not everyone, nor every photographer, gets the access I get. I’ve built up a name and reputation for myself that helps me. Thanks in part to word of mouth from other firefighters, trust and friendship is built. One example of this is when a firefighter called me for a photoshoot after getting my information from a few of his friends in other firehouses. I try, and more often than not, succeed in effortlessly flowing in both emergency situations and non-emergency situations and, that is to say, I do not get in the way. I always anticipate where someone may step, where something could fall, or where a tool might end up.

I wish to show the spark of human compassion. I think there is too much horror documented in this world already. I want to showcase the positive aspect of the fire rescuers’ place in the universe.

Reconstructing Reality
Nicholas Easton, Adriane Musacchio
(The Verrazano Honors School)
Faculty Mentor: Professor Maurya Wickstrom
Department of Performing and Creative Arts

If you went back in time and had to reconstruct the world what would that look like? How would you reconstruct reality? We created our performance piece Reconstructing Reality: Playing (with) the Game of Life, in an attempt to explore these ideas. The show was performed and directed by Nicholas Easton & Adriane Musacchio in December 2013. We wrote the script, directed, performed in, and designed the show.

Our project was greatly inspired by The Game of Life. The Game of Life, played by so many of us in our childhoods, guides us into a life long conformity. From childhood, we are taught to stay in “little boxes” on our life path; taught to never stray from the path for fear of consequences. The game promotes material wealth, power, success, and heterosexual nuclear families, but lacks any passion or desire. It draws from what society deems acceptable, the institutions that have been created throughout history to keep individuals within a certain mold. People are told they must conform to the rules, for fear of possible repercussions.

To defy society’s preconceived notion of what individuals should be defined as, Anti-Conformists attempt to completely disobey all order in the world.

They try to be different and rebel against conforming societies.

Now, what if there was something new? Can you imagine something completely new and different than anything else you’ve ever experienced? A Non-Conformist. This is an individual not of this world; a person who does not know the man-made institutions, such as, marriage, education, law, family, career, and gender, but instead knows only pure feelings and life goals. These institutions have all been constructed in a pre-existing society. For a non-conformist lifestyle, all of these things would somehow have to be started over. The whole world would have to be re-created to rid of conformity. The Non-Conformist doesn’t exist. Only in our minds can we explore this life form. So how do we find the Non-Conformist?
DEPARTMENT OF POLITICAL SCIENCE AND GLOBAL AFFAIRS
CONFERENCE LOCATION: BOTTOM FRONT

POSTER #39
Racial Discrimination in Latin America

Danny Vasquez
Faculty Mentor: Professor Jane Marcus-Delgado
Department: of Political Science and Global Affairs

Not only does African descent exist in the United States, but also in Latin America. Countries like Brazil, Colombia, Ecuador, Peru, and Venezuela. But now, the biggest question is do they suffer from prejudice, discrimination, racism, or live in poverty due to their skin color just like when African slaves were brought to the United States and how many of Afro-Latinos have been successful. A main focus would be mostly in Latin America, these locations were the main source known for slavery. My hypothesis will be focusing on:

• Will there ever be equality for Afro-Latinos in Latin America.
• There is always Afro-Latino that will migrate from one location to another.
• Why certain Afro-Latinos do not identify themselves as having African descendents.
• Give examples of territory and locations of Afro-Latinos in these Countries in South America.
• And can they have success or achieve their goal in life.
• History on racial discrimination.
• Give example on how is their living.
• What are Latin American governments doing about this issue.

POSTER #31
The Political Development of Latin American Military Leaders: The Comparative Cases of Chavez and Pinochet

Elio Chedrawi
Faculty Mentor: Professor Jane Marcus-Delgado
Department: of Political Science and Global Affairs

Why did two Latin American presidents who emerged from the military take such different ideological paths? This study examines the military institutions in Venezuela and Chile during the years of two presidents’ training, to determine how and why each developed such a distinct political trajectory.

Variables to examine include the following: first, the historical background of each institution and its relationship to national politics; second, the effect of ethnicity and social class on political development; and, third, the impact of external factors (such as the Cold War) on each leader’s political formation. The research also analyzes the challenges to democratization and the history of military intervention in each country, to understand the legitimacy and popularity of each autocratic president.

My hypothesis is that political orientation is determined by both the institutional framework of the military, as well as the cultural context present in the formation of political leadership. The project’s methodology will rely on historical documentation of military institutions, biographical data on Presidents Chavez and Pinochet, and socio-economic profiles of military and political leaders of their times.
Research Poster Presentations

**POSTER # 45**

**Economic Effects of Deforestation in the Amazon Basin**

Elizabeth Aguirre

Faculty Mentor: Professor Jane Marcus-Delgado

Department: of Political Science and Global Affairs

The global concern with deforestation of the Brazilian Amazon is not only due to the permanent loss of its natural wealth, but also by the perception that it is a destructive process in which the social and economic gains are less than the environmental losses. Deforestation includes loss of biodiversity, absorption of carbon emissions, water cycle, soil erosion and life quality. This perception also influences the diagnosis, formulation and evaluation of public policies projected by the government and non-governmental organization (NGO) working in the region. One of the main influences of deforestation in the Brazilian Amazon is caused by medium and large scale cattle ranching. The present work suggests the motivations and identify the agents responsible for deforestation, the evaluation of the social and economic benefits from the process and the resulting implications of public policies for the region.

My theory will come from the methods used from scholarly articles and journals published. In conclusion I will attempt to change the perception that deforestation has a significant positive effect on the economy of Brazil.

**POSTER # 32**

**Ongoing Political Corruption in Latin America**

Fahmi Rashid

Faculty Mentor: Professor Jane Marcus-Delgado

Department: of Political Science and Global Affairs

The topic I will be researching on is the ongoing corruption issues in Latin America from different countries such as Argentina, Colombia, Venezuela, and Mexico. I will discuss the impact of corruption it has had on the people in those countries. My research will go through who has benefitted the most from the corruption from political leaders to the officers who “protect” the people of their country. My research for this will go through 30 years of leaders in Latin America and see how they benefited themselves and not help the people of their country.

My hypothesis for this research is to find out if corruption in Latin America helped some countries with distributing wealth to their people. My research on this hypothesis will go through the economic statistics and see if some Latin Americans such as Colombians have benefitted from corruption and saw an increase in economic growth in those countries. I will compare statistics from when leaders first came into power and what they did in their first few years and then compare that to their later years.
**POSTER # 62**

**How Latin American Military’s Affect the War on Drugs**

Felix Romero

Faculty Mentor: Professor Jane Marcus-Delgado

Department: of Political Science and Global Affairs

The purpose of this research is to look at drugs in Latin America and how the military is involved, because if the military is trying to help drugs shouldn’t be this big of a problem. The military in Latin American countries may play a role in the distribution, transportation, and may provide protection for the drugs and drug money to be moved. The military in Latin American countries is known to have been corrupt in the past, so having a part in the drug trade would not be a surprise. The research will be done using databases and other scholarly sources that provide information on the affect the military has on the war on drugs.

**POSTER # 66**

**Neoliberalism in Venezuela: Before, During, After Hugo Chavez**

Joseph Catapano

Faculty Mentor: Professor Jane Marcus-Delgado

Department: of Political Science and Global Affairs

How has neoliberal reform of Latin America affect Venezuela’s politics pre and during the presidency of Hugo Chavez? The politics of Venezuela were greatly influenced by neoliberalism but Hugo Chavez broke away from these policies unlike other countries in Latin America who continue to be under the neoliberal reform in a globalized world economy. My hypothesis is that Venezuela’s politics have been turbulent throughout its history from its independence to eventually falling into the hands of neoliberalism and debt but Chavez’s leftist ideas neglecting neoliberalism provided a greater economic output then before. This essay will research the pros and cons the impact of neoliberal policies placed on Venezuela from demographics to different scholarly sources. I can conclude that reform shaped the outcome of Venezuelan politics and economy today as a major point of Chavez presidency was the nationalization of oil which has decreased the poverty level in the country and led to greater wealth.
Economic Effects of Gang Violence in Latin America
Justin Castro
Faculty Mentor: Professor Jane Marcus-Delgado
Department: of Political Science and Global Affairs
Gang violence is a common problem in developing nations worldwide. This research examines the problem of gang violence in Latin America and its effects to the economy. In Latin America, gang violence has been a chronic feature for a long time, and youth gangs are the new phase of gang violence in this region. Violence and crime in this region have reached levels that can be termed as “epidemic.” The causes of gang violence are varied and are as a result of many factors, these ranges from social, cultural, biological and political. Many of the 33 countries in Latin America exhibit the highest levels of insecurity worldwide, key among them being Guatemala, Honduras, Venezuela and El Salvador. Political violence, homicides, civil wars and domestic violence are common in Latin America. Gang violence has a negative effect on the economic growth potential and development of this region. It strains government resources, discourages investment and deterioration of norms and morals in the society, leading to an unproductive population. In addition, gang violence results in other intangible costs to the economy which are difficult to measure, especially in relation to the costs associated with the persons murdered or injured. Gang violence does not only affect the economies of this region but its effects can be felt by other countries outside this region. Considering the negative effects of gang violence, there is the need to explore a variety of strategies to address the problem. Because there are many causes of this violence, the solutions are varied. These solutions can be directed towards controlling violence and prevention. Through the CSI archives and extensive research on the computer I will show how gang violence affects the economy in many negative ways. It will also show what is being done to lower the violence. If nothing is done gang violence will continue to grow.

