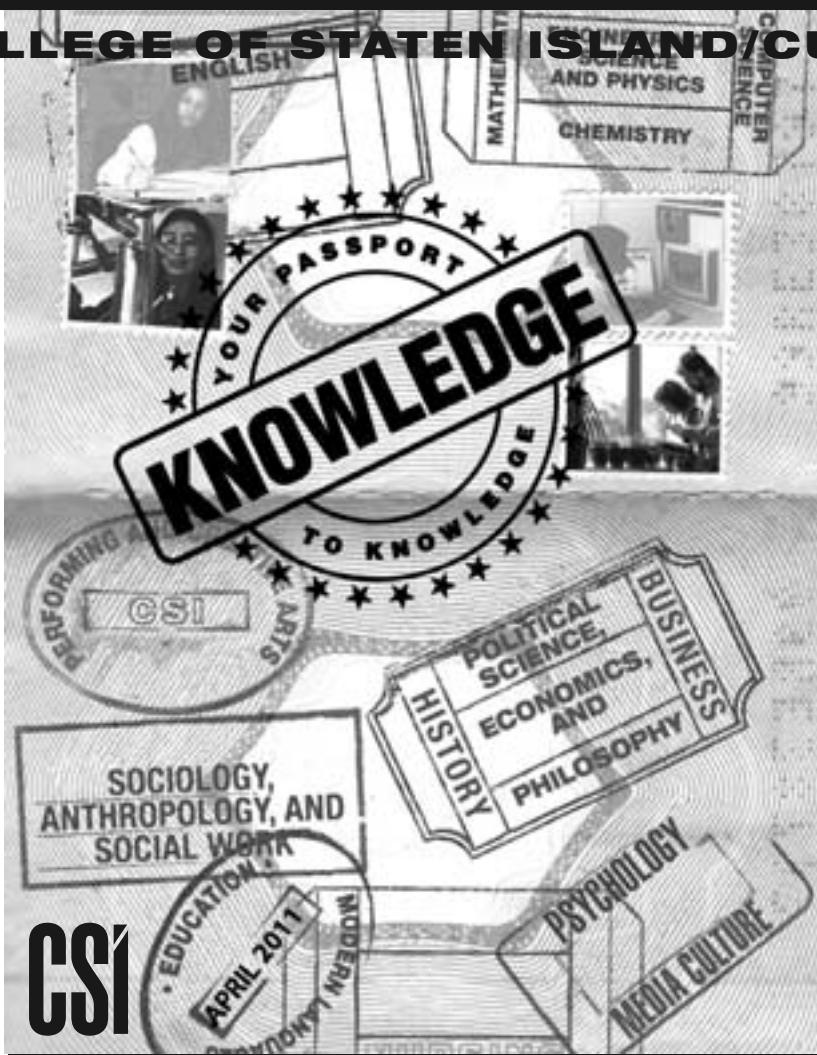


Tomás D. Morales,
PhD

CSI UNDERGRADUATE CONFERENCE ON RESEARCH, SCHOLARSHIP, AND PERFORMANCE

THURSDAY, APRIL 14, 2011

COLLEGE OF STATEN ISLAND/CUNY



CSI UNDERGRADUATE CONFERENCE ON RESEARCH, SCHOLARSHIP, AND PERFORMANCE*

April 14, 2011
Center for the Arts, 1P-Atrium
1:30pm - 4:30pm

*Sponsored by the Division of Academic Affairs with funding from the CSI Student Government Academic and Curricular Affairs Commissions, the Office of Alumni Relations, and the CSI Foundation

**CSI Undergraduate Conference on Research,
Scholarship, and Performance, 2011**

Conference Schedule – Thursday, April 14, 2011

11:30am-12:30pm	Authors and Mentors Lunch
1:15pm-2:00pm	CSI Rock Music Club Springer Concert Hall, 1P-117
1:30pm-4:30pm	Poster Presentations 1P-Atrium, East and West Lounges
1:30pm-3:30pm	CSI Sculpture Exhibition 1P-Atrium—The Glass Case
1:30pm-2:55pm	Paper Presentations—Social Scientific Methods in Comparative Perspective Classroom, 1P-222
1:30pm-2:00pm	CSI Drama Program Lab Theatre, 1P-220
1:30pm-3:30pm	CSI Student Spring Group Art and Sculpture Exhibition Art Gallery, 1P-118B
1:45pm-3:15pm	Panel Discussion Culture of the Atomic Bomb: Japan after World War II Lecture Hall, 1P-119
2:00pm-2:45pm	CSI Music Program Recital Recital Hall, 1P-120
2:15pm-2:45pm	CSI Dance Program Dance Studio, 1P-220
2:15pm-2:45pm	CSI Gospel Choir Springer Concert Hall, 1P-117
2:45pm-3:30pm	CSI Big Band, and Jazz Repertory Combo Williamson Theatre, 1P-111
3:00pm-4:30pm	Paper Presentations—Environmental Studies: Biology, History, and Culture Classroom, 1P-222



CSI Undergraduate Conference on Research, Scholarship, and Performance

Message from the President

It is my pleasure to welcome you to the Tenth Annual Undergraduate Conference on Research, Scholarship, and Performance.

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 302 participants in the conference representing an extensive range of disciplines within the College. There are 99 abstracts being presented either by a single student or groups of students—in all 96 performers and 71 students displaying their talents. Today, you will have the opportunity to immerse yourself in complex musical and dance performances, rigorous analyses of social scientific and literary ideas and theories, and observe meticulous scientific investigations and inquiries.

This year an additional dimension has been added to the conference—paper presentations. Our students will be presenting their research papers in classroom format, giving them the opportunity to develop their presentation skills for their future professional disciplines.

It is important to note that 11 of our students’ research projects were supported through CSI Undergraduate Research Awards sponsored by the CSI Foundation. In addition, we are extremely grateful to the CSI Student Government and the Office of Academic Affairs for their financial support.

I would like to acknowledge Kristen Lindtvedt 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, and Jessica Stein, Debbie Mahoney, and the staff of the Provost’s Office—a great team that handled a myriad of tasks and details. Lastly, I would like to thank Dean E.K. Park and Associate Provost Ann Lubrano for coordinating the conference.