The Effects of Gang Violence in Central America: The Good, The Bad, and The Not-So Useless
Kristine Munoz
Faculty Mentor: Professor Jane Marcus-Delgado
Department: of Political Science and Global Affairs
For many decades, Latin America like most countries has unfortunately been a violence-prone continent. Likewise, it has been known to contain the highest homicide rates due to various illegal and dangerous coup acts. These acts for example, include the notorious guerilla movements, along with civil wars, bloody revolutions, domestic and youth violence and years of brutal dictatorship. has left these countries in a constant struggle for decades.

This research paper aims to examine the groups in three specific countries which are Guatemala, Honduras and El Salvador also known as the Northern Triangle of Central America. These countries have the highest growing multifaceted transshipment corridor for transnational organized crime, also called TOC groups which are most common in Mexico, which has brought a new and dangerous alignment in the regions power structure through drug trafficking. Through graphs and researched facts, this study will prove that these countries have had the most impact on rest of the world through drug-trafficking and other exploits. This paper will also highlight its recent positive and negative effects on the United States.
**Poster #159**

**The Influence of Latin American Presidents on the War on Drugs**

Lorraine Figueroa

Faculty Mentor: Professor Jane Marcus-Delgado

Department of Political Science and Global Affairs

This paper is to inform the reader about the war on drugs in Latin America. More importantly this paper will focus on what roles the Latin American presidents play in this war on drugs. Every year the American presidents gather for the Summit of the Americas, The Summits of the Americas are a continuing series of summits bringing together the leaders of the Americas including North America, Central America, the Caribbean and South America, except Cuba. The function of these summits is to foster discussion of a variety of issues affecting the western hemisphere. The central theme of the summit was “Connecting the Americas: Partners for Prosperity.” The main issues at the summit’s agenda were the exclusion of Cuba, the legalization of drugs to fight the War on Drugs and Argentina’s sovereignty claims over the Falklands Islands. Additionally, criticism of an expansionist monetary policy was also leveled on the developed economies. A final statement was not forthcoming over the issue of Cuba’s inclusion in the next summit which was supported by all states except the United States and Canada, who refuse the southern support. I believe that the Latin American Presidents have the best of intentions when it comes to fighting the war on drugs. In Conclusion I will go further into depth in this paper as to exactly what actions these Presidents take to prevent drugs from illegally entering their country.

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**Poster #63**

**The Greatest Challenges to the Peace Process in Colombia**

Michelle Hernandez

Faculty Mentor: Professor Jane Marcus-Delgado

Department of Political Science and Global Affairs

This research paper will identify why peace in Colombia seems to be a failure. The little that people know about peace in Colombia leads to an overgeneralization of everything that goes on. Drugs often time being the only factor having to do with the violence that exists. This paper will allow a full understanding to the rise in terror in Colombia. This paper will also explain the civil war in Colombia. This paper will examine the role of the government and how it comes to play with the peace process. This paper will help to understand how violence in Colombia has evolved and what is being done to stop it. This paper will bring human rights into account; it will identify why there is a toll on the lives of the people of Colombia. All in all this research paper will examine the greatest challenges to the peace process in Colombia. This paper hopes to make aware that drugs are not the only factor that adds onto the rise of terror in Colombia. The conclusion this paper will draw is that there are other factors that exist, which are not brought into account.
**POSTER # 38**

**Reshaping Education in Latin America Through Innovation**

Monica Sibri  
Faculty Mentor: Professor Jane Marcus-Delgado  
Department: of Political Science and Global Affairs  

In response to the Brookings Institution’s Center for Universal Education’s “Reshaping Education in Latin America through Innovation” intellectual conference, this paper will not disagree in how the changes in the economy and technological advancements of Latin America have called for an education innovation in the Education System. My research project will seek to find a model to implement an education innovation by improving stakeholders’ engagement in the process of developing a more effective system.

Furthermore, this paper will consider the stands of the governments in improving their education systems and comprehending the importance of their role when enabling an education system to be effective for their respective countries and for the global economy prosperity.

**POSTER # 50**

**Democratization and Development: How Does Democracy Emerge and Maintain in Latin America?**

Nicole Francis  
Faculty Mentor: Professor Jane Marcus-Delgado  
Department: of Political Science and Global Affairs  

When examining the different conditions that one country has to maintain in order to transition into a democracy, the factors vary. Haggard and Kaufman argue that through development democracy arises within some countries. This theory is called the modernization theory. This theory asserts that once a country goes through a process of industrialization, mobilization, communication, education and political incorporation then through this sequence that democratization is then birthed. Przeworski highlights the role that international pressure and actors play in the withdrawal of authoritarian regimes. Each admits that a general theory as to how democracy arises is non existent and that countries journey to democracy can be caused by different reasons. However they each argue that most democratic regimes arise due to economic development- (the Lipset Observation). I will argue as to why I hypothesize that economic development is essential to democratization but also reinforce why political and social development is equally as important for the emergence and maintenance of democracy. My methodology will be the use of scholarly articles, journals, case studies and published readings by political scientist.

The conclusion will be that although economic development is a great factor in the withdrawal of authoritarian regimes, there are strong evidence that imply that other conditions have to exist in order for democracy to emerge and to be sustained.
POSTER # 136

How Has Haiti's Economic System Developed since the 2010 Earthquake?

Sarrah-Jeen Delly
Faculty Mentor: Professor Jane Marcus-Delgado
Department: of Political Science and Global Affairs

Haiti has been defined as the poorest country in the Americas. However it is not the poorest country in the Western Hemisphere. Since the earthquake Haiti’s economy has slowly recovered. More than one hundred thousand buildings began to repair. Haiti’s economic freedom’s score is 48.9. Its overall score has increased. It has been driven by improvements in the six of the ten economic freedoms including investment freedom, monetary freedom, and financial freedom. Most financial transactions are handled informally and credited for new business ventures severely constrained. Since coming into office May 2011, Michel Martelly’s government has backed him by making it easier for foreigners to own property and by setting as a goal that Haiti climb into the top fifty countries in the World’s Bank. It now comes as 174th out of 185th. In the twelve months to the end of September the economy expanded by a modest 2.5 percent.

Haiti needs investment to generate social stability and economic growth.

Several hotels for business have opened. Direct budget support for the government totaled less in 2011 and 2012. Since then rebuilding hospitals have stopped.

Michel Martelly relies on Petrocaribe, an aid scheme set up by Venezuela’s Hugo Chavez, which supplies Haiti with oil. Reselling the oil helps the government get up to four hundred million a year. Martelly plans to use this to rebuild a corridor of government offices in Port-au-Prince and pay for many programs. Today, Haiti is still struggling but continuing to grow and strive economically and politically.

In my research I will prove that Haiti’s economic system has improved.

Haiti has gotten the aid they were promised since the 2010 earthquake. The economy as a whole is doing better. I will prove it. Haiti’s economy is doing better by the aid of other countries. President Michel Martelly is working hard to help his country get over this economic turmoil.

POSTER # 52

Purge, Arrest, Investigation Highlight Corruption in Dominican Republic

Thaycha Cabreja
Faculty Mentor: Professor Jane Marcus-Delgado
Department: of Political Science and Global Affairs

The history of corruption and poor rule of law in the Dominican Republic is long many even refer to a “culture of corruption” that characterizes the country’s political system. While corruption may, on its own, not seem exceptional, the moment corrupt practices coupled with impunity permeate and begin eroding a country’s democratic foundations, all of that changes.