I would also like to thank the Alumni Association for donating t-shirts for the volunteers; Design Services; the Center for the Arts for their technical support; and the Undergraduate Research Conference Committee members and 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,

A handwritten signature in black ink, appearing to read 'TDM', written in a cursive style.

Tomás D. Morales, PhD
President

The Department of Performing and Creative Arts

Presents

An Art, Dance, and Music Exposition

at

The Tenth Annual
CSI Undergraduate Conference
on Research, Scholarship,
and Performance

Atrium,
Concert Hall,
Lab Theatre,
Recital Hall,
Williamson Theatre,
Dance Studio, and
Student Art Gallery
Center for the Arts
Thursday, April 14, 2011

WILLIAMSON THEATRE, 1P-111

CSI BIG BAND and JAZZ REPERTORY COMBO

2:45pm–3:30pm

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. The Jazz Repertory Combo takes a keen interest in the development of improvisational and accompaniment skills in the jazz idiom, particularly relating to small-ensemble performance. It explores advanced literature and jazz classics ranging from the early modernism of Charlie Parker and Dizzy Gillespie to later styles of contemporary composers.

Prof. Michael Morreale, *Director*

The CSI Big Band

James Fletcher, Dominick Bartolone, Gregory Quagliano, Danny Lazkani - saxophones
Cem Colpan, David Immiti, Frank Rogers - trumpets
Miles James, Thomas Cropley, Jeff Martin - trombones
Kaleem Sharpe - tuba
Albert DeRosa - piano
Padraic Lynch - contra bass
Alan Rogozin - electric bass
Adan Paz, Matt Gallo, Eric Roces, Salvatore Kubis - guitar
Joseph Giunto, Julia Aponte, Joseph Lamanna - drums

The Jazz Repertory Combo

Gregory Quagliano - tenor saxophone
Anthony Gonzalez - guitar
Padraic Lynch - contra bass
Joseph Lamanna - drums

PROGRAM TO BE ANNOUNCED

SPRINGER CONCERT HALL, 1P-117

CSI ROCK MUSIC CLUB

1:15pm–2:00pm

Prof. Dominick Tancredi, *Faculty Advisor*

SELECTIONS FROM:

TODAY THE SMASHING PUMPKINS
COME OUT AND PLAY (KEEP EM SEPARATED) THE OFFSPRING
WHAT I LIKE ABOUT YOU THE ROMANTICS
ALIVE PEARL JAM
EVERLONG THE FOO FIGHTERS
PAIN JIMMY EAT WORLD
HYSTERIA MUSE
ANNA MOLLY INCUBUS
DON'T STOP BELIEVIN' JOURNEY
I BELIEVE IN A THING CALLED LOVE THE DARKNESS

Alan Aurelia - electric bass
Patrick Granton - guitar
Jomar Vargas - drums
Margaret Hampton - vocals

Jenna Calderon, Steve Flannery - guitar
Joseph Giunto - drums
Kevin Duff - vocals

Dramatic and Musical Performances

CFA ATRIUM – THE GLASS CASE

CSI SCULPTURE EXHIBITION

1:30 - 3:30 PM

Prof. Marianne Weil, *Instructor*

Cast, Carved and Constructed

Student Artists:

Jun Lu , ART 250	<i>Hand Rake</i> , plaster
Heather Annese , ART 350	<i>Jaded Heart</i> , wood
John Samuels , ART 250	<i>Hand Tool</i> , plaster
Jun Lu , ART 250	<i>Hand Tool</i> , plaster
John Samuels , ART 250	<i>Eights</i> , wood
Misste Rivera , ART 250	<i>Hand Gun</i> , plaster
Victoriya Masheyeva , ART 250	<i>Viola Torso</i> , plaster
Chelsea Taylor , ART 150	<i>In Full Bloom</i> , plaster
Christina Sgarlato , ART 350	<i>Freedom</i> , wood
Ermona Sejadinovski , ART 150	<i>Forbidden Strawberries</i> , plaster

SPRINGER CONCERT HALL, 1P-117

THE CSI GOSPEL CHOIR (CSIGC)

2:15pm – 2:45 pm

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

Prof. Sylvia Kahan, *Faculty Adviser*

Choir

Stephanie Layne - soprano
Chanel Winbush - alto
Kayla Hill - alto
Lynn Saunders - tenor
Kenneth Hunt - tenor
Aminta Fredericks - tenor
Ashley Gill - soprano/choir director

Band

Stanton Estwick - keyboard/music director
Dan Muniz - guitar
Dominick Tancredi - bass
Darryl Todman - drums

LORD, YOU'RE MIGHTY.....JJ HAIRSTON AND YOUTHFUL PRAISE
GREAT IS OUR GOD YOUTHFUL PRAISE
MORE THAN ANYTHING..... LAMAR CAMPBELL
GOD IS IN CONTROL.....JAMES HAL

DANCE STUDIO, 1P-220

CSI DANCE PROGRAM

2:15pm–2:45pm

The Training of a Dancer

Prof. Charles Thomas, *Dance Coordinator*

Prof. Niambi Keyes, *Dance Instructor*

Prof. Walter Rutledge, *Dance Instructor*

BALLET (Dan 231)

Excerpt from Marice Ravel's *Bolero* for Spring 2011 Dance Concert

JAZZ (Dan 261)

Centre/Floor Work

Excerpt from "Closer" for Spring 2011 Dance Concert

IMPROVISATION (Dan 171)

Audience Participation

CHOREOGRAPHY (Dan 111)

Excerpt from "Falling Down" for Spring 2011 Dance Concert

CONTEMPORARY STYLES OF DANCE (Dan 101)

Afro-Haitian Dance (Dan 184)

Lecture exploring historical overview of Afro-Haitian Dance.

DANCE CLUB ("Inevitable Kchemistry")

Excerpts from "Respect The Art," "That Girl Is Poison," "Who You Are"

Dance Students: Michael Garrett, Myles Saunders, Daniel Thompson, James Fable, Lauren Stevens, Justina McGhie, Donnica Hamlet, Taryn Ford, Melida Medina, Justin Salud, Precious Purvuerti, Kelly Savarese, Sharon Parshad, Brandon Modeste, Ashley Gorneay, Morselle Horsford, Kerbie Augustine, Jacqueline Hemmy, Samuel Paasewe, Varia Auguste, Kelly Woodford, Samantha Wong, Jacinta Tucker, Girard Francois, Rosemary Adesola, Madeline Long, Lovette Rosado

CSI STUDENT ART GALLERY, 1P-118B

THE STUDENT SPRING GROUP EXHIBITION

1:30pm – 3:30pm

The Student Art Gallery of the Performing and Creative Arts Department will present an exhibition of work by Art majors from all of the areas of study: drawing, painting, photography, printmaking, and sculpture. The exhibition is curated by Stefanie Candelario, Christina Carannante, and Sang Yeum.