What can Dominican policymakers do to get the country back on track? And how are they making changes to combat the corruption in the Country. My research will explain how the corruption started and how it became a big issue. Then explain how the government is taking action against the corruption.
Declining Income Inequality in Latin America

Veronica Chan
Faculty Mentor: Professor Jane Marcus-Delgado
Department: of Political Science and Global Affairs

In large part because of its colonial legacy, Latin America has long been one of the most unequal regions in the world in terms of wealth distribution. However, during the past decade, it has experienced a decline in inequality due to several factors, and this study hypothesizes that the most salient one is that the region accomplished strong economic growth, thus rising employment levels, as well as incomes. Other factors include the implementation of social programs that aid the poor and the expansion of labor market participation, particularly for women and the young. My research paper will focus on three case studies: Brazil, Mexico, and Argentina that will serve to highlight how significant these strides have been in reducing the wide gap in wealth distribution that used to be the norm. The methodology will involve statistics on income inequality from the Inter-American Development Bank, the International Monetary Fund, the World Bank, as well as central banks and demographic data from specific countries.

The conclusion explores whether or not there is a correlation between a country’s overall economic growth and a decline in income inequality.

How Mothers Instruct Their Children During a Challenging Motor Coordination Task

Ahmed Nasr
Faculty Mentor: Professor Lana Karasik
Department of Psychology

The goal of this study is to understand the natural ways mothers offer help and support to their children while completing a challenging task—opening containers. Containers are common in almost all cultures and households, they carry and store a multitude of items, including children’s products.

Children will need to open containers when they are in school or at other instances when their parents aren’t around, to access their food items, school supplies and other belongings. Mothers reported their children’s (12-30 months of age) experiences and abilities in opening and handling various containers in the previous week, prior to the start of the experiment. The content of the mother’s speech, gestures, and hands on support was examined as their children opened both, overcap and screw-on containers, of various sizes in the lab. Differences in maternal instruction were examined as a function of children’s age, ability, and task demands.

Mothers of younger children, or children with little experience in opening containers, were more involved in the methods of support and scaffolding, compared to the mothers of older children. Mothers of older children used more general terms as in “open the container”, “take the goldfish out”, and general encouragement like “good job”. There were few instances of hands on support with older children. As for the younger children mothers were more detailed oriented; focusing on aspects of the containers, how the child’s hand must be placed and the motion they must make to successfully open the container and retrieve the contents inside.

This study will inform on the kind of social information is available to children learning the challenges of everyday life.
Residence Hall Life at the College of Staten Island
Amanda Gioia
Faculty Mentor: Professor Darryl Hill
Department of Psychology

There is some literature on what student life is like while living in a campus dormitory, but little systematic research. Previous and modern day discourse indicates that dorm life is certainly evolving and becoming more widespread to enrich the college experience for students. Proof of this is the College of Staten Island's very own recently developed residence halls. Being that dorm life here on campus is still in its infancy, there is very little substantive research that provides an understanding to student life. Based on previous theory, I hypothesized that the primary issues facing students in CSI dorms are academic achievement, college engagement, adjustment to college, social and family life, and health. Ten students were interviewed about their lives in the CSI Residence Halls, and their interviews were analyzed for common themes. The interviews suggest that students enjoy the convenience of living on campus, while facing the challenge of leaving families and friends back home, balancing work and school, figuring out how to live with roommates, navigating the “rules,” and trying to stave off boredom.

The Effect of Rhyme on Mortality Salience
Amber Adelstein
Faculty Mentor: Professor Florette Cohen
Department of Psychology

The use of rhymes has been seen throughout our everyday lives, from an early childhood to an adult stage we have come across items that have rhymed. However, is it detrimental to know the purpose of rhymes, and if rhyming stimuli can actually affect our levels of perception and processing. To go into further depth with this and explore it, a mortality salience manipulation as part of the Terror Management Theory was made in our Effect of Rhyme on Mortality Salience experiment to further look into how processing rhyming stimuli versus non rhyming stimuli after being made aware of one’s one death can change one’s perception. When one perceives a stimulus that rhymes over a non-rhyming stimuli, the rhyming can be perceived to have somewhat of a facilitation effect on us as it is clear and comforting. Our experiment explores the hypothesis that being given non rhyming stimuli will heighten anxiety of death related thoughts while rhyming stimuli will lower the anxiety. The mortality salience manipulation to make participants aware of their own death was given in the form of two questions asking what thoughts the participants’ own death arouses in them. There were two conditions given, the mortality salience condition and a pain condition which served as a control condition that asked the same two questions. The stimuli were given in the form of aphorisms, statements concerning everyday life, given in the context of two conditions, rhyming aphorisms versus non rhyming aphorisms. Afterwards, DTA was administered to test the participants death related thoughts through having the participant fill in a variety of words mixed with death related words. Our results yielded insignificant for all four conditions of rhyme versus no rhyme and death versus pain, concluding that the effect of rhyme did not facilitate anxiety or perception of death related thoughts after becoming aware of one’s death.
Harnessing the Subconscious Perspective on Atheism
Anthony Liguori (Macaulay Honors College)
Faculty Mentor: Professor Florette Cohen
Department of Psychology

The current experiment investigates the psychological underpinnings of prejudice against atheists. It was hypothesized that if this form of prejudice is mitigated by existential concerns, then thinking about atheism should be tantamount to thinking about death. To achieve this task, experimental manipulation was done to test if thoughts of atheism yielded significantly similar results compared to the anxiety buffer triggered by thoughts of mortality. Using death-thought accessibility as the dependent variable, the results were as predicted. The atheist group participants (M= .89) scored significantly similar to death group participants (M= .87) at the p = .001 level. To further bolster this data, the atheist and death group conditions scored significantly different than the control group in death-thought accessibility at the p = .001 level. This quantitative data supports the notion that theists are psychologically threatened by atheism, and that thinking of atheism is similar to thinking of one’s death.

Don’t Let Your Nerves Get the Best of You
Ashley Albanese (The Verrazano Honors School), Michael Picone (The Verrazano Honors School)
Faculty Mentor: Professor Kristen Gillespie-Lynch
Department of Psychology

For some people, going on a job interview can be an extremely stressful time. Many of us struggle in exhibiting proper interview skills and this could potentially be detrimental to our employment opportunities. All kinds of people will eventually test out their job interview abilities at one time or another. One group of particular interest is people with disabilities. In previous studies of people with disabilities, researchers have examined the verbal qualities about the interview and about how the subjects were responding to the questions that were asked, rather than the physical behaviors that were occurring during the interview. These physical behaviors could potentially make or break an opportunity for employment. In this experiment, twenty-three college students with various developmental disabilities, and twenty-three students without developmental disabilities participated in a mock job interview. We are in the process of coding if the student initiated, responded, or ignored a greeting and salutation. We also will code for physical behaviors including: eye contact, slouching, crossing arms, jitters, and gestures. We will look for these behaviors in a time sample of fifteen seconds. Our hypothesis is that the students with disabilities will exhibit more jitters, slouching, crossing of the arms behaviors. Also, we expect that these students will have less eye contact.

We expect that they will ignore or respond to greetings and salutations rather than initiate them. If this is proven true, people with disabilities may have difficulty finding employment due to the presence of inappropriate physical behaviors during the job interview.
POSTER # 25

Does Culture Influence Whether You Would like Trans Tom and Tina?

Briann Singh
Faculty Mentor: Professor Darryl Hill
Department of Psychology

This is a study about prejudice against trans people (transsexual, transgender, crossdresser). Previous research has found a link between culture, ethnicity, or race, and prejudice against trans people (transphobia; Winter, Webster, & Cheung, 2008). Specifically, people from Hong Kong rated trans people more negatively. Thus, I hypothesized that trans people would be rated more negatively by people who identify their ethnicity as non-Western (i.e., Arabic, Indian, and Asian Pacific Islanders). Seven hundred sixty-five students rated one of several characters (Trans Tom, Trans Tina, cisgender Tom, cisgender Tina) along several dimensions. Each of the stories and pictures were identical except their gender. The most negative ratings were indeed from non-Western cultures. This study demonstrates how ethnic traditions might influence anti-trans prejudice.

POSTER # 79

Mobile Retreat: Study on Social Interaction, Individual Behavior and the Use of Technology

Cassandra Emery, Stephen Fish
Faculty Mentor: Professor Katie Cumiskey
Department of Psychology

According to Bonnington (2011), the percentage of the entire world that has smartphone accessibility is almost 30% and rising. Advancements in mobile technology have been incredible and they have helped people around the world in immeasurable ways. Srivastava (2005) explains that the phone is no longer considered a mere technical device, but it is becoming a key social object in every aspect of our lives. This phenomenon introduces the investigation into the question of how this technology affects humans psychologically. The purpose of this study was to discover how a medium that was designed to simplify our lives can actually add to our stress. This study investigated the unique aspects of mobile communication technology as compared to other kinds of technology. This was assessed both quantitatively and qualitatively. Data from a series of questionnaires measured not only people’s attitudes toward the use of technology, but also the ways in which just thinking about the use of technology impacts mood. In the qualitative study, researchers voluntarily participated in a mobile “retreat”, where they “unplugged” from their devices. Descriptions of their experiences are included in the findings. Based on both sources of data, it was found that people do assess the presence or absence of mobile technology differently than other kinds of technology and that just calling to mind our mobile devices can decrease our sense of happiness, our ability to tolerate frustration and to deal with discomfort. Time away from our devices may improve some mental as well as physical health outcomes.
Encoding Methods Applied to the Autism Spectrum
Christopher Maniscalco (Macaulay Honors College)
Faculty Mentor: Professor Kristen Gillespie-Lynch
Department: of Psychology

The levels-of-processing theory states memory depends on how information is encoded and depth of processing is determined by the nature of a task during encoding. By applying research on encoding, this study seeks to determine what effect, if any, encoding techniques have on students on the Autism Spectrum. Data were obtained once a week as over 30 participants were presented questions tracking the degree to which participants followed the encoding techniques presented in this study. Through qualitative coding and by tracking student's grades at the beginning and end of the semester, we are able to determine the impact of the strategies we presented. We expect a significant increase in student performance linked to trends in themes based on encoding strategies. By analyzing the effectiveness of the strategies proposed in this study, we hope to apply specific models to experimental structured studies in the future.

Keywords: Encoding, Spacing Effect, Autism Spectrum.

Expanding Knowledge of Autism Spectrum Disorders Across Different Majors
Claudia Olender (Macaulay Honors College)
Faculty Mentor: Professor Kristen Gillespie-Lynch
Department: of Psychology

The current study assessed variations in baseline knowledge and social stigma associated with autism spectrum disorder (ASD) among students in science related fields (STEM majors: biology, math, engineering, or computer science), students in majors training them to help others (Helping Professions: psychology, education and social work). Changes in knowledge about specific teaching strategies to help individuals with ASD following an online training about ASD were also examined. Participants (N=366) took an anonymous online training on SurveyMonkey. This online study was composed of a pre-test, a training about autism spectrum disorders, and a post-test. The results, from the analysis of the surveys, would confirm initial hypotheses:

ASD knowledge would be lower and stigma associated with ASD would be higher for STEM majors than for Helping Professions because the latters' major curriculum emphasizes the study and understanding of diversity; and, STEM majors will suggest organization is an effective way to teach people with autism whereas, Helping Professions will suggest that emotional responsiveness is more of an effective way to teach people with autism because the latters' major curriculum emphasizes emotional support. In contrast, the formers' major curriculum emphasizes clear, concise structure. Given expected differences in baseline knowledge of ASD, results would confirm that the training is more effective for increasing knowledge and decreasing stigma associated with ASD for STEM majors relative to Helping Professions.
Is There a Bilingual Advantage in Mathematical Graph Reading?
Daniella Plaksiy (Macaulay Honors College)
Faculty Mentor: Professor Irina Sekerina
Department of Psychology

The purpose of this experiment was to test the effects of the bilingual advantage hypothesis posed by Bialystok (2009) by replicating Kaminsky and Sloutsky (2013). Twenty-two participants were presented with twelve graphs in an eye-tracking experiment and had to answer 3 questions per graph for a total of 36 questions. There were four types of graphs – solid, novel, extraneous equal, and extraneous unequal. Reaction times and eye movements were recorded as the participants answered the questions. Results showed that contrary to the bilingual advantage hypothesis, monolinguals had faster reaction times than bilingual participants, which indicates an effect of the condition on reaction time. Eye-tracking data is still being processed. This shows that while bilinguals were not significantly faster in verbal portion of the task, where they are known to have an advantage compared to monolinguals, their advantage in the non-verbal portion of the task, which was graph-reading, boosted their performance and muted the effect of the verbal task.

The Effect of the Undesired Self on Anxiety and Depression Levels
Danielle Imbesi (Macaulay Honors College)
Faculty Mentor: Professor Florette Cohen
Department of Psychology

Anxiety disorders and depressive illnesses have become a prevalent issue in today’s society and do not have a single cause. One aspect that may contribute to the onset of anxiety and depression is an individual’s self-perception. The present study examined the Undesired Self and Terror Management Theory side-by-side by measuring the impact of negative thoughts about oneself on anxiety and depression levels. If the undesired self truly elicits effects similar to morality salience, then reported anxiety and depression levels should be comparable. Additionally, if low self-esteem contributes to anxiety and depression, then levels reported by participants in the self-at-worst condition should be higher than those reported by participants in the self-at-best condition. Participants consisted of 194 psychology students who voluntarily signed up to participate in the study via Sona Systems. Each participant was randomly assigned to one of four conditions: self-at-best salience, self-at-worst salience, exam salience, or mortality salience. Participants responded open-ended questions regarding one of the four conditions and proceeded to complete the Hospital Anxiety and Depression scale (HADS). The results of the present study found that participants experiencing self-at-worst salience reported the highest levels of anxiety and depression. The findings support that there is in fact no significant difference in anxiety and depression levels between participants reminded of their own death or aspects of their undesired self. Thoughts of self-at-worst produced significantly higher depression levels and a marginally significant difference in anxiety levels when compared to thoughts of self-at-best.
**Research Poster Presentations**

**POSTER # 42**

**Improving Confidence in College Students with Disabilities**

Diana France (The Verrazano Honors School)
Faculty Mentor: Professor Kristen Gillespie-Lynch
Department of Psychology

This study was conducted to test if a mentorship program could assist in the improvement of the self-confidence of disabled college students. The goal of the mentorship program is to increase awareness and tolerance of people with disabilities, as well as to properly prepare disabled students with the skills they need to succeed in the college environment and the workplace. Participants consisted of forty college students who were registered with the Center for Student Accessibility (CSA). Pre and posttest measures included focus groups and Rosenberg’s Self Esteem Scale. The mentorship program consisted of one-on-one academic and professional guidance, as well as group discussions that focused on the development of self-advocacy and public speaking skills in students with various disabilities. Individuals with disabilities who have achieved academic and personal success may show great confidence. Those with confidence are more likely to engage in public speaking, advocate for themselves, create public awareness, and inspire others. We hypothesized that learning about self-advocacy in a mentorship program may aid in building disabled students’ confidence levels and academic success. Future studies may reveal mentorships to be a major asset to all incoming freshmen, with or without disabilities. Implications may show a smoother adjustment to college resulting in an overall higher retention rate.

**POSTER # 57**

**Effects of Cooperative Learning: A Meta-Analysis**

Dina Shevchenko
Faculty Mentor: Professor Patricia Brooks
Department of Psychology

Cooperative learning is often viewed as beneficial for learning environments even when social loafing exists. We conducted a meta-analysis to examine possible benefits in both academic and social outcomes of cooperative learning groups’ compared to a different style of learning. The analysis for studies with academic outcomes (20 studies, 77 comparisons) showed a small effect for cooperative groups, $d = 0.41$, 95% CI $[0.22, 0.60]$, and for studies with social outcomes (12 studies, 62 comparisons) showed a moderate effect of cooperative groups $d = 0.69$, 95% CI $[0.36, 1.02]$. Using the possible moderators of age, country, type of control group, intervention method, and group size, effects were further examined. Findings showed that group size has a significant effect for cooperative learning in academic and social outcomes. Age was a significant moderator showing that adolescents (7th – 12th grade) benefit more from cooperative learning academically and children (1st – 6th grade) show the largest benefits in social groups. Results are further discussed with respect to other moderators and what an ideal cooperative learning experience could look like.
**POSTER # 91**

**Gender Differences in Computer-Mediated Communication**
Erica Golin (The Verrazano Honors School), Christine Shane-Simpson
Faculty Mentor: Professor Kristen Gillespie-Lynch
Department of Psychology

Social media plays a role in everyday life, especially considering that many of us cannot go a day without checking our Facebook newsfeeds or refreshing Twitter to see the latest tweets. Social media provides an outlet for many people to stay in touch with their friends and family and to share things with others, which ultimately increases life satisfaction and perceived social support (Manago et al., 2012). Are these benefits shared equally between the genders? This study investigates how social media use varies with gender. The current study specifically deals with Facebook, and we hypothesized that women would display online behaviors that were public and active, while men would display private and passive behaviors. We recruited 326 female and 165 male students to participate in our online survey about their Facebook use for research credit.