Prof. Siona Wilson, *Faculty Adviser*

Joanne Goodfellow
Allan M
Gerard O'Mallen
Amanda Kane
Corey Lewis
Arlene Gonzalez
Nina Musillo
Francisco Osorio
Erin Kammerer
Hayat Tahmaz
Laurie Stein
Lucia Rappa
Mohamed I
Kellie Bollaert
Anna Tam
Daniella Catalfumo
Jodi Rupelli
Sara Ibrahim
Jennifer Canade
Carla Musacchio

Jesse Rodriguez
Heo Zell
Sundas Nazir
Olga Vishneva
Elena Vlasiuc
Yan Li
Shangi Deng
Jerry Chen
Anthony Ryan
Saphia Capasso
Alexandra Ozias
Margarita Sansone
Teresa Farina
Abigail Rivera
Nicole Castaldo
Elizabeth Brandt
Chelsea Taylor
J. Samuels
Yin Lin
Erika Quarante
Marissa Lauria

Michael Dote
Ewelina Berc
Boyana Jovanovic
Paul Caminiti
Jonathan Loncle
Sara Ibrahim
Annie Breen
Amira Hassan
Allan Murtada
Teresa Farina
Amr Abdelsalam
Sharifa Ahmed
Bonnie Kennedy
Lali Partsvania
Carlos Soto
Chris Liberti
Sharon Cruz
Rashid Jackson
Leonella Gatti
Viktoriya Masheyeva

LAB THEATRE, 1P-110

CSI DRAMA PROGRAM

1:30pm–2:00pm

*Excerpt from **Delirium** by Enda Walsh and Theatre O*

Based on The Brothers Karamazov by Fyodor Dostoevsky

THE CAST (in order of appearance)

Father Zosima	Daniel Koehler
Katerina	Christine Zahra-Devito
Smerdyakov	Amy Puleo
Alyosha	Michael Dianora
Ivan	Edward V. Turner
Grushenka	Gabrielle Canci
Fyodor	Bob Elia
Mitya	Ernest Caushi

THE PRODUCTION TEAM

Director	Prof. Maurya Wickstrom
Set Design	Prof. Kevin Judge
Lighting Design	Daniel Koehler
Sound Design	Daniel Koehler
Assistant Director	Christine Zahra-Devito
Stage Manager	Alison Langleiben
Assistant Stage Manager	Michael Simanovsky
Fight Choreographer	Prof. Eero Laine
Light Board Operator	Essam Meawad
Video Operator	Aissata Barrie
Costumes	Prof. Maurya Wickstrom, with Christine Zahra-Devito and Jennifer Straniere
Video Animations	Naoise Reynolds and Joel Reynolds
Puppet Design and Construction	Joel Reynolds with Prof. Maurya Wickstrom
Choreography	Prof. Maurya Wickstrom with Cast Collaboration
Production Manager	Jennifer Straniere

Songs by: The Kills, The Dead Weather, The Black Keys, Nick Cave and Grinderman, Ray Charles, and the soundtrack from *Pina Bausch Mazurca Fogo*

Additional original musical underscoring by Michael Simanovsky and Dan Koehler

Dramatic and Musical Performances

RECITAL HALL, 1P-120

CSI MUSIC PROGRAM RECITAL

2:00pm - 2:45pm

*A showcase of chamber music featuring faculty and students of the
CSI Music Program*

Prof. William Bauer, *Performance Coordinator*

PROGRAM

WHAT ARE YOU DOING THE REST OF YOUR LIFE MICHEL LEGRANDE (B. 1932)

LULLABY OF BIRDLAND..... GEORGE SHEARING (1919-2011)

BLACK COFFEE.....SONNY BURKE (1914-1980)

YOU DON'T KNOW WHAT LOVE IS GENE DEPAUL (1919-1988)

Linda Soria - voice Gregory Quagliano - tenor saxophone,
Eric Roces - electric guitar Padraic Lynch - bass
Joseph Giunto - drums Prof. William Bauer - piano

NOCTURNE IN B-FLAT MINOR, OP. 9, NO.1 FRÉDÉRIC FRANÇOIS CHOPIN (1810-1849)

Shiyun Shang - piano

GREENSLEEVES TRADITIONAL arr. by FRANCIS CUTTING

IN SORROW'S WAKE ANDREW YORK (B. 1958)

PRELUDE NO. 1 IN E-MINOR..... HEITOR VILLA-LOBOS (1887-1959)

Jenna Calderon - guitar

SIX DUETS FOR 2 VIOLINS AND PIANO BENJAMIN GODARD (1849-1895)

No.1 Pastorale (Souvenir de Campagne): Allegretto

No.2 Sadness (Tristesse): Andante

No.3 Forsaken (Abandon): Allegro non troppo

Melissa Folzenlogen and Stephanie Geraci - violins Shiyun Shang - piano

PCA EVENTS CALENDAR, SPRING 2011

Tuesday, May 3–Thursday, June 2, Student Art Gallery, 1P-118B
Graduating Art Majors and Art/Photography Concentration Majors
This show focuses on the work made by the 2011 graduating seniors enrolled in the Art Program and the Art/Photography Concentration of the Performing and Creative Arts Department