While we did not observe gender differences in preference for private-public communication or passive-active behaviors on Facebook, we found that women were using Facebook to seek information ($p = .02$) and maintain contact ($p = .006$) more than men, which is mostly consistent with the current literature (Haferkamp et al., 2012), although we observed no gender differences in use of the internet to initiate contact. Women also had more friends on Facebook than men ($p = .005$) in our sample. The implications for analyzing gender differences in social media usage are yet to be determined.

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**POSTER # 124**

**Mind Wandering and Eye Movements**
Han Lee
Faculty Mentor: Professor Irina Sekerina
Department of Psychology

This eye-tracking experiment extended and replicated Farley et al.’s (2013) study in which they investigated the influence of time on task on attention, fidgeting behavior (body movements), and memory within a lecture-viewing context. We predicted that as time passes in a 30-min lecture, (a) attention should decrease, (b) fidgeting should increase, (c) comprehension scores should decrease, and (d) fixations away from the lecturer (background) should show better cues of mind wandering than fixations to the lecturer (body and head). Participants watched a 30-min psychology lecture, split into 6 5-min blocks. After each block, they self-reported their attentional state and took an 18-question comprehension test. The behavioral results showed that as time passed in the lecture, comprehension scores decreased and fidgeting increased, but, contrary to (a), attention remained the same.

The eye movement results showed that as time passes, fidgeting behavior and eye movements were positively correlated, attention was negatively correlated, and there was no relationship to comprehension scores.
**Research Poster Presentations**

**POSTER # 1 2 2**

**The Effect of a Self-Advocacy Mentorship Program on Class Participation of Adult College Students with Autism Spectrum Disorder**

Joseph D. Rivera  
Faculty Mentor: Professor Kristen Gillespie-Lynch  
Department of Psychology  

The purpose of the study explained in this paper was to evaluate if participation in a self-advocacy mentorship program, which was carried out as a quasi-experiment, would affect the social participation of college students with autism spectrum disorder, or ASD. A self-report survey was used to measure student class participation. Naturalistic observations of group meetings, conducted during the mentorship program, were used to measure student participation during the meetings. My first hypothesis states that, based on the initiation deficits associated with ASD, I expect difficulties in participating in class to be more pronounced for students with ASD than other disabilities. My second hypothesis was that I anticipated that through participating in the mentorship program, students with a range of disabilities (including ASD) will increase their class participation. The data suggests that there was no difference in self-reported participation between students with ASD and those with a different disorder. The pre-test data revealed that anxiety was negatively related to talking to a classmate outside of class and to comfort with giving a class presentation. Furthermore, anxiety affected student participation during the group meetings. The data also suggests that perceived social support impacted class participation and interaction with a professor in class. The implications of the study include obtaining data about the participation patterns of students with ASD which can be utilized in the development of intervention practices aimed at improving their quality of life while attending college and aid them in succeeding academically.

**POSTER # 4 1**

**The Case of John/Joan and Dr. John Money**

Joseph Guarini  
Faculty Mentor: Professor Darryl Hill  
Department of Psychology  

Over the course of his career, John Money greatly influenced the field of sexology, but one case would profoundly impact his career and reputation forever: the case of John/Joan in which he advised the Reimer family to raise their son as a girl after a botched circumcision. Historical and archival research was used in this work to gather information on what would come to be known as the John/Joan case and Money’s involvement. Money believed a child’s gender identity could be altered as long as their upbringing in that gender was consistent. It was this theory that led the Reimer’s to raise their son, Bruce, as a daughter, renamed Brenda. Money claimed the case was a success, but after several consultations with the child, Brenda continued to identify herself with the male gender. Years later, psychologists Milton Diamond and Keith Sigmundson sought to reveal the truth behind the case. Accounts that they gathered from fellow psychologists, who had also worked with the child, as well as the Reimer family, showed evidence that the gender reassignment had been unsuccessful from the start. Money’s documentation of the case makes it seem as though he was so determined to prove his theory accurate that he was willing to falsify data to do so. Unfortunately, this false data led to the reassignment of many newborns in the years following. After marrying and adopting children, Reimer lived many years as a man, but took his own life in 2004 at the age of 38 after a lifetime of depression and suicidal tendencies. This case had a severe impact on Money’s reputation, but he still continued his work in sexology until his death and remained respected by many of his students and peers.
The Benefits of Mentoring on Autism
Kelly Reebe
Faculty Mentor: Professor Kristen Gillespie-Lynch
Department of Psychology

Qualitative research has produced insights necessary for a better understanding of autism. With such knowledge, the thoughtful improvement of intervention should subsequently follow. Applying the concept of peer support and guidance as a tool for supporting adjustment, this paper explores and measures the effects of peer mentoring on college students on the autism spectrum. Using a mixed-methods design (including standardized assessments and case studies), the intent is to identify specific skill developments associated with 1:1 mentoring, as well as relations between the patterns observed in particular individuals and quantitative data produced by the questionnaires mentees with autism and other disabilities completed at the beginning and end of the term. It is hypothesized that both the students involved in the case studies, as well as the broader population of participating students who completed standardized forms, will experience a distinct increase in adjustment, measured by survey data and themes within case studies, to college/adult life. If the mentorship program was associated with increased adjustment, this would suggest that peer mentoring might significantly impact the lives of students with autism. Such results should encourage the establishment of similar college intervention programs at other universities.

Behavioral Correlates of Cortical Neuron Morphology in the Naked Mole Rat
Kunzah Syed (Macaulay Honors College)
Faculty Mentor: Professor Dan McCloskey
Department of Psychology

Naked mole-rats are a mammalian species with a unique social structure. They are colonial and highly social, with a queen who is the only female responsible for bearing young. To date, no studies have examined the morphology of neurons in the naked mole-rat brain. The purpose of the present study was to conduct the first neuron morphology analysis of naked mole-rat neurons using the Golgi-Cox staining method. This technique was tested in two different applications, i.e., by first using the rapid Golgistain on select individuals and second, the traditional Golgi staining method on the other individuals. Following staining, 3D reconstructed neurons were microscopically analyzed for observable features such as dendrite number, length, dendritic spine number, and soma volume using Imaris software. These measures were compared across animals of different age and social status using an analysis of variance. This project tested the hypothesis that dendrite features will be enhanced in the prefrontal cortex of naked mole rats that show the highest levels of pro-social behavior, and that the traditional Golgi stain will better visualize these morphological features. Our results to date show that although naked mole-rats have a gestation over three times as long as mice or rats, cortical neurons do not appear to be more developed in this species at birth, based on dendritic branching. Branching increases significantly in the first ten days of life, similar to what has been previously reported in the rat.
**Research Poster Presentations**

**Poster #146**

**Prescriptive Authority for Psychologists: A Comparison between Nurse Practitioners and Physician Assistants**

Lauren Fuscaldo  
Faculty Mentor: Professors Daniel Kaplin, Florette Cohen  
Department of Psychology

Prescriptive authority for psychologists (referred to as the RxP Movement) has been a controversial issue amongst members of the medical community since it was first proposed. Past research has focused primarily on psychologists and psychiatrists. This article examines the opinions of the physician assistants (PAs) and nurse practitioners (NPs) using an adapted 15-item scale (evaluating 7 benefits and 8 drawbacks) adapted from Sammons et al. (2000). Social identity theory and persuasion theory are used to explain the results. A total of 192 participants (119 NPs, 72 PAs, and 1 who did not report their profession) responded to the survey. The results of our Chi Square analyses indicated significant support for the benefits of RxP amongst both NPs and PAs. All items were significant at p = .01 or less. However, PAs reported more concern about the liabilities than NPs. Where NPs, frequently expressed disagreement with the liability items, PAs expressed concern about malpractice, over-prescription and under-prescription. These items were significant at p = .05 or less. An independent samples t-test was conducted to compare RxP drawback items mean scores for nurse practitioners and physician assistants. There was a significant difference in scores for the nurse practitioners and physician assistants, t (185) = 3.867, p = .001. Similarly, RxP total scores for nurse practitioners and physician assistants yielded significant differences t (179) = 4.874, p = .001. The implications of these findings will be discussed.

**Poster #107**

**A Hierarchical Study of Naked Mole Rats**

Lauren Overeem (Macaulay Honors College)  
Faculty Mentor: Professor Dan McCloskey  
Department of Psychology

Naked Mole-Rats have highly complex social behaviors that we are still attempting to understand; these behaviors affect feeding, mating, and even their own passage from one place to another. In an attempt to better understand the roles of the mole rats throughout the colony, we have been monitoring which animals are performing what actions throughout the colony.

We have taken measures to determine which animal is performing each task within the colony that have been integrated with the RFID system; we used these to determine building, care taking and tunneling roles. Preliminary results show some animals can perform multiple roles within the colony. This implicates that there are highly social animals and less social animals within each colony.
Exploring Vocal-Motor Contingencies Over the Transition to Crawling in Infancy

Marian Cunsolo
Faculty Mentor: Professor Sarah Berger
Department of Psychology

The acquisition of motor skills provides opportunities for infants to practice skills relevant to language acquisition (Iverson, 2010). Onset of sitting and walking forecasted productive language in late infancy (Oudgenoeg-Paz, Volman, and Lexeman, 2012). Previous work did not examine simultaneous motor and language acquisition nor did it capture the transition from pre-locomotor to locomotor ability. The transition reflects changing motor expertise as language also changes. To address this, we conducted a longitudinal case study of the contingency of vocal behaviors and motor actions at four time points across the transition to crawling: two weeks pre-crawling, crawling onset, two weeks post-crawling, and four weeks post-crawling. Four 15-minute naturalistic observations of play took place.

We coded eleven motor variables (e.g., sitting, crawling, standing) along with eight language variables (e.g., babble, coo, word). Preliminary findings show that vocalizations consistently increased from the first session to the last (vocalization duration session 1=8.56 secs; vocalization duration session 4=36.27 secs). Vocalizations occurred more often when the infant performed experienced motor skills than when he performed new motor skills. For example, in session three, the infant vocalized about twenty times less often when in his new crawling posture than when in a more experienced posture such as kneeling. These findings have implications for the organization and functioning of attention. Perhaps the acquired expertise of experienced motor skills allows infants to put forth more effort on language learning. New speech patterns may be explored more easily during times of motor stability.

The Effects of an Online Training on College Students’ Knowledge of and Stigmatizing Attitudes Towards ASD in the United States and Lebanon

Marsha Dupiton
Faculty Mentor: Professor Kristen Gillespie-Lynch
Department of Psychology

Autism is no longer viewed as a syndrome of infancy, but as a developmental disorder that handicaps individuals to some degree throughout life (Shulman, 2000). Although there has been an increase in the international prevalence of autism recently (Elsabbagh et. al. 2012), there is still misunderstanding of autism and/or stigma worldwide (Gray, 2002). To evaluate effects of an online training on conceptions of autism, participants recruited from college campuses in Lebanon (N=272) and the United States (N=366), completed a 45-minute ASD training consisting of: pretest, training about ASD, and posttest. Pretest and posttest are identical, and measure knowledge about ASD (adapted from the Stone ‘Autism Awareness Survey’) and autism associated stigma (adapted from Link’s “Social Distance Scale”: 1 definitely willing to 4 definitely unwilling). The current study is the first to examine potential benefits of an online training about autism for stigma reduction among college students. Open-ended responses were coded into categories by independent coders after they achieved reliability (greater than 80% agreement on at least 20% of the sample). In both Lebanon and the United States, the training was associated with increased knowledge about ASD, F(1,611)= 321.12, p < .001 and decreased stigma associated with ASD, F(1,616)= 86.70, p < .001. These results suggest that college students have greater understanding of the core difficulties associated with autism, but stigma has increased nonetheless.
**Poster #99**

**How Does Depression Effect Sleep in Heart Attack Patients?**

Merlin Sara Raj (The Verrazano Honors School)

Faculty Mentor: Professor Ellen-ge Denton

Department of Psychology

Coronary artery disease (CAD), is the leading cause of death worldwide (Groenewold et al., 2013) and depression is one of the many mental health disorders commonly associated with CAD patients (Coulter et al., 2012; Groenewold et al., 2013; Cric-Zdravkovic, Zilic, and Lazovic, 2013; Nikolic, Samardzic, and Jovanovic, 2012; Nikolic, Samardzic, and Milenkovic, 2011; Sanjuan, Ruiz, Perez, 2013; So et al., 2011). Comorbid depression may add to the detrimental effects of CAD patients. The effects of depression greatly reduce the sleep quality among CAD patients (Edell-Gustafsson, and Hetta, 2001). The aim of this study is to examine the relationship of depression on the sleep quality among acute coronary syndrome (ACS) patients, who have recently experienced a coronary event (N= 944). We will examine the relation between depression, measured by the Beck Depression Inventory (BDI), and sleep quality, measured by the Pittsburgh Sleep Quality Index (PSQI), 6 months after patients experienced an ACS event. We hypothesize that, when comparing depressed and non-depressed ACS patients’ depression will predict future sleeping problems. It is expected that there will be a significant mean difference between depressed and non-depressed ACS patients in hours of sleep per night, with depressed ACS patients demonstrating a lower mean score in hours of sleep per night. It is expected that the frequency of sleep disturbances for depressed ACS patients will be greater when compared to non-depressed ACS patients and the duration of sleep disturbances will be less when compared to non-depressed ACS patients.

**Poster #92**

**Student Involvement on Campus and its Effect on Adaptation to College and Perceived Social Support**

Michelle Perez, Erica Golin (The Verrazano Honors School)

Faculty Mentor: Professor Kristen Gillespie-Lynch

Department of Psychology

Students with disabilities often have difficulty transitioning from high school to the less structured university setting. Adaptation to college predicts positive outcomes for students with and without disabilities (Adams and Proctor, 2010). The Student Adaptation to College Questionnaire (SACQ) assesses college adjustment in the following four domains: Academic (coping with educational demands), Social (dealing with interpersonal-social demands), Personal-Emotional (how a student feels psychologically and physically), and Attachment (how students feel in general about their college). We devised a survey to measure students’ current involvement on campus. Social support was measured using the Multidimensional Scale of Social Support. Participants were students with disabilities who were involved in Project REACH, a mentorship program. We hypothesize that students who have good social support systems and are involved in campus life will be better adapted to college. Frequency of being a leader on campus was correlated with academic adjustment (p = .001). Involvement in campus activities correlated with social adjustment and attachment to college (ps < .03). Perceived familial support was related to personal-emotional adjustment (p = .02). Perceived support from friends was related to social adjustment and attachment to college (ps < .008). Over the course of this semester, a population of students without disabilities will serve as a control group to allow us to determine if similar relations are apparent in the general student population. Being involved in campus activities may help students with and without disabilities be more rooted in the college community, with leadership being particularly important for academic adjustment.
Step by Step: How Infants Solve the Problem of Stair Decent

Mohamed Hussien, Sandeep Basra
Faculty Mentor: Professor Sarah Berger
Department of Psychology

Approximately 73,000 children between the ages of 6 months and 2 years were injured on stairs in 2009 (National SAFE KIDS Campaign, 2004). Stair descent may be challenging for infants due to perceptual-motor demands.

Surprisingly, there is little research on infants learning to descend stairs. Participants included 32 13- and 17 18-month-old infants from New York City. For 5 trials, infants were placed on top of a 5-step wooden staircase and encouraged to descend to a caregiver at the bottom. The design facilitated the analysis of emerging stair descent solutions step-by-step, trial-by-trial, and by age. Infants backed, walked or scooted down. Repeated measures ANOVAs on the proportion of trials infants used each strategy revealed main effects for step and group for both scooting and walking (all p’s < .05). 13-month-olds walked more than 18-month-olds and 18-month-olds scooted more than 13-month-olds. With each step of the staircase, 13-month-olds tended to walk more and scoot less, whereas 18-month-olds started and ended trials by walking, but scooted mid-staircase. A repeated measures ANOVA of latency to descend revealed main effects of and interactions between trial, age and stairs at home (all p’s < .01).

13-month-olds had shorter latencies than 18-month-olds across all trials.

but 18-month-olds without stairs at home took especially long on their first trial. Thus, new walkers do not take into account the dangers of stair descent, whilst experienced walkers act with caution and alter their behavior to the perceptual-demands of the task. Stair-climbing provides a model for observing the development of problem-solving in infancy.

An Investigation of the Relationship Between Self-report and Social Behavior in College-aged Students with and without Disabilities

Naomi Gaggi (Macaulay Honors College)
Faculty Mentor: Professor Kristen Gillespie-Lynch
Department of Psychology

The relationship between self-report and social behavior will be examined by comparing and contrasting coded video data of mock interviews of students with and without disabilities to self-reports of their social difficulties.