Please call 718.982.2118 for gallery hours

Thursday, May 5, 1:30pm, The Recital Hall, 1P-120

Music Hour: **The OMNI Ensemble**

Admission: Free

Thursday, May 5, 7:30pm, Williamson Theatre

Spring Dance Recital

Directed by Charles Thomas, Niambi Keyes, and Walter Rutledge

Tickets: \$10/\$7 students and seniors

Monday, May 9, 7:30pm, The Recital Hall, 1P-120

Senior Recital: Jenna Calderon, guitarist

Admission: Free

Thursday, May 12, 1:30pm, The Recital Hall, 1P-120

Music Hour: The CSI Small Jazz Ensemble

Admission: Free

Thursday, May 12, 7:30 pm, Recital Hall, 1P-120

Recital: The CSI Guitar Ensemble

Directed by Edward Brown

Tickets: \$5

Tuesday, May 17, 2:30pm, The Recital Hall, 1P-120

Chamber Music/Young Artist Recital

Admission: Free

Tuesday, May 17, 7:30 pm, Recital Hall, 1P-120

CSI Honors Recital

Tickets: \$5

Wednesday, May 18, 2:30 pm, Recital Hall, 1P-120

Recital: The CSI Chorus

Directed by Marina Alexander

Tickets: \$5

Wednesday, May 18, 7:30 pm, Lab Theatre, 1P-110

Recital: The CSI Jazz Ensemble

Directed by Michael Morreale

Tickets: \$5

All events take place in the Center for the Arts, College of Staten Island

For information, please call 718.982.2520 or 718.982.ARTS

All performance events are CLUE-certified.



Research Paper Presentations

Center for the Arts

1:30pm - 4:30pm

PANEL DISCUSSION

Culture of the Atomic Bomb—Japan after World War II

Lecture Hall, 1:45pm–3:15pm

Faculty Mentor – Dr. Janet Ng Dudley

Atomic Bomb and Its Culture Effects: Overview

Ani Peradze

During the final stages of World War II in 1945, the United States decided to use atomic bombs against Japan in order to end the war. On August 6th and August 9th two bombs were dropped in the cities of Hiroshima and Nagasaki, which killed hundreds of thousands of people. In both cities, most of the dead were civilians. Even though, the U.S. government had a full understanding of the power of an atomic bomb, no one expected this kind of disastrous outcome. This paper gives an overview of the politics of the dropping of the Atomic Bomb, the political repercussions and the effects on Japan and its cultural expression

Kurosawa and the Samurai

Raymond Reyes

This project is an in-depth look at the historical/cultural context of Akira Kurosawa's post-war samurai films Sanjuro, Yojimbo, Seven Samurai and The Hidden Fortress. It discusses the purpose and aim of the nonstandard portrayal of samurai in the aforementioned films by comparing and contrasting the characters to historic samurai practices as outlined in William Scott Wilson's "Ideals of the Samurai" and Yamamoto Tsunemoto's Hagakure.

Human in the Shell

Jennifer Megan Terzic

In a fantastic future world, when the only distinction between humans and machines has been narrowed, and even blurred, what is the main ingredient that defines us as humans? What is a human; what makes us human? When the frailty of mortality has been stripped away, or "cyberized," is there any interior or "origin"? Through an analysis of a popular, cyberpunk franchise in Japan, which also became influential in the U.S., I will attempt to answer these questions.

The Social Aesthetics of Kawaii

Victoria Cooper

Modern Japanese society is uniquely defined by a particular style known as Kawaii. Kawaii, most commonly translated as "cute," takes on a variety of meanings from adorable and lovable to childlike. From the Japanese eye, "cute" is not only common, it is an acceptable term used in everyday vernacular, a popular aesthetic, and an obsessively sought after approach to living. However, the word goes beyond describing a physical and visual style as described previously; rather, Kawaii has become a lifestyle in Japan as many, from children to adults, have made a conscious choice to indulge in this innocent aesthetic. In this paper, I will answer the question how, in such a serious and logical society, can such unrealistic characters not only be popular, but also be identified with by people of all ages, genders, and social classes?

Social Scientific Methods in Comparative Perspective

Room 222, 1:30pm–2:55pm

PAPER 1

The Western Union Telegraph Expedition and the Participants' Views of the Natives They Encountered

Kelly Cooper

Faculty Mentor: Dr. Susan Smith-Peter
Department of History

Between 1865 and 1868 members of the Western Union Telegraph Expedition encountered many native people on their journeys through Alaska and Siberia. Historians have not given a detailed or complete account of the Western Union Telegraph Expedition, especially the encounters between the participants and the natives of Siberia and Alaska. This paper tries to provide this account and examine a topic that has not been given much consideration. This paper concentrates on the views of the expedition participants towards the natives they encountered on their journeys. Based on the written accounts of George Kennan, Richard Bush, and William H. Dall, this paper argues that all the participants viewed the natives they encountered as inferior, and that this opinion was shared by the white American population at the time. The expedition members' views about the natives can be connected to the broader white American view that natives, including Native Americans, were barbarians. This paper argues that this view contributed to the negative view the expedition participants had of the natives in Alaska and Siberia. This negative view varied in degree among the participants, but none of them found the natives to be equal. This was surprising because most of the participants would have died had the natives not been so helpful in such terrible conditions.

PAPER 2

The International Committee of the Red Cross and the Terezin Ghetto

Deryn Cro

Faculty Mentor: Dr. Mark Lewis
Department of History

The Nazis set up the Terezin ghetto in the Protectorate of Bohemia and Moravia to persuade the outside world that Jews were being protected

within the Third Reich. Even after an investigation by the International Committee of the Red Cross (ICRC), the Nazis were still able to maintain this façade. This study focuses on the time between 1941-1945 when Terezin was first developed, and suspicions regarding the Final Solution began to increase. Historians have previously speculated that the ICRC, as a neutral organization, had its hands tied with regards to the Holocaust. However, this research hopes to use archival evidence to show that the ICRC not only had previous knowledge but also chose to not act upon this information. It also seeks to explain why the organization made the decisions it did. Another objective is to explain why the ICRC made no further inquiries after visiting Terezin, and the lengths the Nazis went to in order to cover up the true purpose of the “model ghetto.” This research looks to back up accusations that the ICRC failed to provide proper humanitarian assistance that could have halted the Nazis' plans for extermination.

PAPER 3

The New York City Mayoralty and Public Opinion

Kanika Khanna

Faculty Mentor: Dr. Richard Flanagan
Department of Political Science, Economics and Philosophy

The New York City Mayoralty and Public Opinion examines the relationship between approval ratings and conditions/events and on the highest political office of New York City. Through a comparative study of the mayoral terms of Koch, Dinkins, Giuliani, and Bloomberg, I note a shift in public perception of mayoral performance regarding the economic state of New York City. This study utilizes both statistical analysis of polling data and historical analysis of New York City's political system. Resources used include polling data, archives, newspapers, and numerous historical publications. From my research, I have concluded that the Bloomberg mayoralty is held less accountable for economic downturns than previous administrations; however, opinions on a mayor's effectiveness during economic struggle are influenced by the portrayal of the mayoralty's leadership and relatability.