College-aged students with and without disabilities have self-reported on a pre-test about themselves socially. Mock interviews were later video taped, recording social behaviors, such as verbal and behavioral actions. The self-reports of students with disabilities will be compared to their actions recorded during the mock interviews and will also be compared to the responses and actions of students without disabilities. The presence, or lack thereof, and the degree of extremity of certain verbal and behavioral actions, such as stuttering, greeting, time elapsed between question and answer, accuracy of answers, tone of voice, fidgeting, coordination, and facial expressions, will be coded. These coded actions will then be compared to self-reported social difficulties. I hypothesize that students with disabilities will have more self-reported and social difficulties than students without disabilities. Although I expect self-report to be correlated with observed behaviors, I expect this correlation to be lower for students with more severe social difficulties due to less knowledge about their own social behaviors. This study will fill an important gap in the literature, as previous research has not compared how college-aged students with and without disabilities perform during job interviews. This study will raise awareness of the possible discrepancies between knowledge of oneself and actions in a real-life situation among people with and without disabilities.
Maternal Reminiscing Predicts the Quality of Children's Autobiographical Narratives about Jealousy during Middle Childhood

Nicole Kwoka (Macaulay Honors College)
Faculty Mentor: Professor Patricia Brooks
Department of Psychology

How mothers talk with their children about emotional experiences may guide children's situational appraisals in ways that support emotional development and self-awareness. Although many studies have examined maternal speech with young children about basic emotions, few studies have investigated talk with older children about more complex emotions such as jealousy. Our study investigated the influence of maternal speech on children's understanding of jealousy. Eighty 5 - to 11 - year-olds and their mothers participated. Mother-child dyads were asked to recount a previous experience involving the child's experience of jealousy. Analyses revealed that mothers focused on the elaboration of factual information and emotion resolutions when discussing the child's experiences leading to jealousy. Children's understanding of jealousy, increased with age, and was predicted by maternal inclusion of conflict-resolution strategies and factual information in the co-constructed narratives. We observed gender similarities as well as differences in developmental trajectories in emotion understanding. Girls, however, tended to provide more jealousy explanations than boys, and focused more on jealousy impacting their relationships negatively.

The Effects of Anxiety on Athletic Performance and Attitudes toward Performance Enhancing Drugs

Priscilla Alvarez
Faculty Mentor: Professor Florette Cohen
Department of Psychology

Sports and performance anxiety is an interesting phenomenon which has been associated with the inability to manage stress, performance difficulties and poor decision making. The present study aims to investigate the role of anxiety in performance and the attitudes of people towards the justifiability of using performance enhancing drugs (PED'S). A total of 216 undergraduate students (athletes and non-athletes) from the College of Staten Island were administered a series of personality, anxiety and sport attitude questionnaires along with 2 open ended questions on either 3 conditions: a championship game, regular season game or pre-season game. It is expected that individuals who experience high levels of anxiety during performance will "choke under pressure" and show higher justifiability for the usage of performance enhancing drugs. In the other hand, individuals who experience low levels of anxiety during performance will perform efficiently and present lower levels of justifiability towards the usage of performance enhancing drugs.
**P O S T E R # 4 0**

**Where Do Infants Prefer to Look When Scanning Faces—Eyes or Mouth?**

Roseline Nkama
Faculty Mentor: Professor Jennifer Wagner
Department of Psychology

Early identification of faces is an essential part of social development.

Even shortly after birth, infants prefer to look at faces and can tell the difference between a familiar and unfamiliar face. Eye tracking has provided insight into which features of the face infants find most salient across development. The purpose of the present experiment is to study scanning of familiar and unfamiliar faces in 6-, 9-, and 12-month-old infants. Using the eye-tracking data collected at these three ages, we examined scanning patterns and infant attention to core features of the face, such as the eyes and mouth. Infants saw up to 14 trials, half with videos of their mother talking with no sound, and the other half with a stranger. Each trial lasted 16 seconds. Preliminary analyses focused on infants who looked for more than 15% of the time to each face (current sample: four 6-month-olds; 12 9-month-olds; 17 12-month-olds).

Preliminary results show that at 6-months-old, infants are spending more time on the eyes than the mouth for both familiar and unfamiliar faces; however, at 9- and 12-months-old, infants spend more time on the mouth as compared to the eyes for both faces. Further work will examine whether infants spend more time looking at the mother’s face compared to that of the stranger. In addition it will be interesting to know if this attention changes for faces showing different emotional expressions. This work and its findings will help us understand how attention to faces changes across development.

**P O S T E R # 9 4**

**A Longitudinal Study of Motivation to Move in Infancy**

Stephanie Valonis
Faculty Mentor: Professor Sarah Berger
Department of Psychology

Motivation influences children’s acquisition, transfer, and use of knowledge and skills. Our research documented the relationship between motivation to move and motor development by asking whether: 1) motivation to move is stable over a period of rapidly changing motor skill, 2) there is variability in motivation levels amongst infants, and 3) infants’ motivation predicted persistence on a challenging task. Twelve infants participated longitudinally at 5 key points in motor development. Using a within-subjects design, infants traveled down an easy path (flat ground) and a difficult path (tunnel) towards a goal, 5 times per condition. To assess motivation to move, we measured latency, the time it took infants to move towards the goal in the easy condition. To assess persistence, in the difficult condition we measured avoidance of the task (backing), duration of stops, and body/tunnel mismatch (bumping).

Infants’ individual motivation to move was primarily stable across trial and session (75%), with variability in level of motivation to move between infants. Motivation to move was significantly correlated with backing and bumping for walking infants and with stop duration for infants transitioning from crawling to walking, suggesting that infants’ who find motor tasks difficult may have low motivated to move. Children seek to master tasks which are moderately challenging. During the transition stage, infants have not yet given up crawling, so the task is easy.

These findings have important clinical implications for understanding that interventions for children with motor delay or impairment may need to be tailored to infants according to individual differences.
**Poster #49**

**Effects of a Social Skills Training or a Self-Advocacy Intervention on Social Symptoms**

Thomas Cintula  
Faculty Mentor: Professor Kristen Gillespie-Lynch  
Department of Psychology

Do self-advocacy interventions decrease social symptoms as much as social skills interventions? The primary focus of this paper is to examine whether a self-advocacy skills intervention or a social skills intervention for college students is associated with greater reductions in social symptoms.

College students with disabilities participated in two semester long interventions. One addressed social skills and the other self-advocacy. Social skills interventions teach students how to socialize with other people: This includes initiating conversation and confronting their social anxiety. Students are also given an opportunity to improve their non-verbal communication skills, reading of nuances, having topics of discussion to talk about, and telling stories. Self-advocacy interventions give students the knowledge to be more assertive, have social-awareness, and empowerment.

Students completed pre-tests, which included a measure of social symptoms (the Social Responsiveness Scale; SRS), at the beginning and end of each intervention. My hypothesis was that both interventions would be equally effective in decreasing social symptoms. Social symptoms decreased from pre-test (M = 59.208, SE = 6.033) to post-test (M = 50.000, SE = 6.210) during the spring social skills intervention. Findings from the fall 2013 self-advocacy intervention will also be reported. If both interventions are associated with decreases in social symptoms, this will suggest that mentorship more generally may be helpful for college students with disabilities. This type of mentorship program may be a building block to help students with disabilities evolve into mainstays of mainstream culture while increasing awareness of the potential of students despite these obstacles.

**Poster #69**

**Anxiety among Project REACH Mentors in Comparison with Mentees**

Vincent Wong (Macaulay Honors College), Christopher Maniscalco (Macaulay Honors College)  
Faculty Mentor: Professor Kristen Gillespie-Lynch  
Department of Psychology

Project Reach is a peer-mentorship program for college students with disabilities. The main goal of this program is to involve students with disabilities in mentorship sessions with their peers to help them properly adjust to the college setting. A primary aim of the program is that the mentees learn to become better self-advocates with more understanding of others and themselves. As a result, it is very important for the mentors themselves to be adept at functioning in the college environment. Before and after the program, mentors (N = 10) and mentees (N = 36) were asked to complete standardized and unstandardized forms that measured characteristics such as self-advocacy, self-esteem (Rosenberg Self-esteem Scale), anxiety (State-trait anxiety inventory), and social symptoms (social responsiveness scale). We hypothesized that mentors would have more self-advocacy skills and self-esteem and less social symptoms and anxiety than mentees before the program began. Mentors had higher self-esteem (p < .001) and lower social symptoms (p < .001) than mentees. However, significant differences in self-advocacy (p = .13) were not observed. Interestingly, mentors exhibited a trend toward higher trait (p = .06) and lower state anxiety (p = .051) than mentees. This might be because mentors are stressed about their academic performance in addition to balancing a multitude of responsibilities. These findings suggest that mentors have strengths to share with the students with disabilities they mentor but that mentors and mentees can relate to one another in terms of the challenges they face as students.
**Gender Differences in Externalizing and Internalizing Behaviors of Orphan and Non-orphan Children in South Africa**

Waleska Salgado  
Faculty Mentor: Professor Comfort Asanbe  
Department of Psychology

The purpose of this study is to explore gender differences in acting out and emotional behaviors of orphan and non-orphan children from a township near Pretoria, in South Africa. There is minimal data on the mental health of this population. I examined the data for 103 participants; 73 orphans, 43 are orphans due to AIDs and 30 are non-AIDs orphans, and 30 non-orphans using the Child Behavior Checklist (CBCL), the most widely used questionnaire for conducting research with children. I scored some of the raw data. The sample for the study consisted of 60 females and 43 males, between the ages of 6-11. Grandmothers of the orphans and biological mothers of the non-orphans completed the CBCL in 2013 during Dr. Asanbe's sabbatical at the University of Pretoria (UP). The team consisted of researchers from UP and Dr. Comfort Asanbe is the principal investigator (PI). The project was approved by the institutional review board (IRB) at UP. This is a large study that involved additional participants between the ages of 12-18, but I am only focusing on the younger children. Based on previous research, I hypothesized that: (1) male participants will show more acting out behaviors than females, (2) female participants will report more emotional behaviors than their male peers, and (3) orphans will report more externalizing behaviors than non-orphans.