Environmental Studies: Biology, History, and Culture

Room 222, 3:00pm–4:30pm

PAPER 4

Long Distance Dispersal—A Mechanism for Range Expansion

Brian Kateman

Faculty Mentor: Dr. Shaibal Mitra
Department of Biology

Dispersal is of ecological and evolutionary significance for many areas in population biology, including population synchrony, range expansion and colonization, source-sink and meta-population dynamics, and genetic structure. To predict rates of spread, it has recently become clear that Long Distance Dispersal (LDD) rates, although much more difficult to measure than median dispersal distances, are critically important because static dispersal kernels underpredict the rate of population spread. Furthermore, it has recently become evident that distances dispersed by individuals may change through time as a population expands. Both of these issues – the contribution of LDD to population spread, and the possibility that the distribution of dispersal distances of expanding populations change over time – are explored through analysis of continent-wide data on bird abundance and dispersal supplied by the Bird Banding Laboratory. We characterized the frequency of dispersal distances for 10 species and found that all followed a Leptokurtic distribution. We tested for changes in the distribution of dispersal distances of expanding populations, over time and across space, by comparing dispersal from newly-occupied areas with dispersal from core areas. Among the 10 species explored, the Carolina Wren, Eastern Tufted Titmouse, Great Black-backed Gull, Northern Cardinal, Northern Mockingbird, Red-bellied Woodpecker, and Painting Bunting showed a significant correlation between average dispersal distance and time, supporting the notion that dispersal distances increase as a population expands and thus lead to range expansion.

PAPER 5

From a Clay Mine to an Oasis: The Transformation of Charleston (1854–1986)

Christina Landolfi

Faculty Mentor: Dr. John Wing
Department of History

There is a hidden gem that lies in the Charleston area of Staten Island. My visit to Clay Pit Ponds State Park Preserve prompted me to find out two things; the first was how a former operating clay mine evolved into an oasis and secondly how a place so beautiful and ecologically diverse came into existence on Staten Island. The stresses that are placed on the environment by human activities often cause dramatic changes to the landscape, as we see with the disappearance of forests, glaciers, and animal habitats. What I discovered was that industrial clay mining played a role in transforming a pine barren landscape to one with a unique and diverse ecology. The extraction of clay led to dramatic environmental changes of the landscape. The clay pits that were once extensively mined were abandoned and were left to lay fallow allowing nature to take its course. The clay pits filled with rainwater, which started the stages of succession, which would not have been possible without the clay pits and the sands, gravels, and clays that were laid down during the Cretaceous period. The Preservation of Clay Pit Ponds led to the founding of the Protectors of Pine Oak Woods, who fought to preserve the land. Clay Pit Ponds became a State Park Preserve in 1986 and held community, recreational and educational activities, which are still continued today. The work of the Protectors of Pine Oak Woods is an example of how to make a post-industrial landscape something beneficial to the local community. This paper argues that the history of Clay Pit Ponds, the historical, geological, and biological processes and human activity all played a major role on the transformation of the landscape

PAPER 6

The Navajo Struggle for Compensation—Health and Environmental Effects of Uranium Mining Since the Cold War Era

Kasuni Nanayakkara

Faculty Mentor: Dr. John Wing
Department of History

An important environmental struggle involving the Navajo nation began during the Cold War era (1947-1991), when there was a continuing state of political conflict, military tension, and economic competition primarily between the Soviet Union and the United States. The escalation of the Cold War between the two world powers sent low-income Navajo workers to uranium mines in the United States to mine the ore for the processing of nuclear weapons. Since the Navajo workers proved to be an inexpensive labor source, the federal and state governments used them to provide raw materials for the buildup of the American nuclear arsenal. In my paper, I combine oral histories, interviews, photographs, and a range of secondary sources to examine how Navajo workers and their families living in the Four Corners region were neither informed of the dangers of uranium mining nor were they given proper clothing to prevent radiation exposure. The exploitation by the United States government and the mining companies, along with the lack of proper health care following radiation exposure, caused dire environmental and medical issues for the miners and their families. The resulting high rate of illness among the miners and the deadly legacy of past uranium mining led to the passage of the 1990 Radiation Exposure Compensation Act and the Diné Natural Resources Protection Act of 2005, but many are still exposed to radiation and contaminated water near mining sites.

PAPER 7

A Sacrifice for Water. Quenching the Thirst of New York City

Daniel Stewart

Faculty Mentor: Dr. John Wing
Department of History

Taking an environmental historical perspective, my research has found that the process of creating a water supply for New York City has heavily affected the local towns and communities in upstate New York. While creating these water supplies, towns had to be destroyed or removed from their original location in order to create several massive reservoirs in the Croton River headwaters and in the Catskill Mountains. I conducted archival research in the town of Southeast, NY and interviews with community members near the reservoirs to investigate what actually happened and how these local communities were affected. I conclude that not only were towns destroyed but thousands of residents had to sell their homes and relocate to neighboring towns. When these reservoirs replaced these towns, the neighboring economies were heavily affected as a result of these newly created water supplies. Roughly nineteen towns were destroyed and over 4,000 people lost their homes.

One example of how these man-made reservoirs negatively affected communities and businesses was the unintended flooding of a local iron ore mine named the Tilly Foster Mine. This mine supplied magnetic iron ore to the entire east coast the United States. When the mine was deemed too dangerous from the flooding, iron ore distribution stopped and local businesses that used this iron were forced to shut down. On the other side of the coin was how a reliable clean water source was going to affect New York City. With a newly built water supply system, the city was able to thrive and eventually eliminate water-borne diseases that plagued the city such as cholera, yellow fever and typhoid. My aim was to point out both negative and positive impacts of these reservoirs and to make cases for both. Ultimately, without these reservoirs, New York City would not have been able to grow to its current size.



Research Poster Presentations

Center for the Arts

Atrium

1:30pm - 4:00pm

Research Poster Presentations

POSTER 1

Similarity Matching for Adverse Events in Large Data Sets

Christopher Savo and Dean Kunjraiva
Faculty Mentor: Dr. Deborah Sturm
Department of Computer Science

POSTER 2

The Effects of Hypercapnic Hypoxia on Naked Mole Rat Activity Levels, Memory, and Social Interaction

Rena Berkovits, Nicole Boffa, Vanessa DeLuca
Faculty Mentor: Dr. Daniel McCloskey
Department of Psychology

POSTER 3

The Demise of Enron and Arthur Andersen

Michael Ferrandino
Faculty Mentor: Professor Deborah Brickman
Department of Business

POSTER 4

The Effects of Video-game Play on Various Cognitive and Information Processing Skills: A Meta-Analyt

Melissa Anne Palladino
Faculty Mentor: Dr. Patricia Brooks
Department of Psychology

POSTER 5

Researching Film History – From Theatre to Cinema

Michael Maslankowski
Faculty Mentor: Dr. Matthew Solomon
Department of Media Culture

POSTER 6

Synthesis of Curcumin Incorporated Copolymers via ATRP

Cristopher Santana
Faculty Mentor: Dr. Krishnaswami Raja
Department of Chemistry

POSTER 7

Synthesis of Eco-friendly Plasticizers Using Curcuming di-ethers

José A. Saltos
Faculty Mentor: Dr. Krishnaswami Raja
Department of Chemistry

POSTER 8

Synthesis of Curcumin Incorporated Copolymers via ATRP

Frantz Pierre Toussaint, Jr.
Faculty Mentor: Dr. Krishnaswami Raja
Department of Chemistry

POSTER 9

Clicked' Sweet-Curcumin: Modulator of Amyloid- β Aggregation at Ultra-low Concentrations

Dinali Obeysekera
Faculty Mentor: Dr. Krishnaswami Raja
Department of Chemistry

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Faculty Mentor: Dr. Alejandra Alonso

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Irvin Ibarguen

Faculty Mentor: Dr. Calvin Holder

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Regina Miller, Fatabardha Shala

Faculty Mentor Dr. Alejandra Alonso

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Faculty Mentor: Dr. Jonathan Peters

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Faculty Mentor: Dr. Jonathan Peters

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Faculty Mentor: Dr. Susan Imberman

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Faculty Mentor: Dr. Abdeslem Elidriissi

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Faculty Mentor: Dr. Alejandra Alonso

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Faculty Mentor: Dr. Alexandru Voicu

Department of Political Science, Economics and Philosophy

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Faculty Mentor: Dr. Daniel McCloskey

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Teaching Fractions Across Elementary Grades

Kimberly DiGregorio and Jillian Popper

Faculty Mentor: Prof. Judit Kerekes

Department of Education

POSTER 1

Similarity Matching for Adverse Events in Large Data Sets

Christopher Savo and Dean Kunjraiva

Faculty Mentor: Dr. Deborah Sturm
Department of Computer Science

With the advent of mandatory and voluntary error reporting and the formation of Patient Safety Organizations, scalable methods are needed to analyze the expanding database of near misses and adverse events. We explore the feasibility of incorporating real-time similarity matching into medical reporting systems using parallel processing and a small Linux cluster. Finding similar events has been shown to identify patterns or clusters of errors and can help prevent or mitigate future occurrences. Our prototype will run on the CUNY High Performance Computing Center clusters. The code is written in C++ using the Message Passing Interface (MPI).

*This work is supported in part by a PSC-CUNY research grant

POSTER 2

The Effects of Hypercapnic Hypoxia on Naked Mole Rat Activity Levels, Memory, and Social Interaction

Rena Berkovits, Nicole Boffa, Vanessa DeLuca

Faculty Mentor: Dr. Daniel McCloskey
Department of Psychology

In their natural environment, naked mole rats experience low levels of O₂ during rainy seasons that humans cannot handle. These conditions were mimicked in the naked mole rat laboratory colony by increasing carbon dioxide levels and creating a hypercapnic hypoxic environment. Levels of activity, memory, and social interaction were measured under normoxia and hypercapnic hypoxia. The hypothesis was that overall movements would be decreased, memory would suffer, and social interaction would decrease. With concerns over current climate changes, the increasing effects of pollution is crucial for future levels of O₂ and CO₂ in the air. If this change affects naked mole rats, who are predisposed to hypoxia, humans would likely be more severely affected. The hypothesis was not supported, however, and the reverse was found. Overall movements actually increased, memory maze trip times were reduced, and social interaction increased.

POSTER 3

The Demise of Enron and Arthur Andersen

Michael Ferrandino

Faculty Mentor: Professor Deborah Brickman
Department of Business

Enron was one of the largest corporations in America. Its stock increased 87% from 1999 to 2000, Fortune magazine put Enron on its Fortune 500 list as the seventh largest corporation in 2000 and its CEO, Jeff Skilling, was rated the top CEO in America. Arthur Anderson LLP, Enron's auditor, was a big five international accounting firm with \$9 billion in revenue, 85,000 staff around the world and was known for its ethical accounting standards. Yet, in 2000, everything changed. Enron's stock price suddenly dropped, and its executives were quickly selling off their stock. Enron later announced that it was changing its financial statements for previous and current years due to "accounting errors." Investors lost millions in their investments and 401(k) plans and thousands of employees lost their jobs. Arthur Andersen shredded important Enron documents upon hearing of the investigation. People from both companies were brought up on charges such as securities fraud, manipulating evidence and insider trading. Eventually, Enron completely dissolved and Arthur Andersen had its CPA license revoked. After all of this, people wondered: how could this have happened? This is the question that my thesis tries to answer. By answering this question, we can figure out how to avoid events such as these, which have significant negative impacts on individuals and the economy, from ever happening again.

POSTER 4

The Effects of Video-game Play on Various Cognitive and Information Processing Skills: A Meta-Analyt

Melissa Anne Palladino

Faculty Mentor: Dr. Patricia Brooks
Department of Psychology

As the controversy over excessive video game play grows, so arises the demand for scientific research focusing on either positive or negative effects on players. The present research attempts to examine the cognitive impact of video game play on players' information processing. An extensive literature review was conducted yielding 38 papers to be included in this meta-analysis (52 experiments with 204 comparisons). We examined a variety of outcome measures: mental rotation and other aspects of visual-spatial processing (multiple object tracking, contrast sensitivity, hand-eye-motor coordination, etc.), reaction time, and selective attention. Preliminary analyses of the 55 studies, using a random effects model, indicate that video game playing enhances information processing skills, $d = .68$ (95% CI = .53/.84). Moderators include amount of video game play, game type, experiment type, and population, including age and gender. Findings will be discussed with attention paid to educational implications for multiple populations.