**Using a Peer Mentor Intervention for Self Advocacy and Academic Improvement**

Ying Chen  
Faculty Mentor: Professor Kristen Gillespie-Lynch  
Department of Psychology

Is self-advocacy training beneficial for individuals with disabilities in supporting their transition from high school into college? Students with different disabilities from the College of Staten Island voluntarily participated in weekly hour-long group sessions of a peer-mediated intervention designed to increase self-advocacy. These group sessions focused on meeting objectives from modules designed to deliver self-advocacy skills. Participants could also choose to participate in additional 1:1 mentor sessions focused on individualized goals. At the end of the semester, students voluntarily participated in focus groups to discuss their assessment of the mentorship program. The hypothesis underlying this study is that participation in the mentorship program would be associated with increases in self-reported self-advocacy, academic self-efficacy and social support. Chi-square analysis of focus group data revealed an increase in self-advocacy relative to other-advocacy after the self-advocacy intervention ($p = .022$). Within-subject analyses suggested that there was an increase in academic self-efficacy ($p = .005$) but no significant changes in self-reported self-advocacy (on an unstandardized measure) and social support. Overall, the results disproved part of my hypothesis because the increase in academic self-efficacy did not co-occur with an improvement in self-advocacy and social support as assessed with questionnaires. However, my hypothesis was correct in that there was an increase in academic self-efficacy and descriptions of self-advocacy in the focus groups. This type of peer-mentor intervention could be adopted by social service.
DEPARTMENT OF SOCIOLOGY, ANTHROPOLOGY, AND SOCIAL WORK
CONFERENCE LOCATION: WEST LOUNGE

POSTER #147

BSW Students Reactions to the Aftermath of Hurricane Sandy

John Felci
Faculty Mentor: Professor Sondra Brandler
Department of Sociology, Anthropology and Social Work

The Research conducted will provide us with an understanding of how College of Staten Island BSW students reacted to the aftermath of Hurricane Sandy. The research also provided information about how Hurricane Sandy affected the elderly and people with disabilities. The research that was conducted will be beneficial to the social work profession because it will give us an understanding of how BSW students responded to the aftermath of hurricane sandy. The research will help in better preparing social workers while working and volunteering during and after natural and man made disasters. This research will also give us in the social work profession a better understanding of the needs of the elderly and disabled during and after such events. About fifty journals were written by College of Staten Island BSW students about their reactions to Hurricane Sandy. These journals were analyzed and many of the BSW students shared similar responses to the event and similar thoughts while volunteering after the event. The intention of conducting this research is to show common reactions of BSW students after a disaster.

POSTER #85

Meeting the Needs of the LGBT Community on Staten Island

Luiza Kayumova
Faculty Mentor: Professor Lacey Sloan
Department of Sociology, Anthropology and Social Work

This community agency-college partnership based research examines services provided by the Staten Island LGBT Community Center to identify unmet needs. Using existing data and Geographic Information Systems (GIS) software, a map was created indicating the parts of the Island that are served by the Center and the services utilized. A focus group was conducted with peer outreach educators, who are trained to talk to their peers (often strangers) in public places about safer sex, testing, and Center programs for LGBTQ people and families to identify strengths and challenges they face in street outreach to prevent HIV.

Problem Statement
- Is the Staten Island LGBT Community Center serving people from across Staten Island with the full range of services available?
- What are the challenges and strengths of the Peer Outreach program that conducts street outreach to Men who have Sex with Men (MSM) to prevent HIV infection?

Methods
The two research methods used in this study were analysis of existing data and a focus group with peer outreach workers. The existing data was examined using GIS to determine whether or not the Center is serving people from across the Island, the services they use, and the demographics of clients. The focus group was conducted by the researcher peer outreach workers.
DEPARTMENT OF WORLD LANGUAGES AND LITERATURES
CONFERENCE LOCATION: WEST LOUNGE

POSTER # 44

Memory and Oblivion in Borges’s Narratives
Jurandir Chan
Faculty Mentor: Professor Felipe Martínez-Pinzón
Department of World Languages and Literatures

Literature illustrates that life requires a balance. Jorge Luis Borges states that an exaggeration of memory or oblivion is destructive because happiness is achieved through balance, but if disequilibrium occurs, life will not be enjoyable. A perfect memory is a condemnation. Borges proposes the idea of constant remembrance as a “garbage disposal.” In “Funes, the Memorious,” the character obtains a flawless memory and he becomes incapable of forgetting details. Funes remembers all he sees and marvels every time he looks at his hands because of the insignificant changes he perceives. Funes’s perception of time traps him as the future depends on forgetting the past. Funes is punished for obtaining a memory close to God’s divine one by living under a perpetuate condition of insomnia. The troglodytes from “The Immortal” are the opposite of Funes. The protagonist Rufo goes to a journey to find the City of the Immortals. In his travel, Rufo is accompanied by a troglodyte, which is an uncovered man with gray skin, and he finds out that this creature is actually Ulysses, the author of the Odyssey. The troglodytes are indifferent to life because they are eternal. They will have the chance to live under all conditions and experience all circumstances repeatedly. For this reason, the possibility of death causes people to value their lives because every act might be the last one. The oblivion of the troglodytes emphasizes the importance of human life.

The troglodytes can imitate living the exact lives of other individuals, but they forget their experiences. The cost of eternity, for Borges, is oblivion. The memories of one composes his human identity and gives sense to their actions. Imbalance in this story takes two different forms: oblivion and eternity. To live shortly and productively is more desirable than to live forever without purpose because the limitation of time urges people to enjoy while they can.

POSTER # 74

Antinational Discourse in Contemporary Salvadoran Fiction
Sandra Flores Hernandez
Faculty Mentor: Professor Sarah Pollack
Department of World Languages and Literatures

In El Salvador, like in the rest of Latin America, the literary rhetoric of nationalism existed as a force for cohesion and the creation of an autonomous identity that dominated the nation’s fiction following its independence from Spain in 1821. Since its formation as a nation though, El Salvador has suffered a series of military dictatorships and violent confrontations that eventually culminated in the Civil War in the 1980s. The prolonged violence profoundly impacted the recent literature of the country. Abandoning grand national narratives, the literary works of contemporary Salvadoran authors such as Horacio Castellanos Moya, Rafael Menjivar Ochoa and Manlio Argueta, among others deconstruct national identities, presenting critical insights into the violent culture, politics and history of the country. I study this phenomenon, for example in El asco, through the perspective of a “self-exiled” Salvadoran citizen who is forced to return home upon his mother’s death, providing the reader with a strong and disturbing critique of the country, and through the perspective of a maid who finds herself in the midst of violent altercations between the rebels and the police in La sirvienta y el luchador, both by Horacio Castellanos Moya. My project argues that contemporary Salvadoran fiction rejects national narratives and identitarian rhetoric, suggesting that war and violence have shattered all possibility of a discourse articulating the coherence and common bonds of a national project.
# Undergraduate Conference on Research, Scholarship, and Performance—Faculty Mentors

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### Research Paper Presentations—Panel Discussion

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# Student Scholars

## Undergraduate Conference on Research, Scholarship, and Performance—Student Scholars

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## Student Scholars

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## Student Scholars

### Undergraduate Conference on Research, Scholarship, and Performance—Student Scholars (cont.)

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**Undergraduate Conference on Research, Scholarship, and Performance—Student Scholars (cont.)**

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Dr. Charles Liu

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718.982-2341, jonna.desantis@csi.cuny.edu

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