POSTER 5**Researching Film History—From Theater to Cinema**

Michael Maslankowski

Faculty Mentor: Dr. Matthew Solomon
Department of Media Culture

My research consisted of using systematic approaches for gathering information and evidence pertaining to selected topics in the field of film history that will be used by Professor Solomon in preparing a forthcoming book chapter and conference presentation. The first half of my research consisted of the use of microfilm readers at the College of Staten Island Library to locate and copy information found in the microfilmed periodical, *Moving Picture World*, that detailed how both the magic lantern and cinema were deployed in relation to religion in the 20th century, between the years of 1907 to 1910. The second phase of my research focused on the two films, **The Man Who Laughs** (1927) based on the French novel by Victor Marie Hugo and **Laugh, Clown, Laugh** (1928) based on the Italian play adopted from Ridi, Pagliaccio of Fausto Martini. This research was based out of the New York City Public Library for Performing Arts at Lincoln Center, where I used scrapbooks, microfilms, news clippings, and film archives to gather information from the 1910s and the 1920s dealing with these films/plays adaptations. The last phase of this research project dealt with the French archive database, Gallica. I used this database system to locate the publication, *L'Orchestre* (first published in 1856), and primarily focused on the 19th century, between the years 1888 to 1891. I copied the publications, detailing performance information pertaining to the Robert-Houdin Theatre, during an important transitional phase in its history to help analyze trends that occurred over this period of time.

POSTER 6**Synthesis of Curcumin incorporated copolymers via ATRP**

Cristopher Santana

Faculty Mentor-Dr. Krishnaswami Raja
Department of Chemistry

Curcumin based Biomimetic Polyphenols: The chemical synthesis of therapeutically relevant, well-defined high molecular weight polyphenols is very rare. We propose to employ the following general strategy: synthesizing living polymers in which the side chain pendant groups and the polymer chain end possess orthogonal reactivity, followed by the attachment of a number of water soluble, biocompatible moieties and appropriately designed curcumin derivatives to the reactive polymer side chains. In one embodiment t-butyl acrylate will be polymerized via Atom Transfer radical Polymerization using an azide incorporated initiator 1. The polymers with azide chain end will be deprotected to produce poly(acrylic acid) with a single azide chain end. The resulting polymer will be further reacted with varying ratios of monoamine derivatives of curcumin followed by commercially available glucose amine (Glu-NH₂)/oligoethyleneglycol-NH₂ (OGE-NH₂) in two sequential amidation steps to produce libraries of polymers with varying loadings of curcumin (Scheme 1). The glucose/PEG component of the polymers serves to improve the water solubility of the polymers.

Scheme 1. Synthesis of poly (acrylic acid) based water soluble curcumin side-chain polymers with reactive chain end. gestation births.

POSTER 7

Synthesis of Eco-friendly Plasticizers Using Curcumin di-ethers

José A. Saltos

Faculty Mentor: Dr. Krishnaswami Raja
Department of Chemistry

Plasticizers are widely used for their effectiveness in reducing the hardness, density, melt viscosity, glass transition temperature and volume resistivity of a polymer. They are employed in a wide range of industries such as the biomedical, construction, plastics, and more. Phthalate esters are the most widely used plasticizers for their suitable applications and availability, and account for 92% of the plasticizers produced worldwide. Its limitation lies in that phthalate esters have been reported to migrate out of the polymers, making them less flexible and less efficient. It is also associated with endocrine disruption, reproductive and developmental toxicity in humans, and with negative environmental impact on plants and animals. Curcumin is the active ingredient in the curry spice turmeric, it is generally regarded as safe by the FDA. The molecule is rigid in structure with two phenolic groups that can be modified covalently. We plan to synthesize green eco-friendly plasticizers based on curcumin and tetrahydro curcumin, by reacting the molecules with bromohexane, bromododecane and bromohexadecane to produce curcumin and tetrahydro curcumin diether derivatives. These plasticizers will be blended to three different polymers: PMMA, PVC and Polystyrene in various percentages: 35%, 45% and 55%, to test their effectiveness in inducing depression of the glass transition temperature in the polymer/plasticizer system. The Curcumin/THC plasticizers we plan to produce are better from both ecological and toxicological viewpoints.

POSTER 8

Synthesis of Curcumin Incorporated Copolymers via ATRP

Frantz Pierre Toussaint, Jr.

Faculty Mentor: Dr. Krishnaswami Raja
Department of Chemistry

The chemical synthesis of therapeutically relevant, well-defined high molecular weight polyphenols is very rare. We propose to employ the following strategy: synthesizing living polymers in which the side chain pendant groups and the polymer chain end possess orthogonal reactivity, followed by the attachment of a number of water soluble, biocompatible moieties and appropriately designed curcumin derivatives to the reactive polymer side chains. In one embodiment Glycidyl methacrylate will be polymerized via Atom Transfer Radical Polymerization (ATRP) using an azide incorporated initiator. The resulting polymer will be further reacted with varying ratios of mono-carboxylic acid derivatives of curcumin followed by commercially available Glucuronic acid in two sequential ring-opening esterification steps to produce libraries of polymers with varying loadings of curcumin. The glucose component of the polymers serves to improve the water solubility of the polymers.

POSTER 9**Clicked' Sweet-Curcumin:
Modulator of Amyloid- β
Aggregation at Ultra-low
Concentrations**

Dinali Obeysekera

Faculty Mentor: Dr. Krishnaswami Raja
Department of Chemistry

We have developed a general strategy towards mono-functional derivatives of curcumin, the active ingredient in turmeric (the dried rhizomes of *Curcuma longa*). The synthesis of a water/plasma soluble, non-toxic, biocompatible derivative of curcumin with amplified bio-efficacy in modulating A β aggregation is presented. Curcumin mono-alkyne was 'clicked' with commercially available acetal-protected galactose azide. The deprotected curcumin 'clicked' galactose [sweet-curcumin] is freely soluble in water. Sweet-curcumin inhibits A β aggregation at significantly lower concentrations compared to curcumin. Where curcumin barely inhibits A β aggregation at a concentration of 8 μ M, sweet-curcumin inhibits aggregation at concentrations as low as 8 nM. It was found to be a more powerful antioxidant than curcumin. A MTT assay on cultured hippocampal slices of mouse-brain indicated that the sweet-curcumin is potentially neuroprotective and non-cytotoxic. Thus Sweet-curcumin is a promising Green-drug candidate against AD.

POSTER 10**Housing Bubble in China**

Daniel Blois

Faculty Mentor: Professor Alan Zimmerman
Department of Business

With the Global Collapse of 2008, which was created from a housing bubble in the United States, much research has been done to prevent it from happening again. Currently, China, which recently took the spot as the second largest economy in the world, is going through a similar housing bubble. Unfortunately, despite their growing importance not much has been written about this phenomenon. This study will show that median home prices in China are greater than median income. It will further show home prices, when adjusted for inflation, provide a small modest return. The findings of this study will show how close China's bubble is to bursting and what measures can be done to prevent it. As the world becomes a more unified economy, price speculations have the ability to take down global economies; this research is a further exploration of how to prevent this.

POSTER 11

Social Media Based Grants Management System

Gayathri Sudarsanan

Faculty Mentor: Dr. Soon Chun

Department of Business

The current granting process in foundations and other non-profit organizations are primarily structured process involving the experts and board members as the main contributors in selecting and granting projects. It is a “closed” process. In this project, we propose to explore and extend in the current Grant Management System at Ford Foundation to include the possibility of public participation in the grant selection and deliberation process through social media technologies, such as commenting, rating, recommendations, social networks, and microblogging, etc.

Based on this research of social media and its impact on non-profit sectors we plan to make recommendations to extend the Ford Foundation’s current system of grant review process to include the social media features for public participation in review process. The focus of the project is to design and create a social media-based grant system, which would make the grant review process more transparent. Grants selection and management would increase public engagement and accountability of grant selection and management process with the recommended system.

The social media based grant system is intended to increase the effectiveness of the grants evaluation by making them open and listening to the public’s opinion. The design features include: 1. Registered users can comment on the grant applications; 2. rate the application with either like or dislike; or 3. comment supporting their reason for “liking” or “un-liking” the grant. To help the public evaluation and commenting, the system will provide the users with analytic tools for past data to better augment their decision process. It also provides the summary of public ratings and opinions for the final decision makers. The Ford Foundation may be able to consider and reflect on the likes and comments to gauge whether the public supports this project, reducing the subjective biases in favoring one grant over another. The system we design will make the Ford Foundation’s grant selection process more democratic, more transparent and accountable.

POSTER 12

Quantifying the Aggregate Net Income from the Port Authority Staten Island Bridges

Thomas Brigandi

Faculty Mentor: Dr. Jonathan Peters

Department of Business

Using a unique dataset constructed based upon historical financial reporting from the Port Authority of New York and New Jersey, the authors estimated the enterprise value that was created over an extended period of time for the Staten Island Toll Facilities to New Jersey. In particular, the project estimates a number of key metrics of financial success including capital costs, operation costs, facility profitability, payback period and capital burden as well as the total value created by the toll facilities.

Options for financing are explored as are the key policy issues that must be addressed to utilize private capital in transportation infrastructure. The authors find that the Staten Island Bridges were large financial liabilities in their early life, however, growth in traffic and toll rates have resulted in assets that have contributed a tremendous amount of capital to regional projects.

POSTER 13

**How Americans
Memorialize Tragedies**

Demetrius George Dermanis

Faculty Mentor: Dr. Catherine Lavender
Department of History

I am looking at how Americans have memorialized tragedies, especially Pearl Harbor and 9/11. Using the memorialization of these events, I will look at how these attacks affected the lives of many people for years to come. My focus is on visual memory, using images to really get the full effect of the events and to get the viewer to understand how these attacks affected people emotionally and physically. I feel images have more of an effect on a person than just reading it from a paper. For context, I also will look at the memory of different tragedies that took place in American History. Some memorializations I am going to look at are those of the Vietnam War, the Kennedy Assassination, and the Chicago and Peshtigo Fires. To this day people still visit sites like the Vietnam Wall in Washington to read the names of those who lost their lives protecting the freedom of Americans.

POSTER 14

Sea Urchin Development

Lisa LaManna

Faculty Mentor: Dr. Charles Liu
Department of Engineering Science and Physics

Metazoans have a life cycle that uses intermediate juvenile or larval stages as a main mode of development. These larval stages are characteristic of indirect development where larval cells partially differentiate to give a different organismal phenotype than that of the adult form. The adult form is given after the larval form undergoes a morphogenesis, where larval tissues dedifferentiate and/or replace old tissues with adult tissues. Both protostomes and deuterostomes contain lineages of organisms that develop directly and indirectly, but the question of which method of development was used by the protostomes and deuterostomes ancestor (PDA) is still unanswered. Core macroregulatory networks in larva control the body axis and major developmental processes like gastrulation by invagination. Studying these macroregulatory networks among major metazoan species, particularly the role of histones in gene regulation, would provide insight to the developmental mode of the PDA.

POSTER 15

**Species Accumulation Curves—
An Assessment Tool for
Species Richness**

Anna Theodoropoulos

Faculty Mentor: Professor Lisa Manne

Department of Biology

A general feature of ecological communities is that the number of species accumulates with increasing area sampled and that this accumulation will form a plateau when sufficient sampling area (or time) has been reached. Species accumulation curves show the rate at which new species are found for a certain number of sample sites and can be used to provide an estimate of species richness. Characteristics of the landscape (over which the sampling is occurring) influence the rate of species accumulation; in particular, heavily fragmented areas should demonstrate a faster rate of accumulation of species, with a lower number of species overall (compared to less-fragmented areas). This phenomenon can be addressed using Breeding Bird Survey data for four regions: New York and Michigan, where the habitat is a somewhat fragmented landscape of forest and farmland, and Massachusetts and Maine, where the habitat is largely returned to forest (from farmland). For Massachusetts, Maine, New York, and Michigan, we assess whether the more fragmented areas (NY and MI) will yield more rare species than the MA and ME areas; if yes, this difference will be reflected in the species accumulation curves for the two areas.

POSTER 16

**The Impact of Extreme
Temperature Events on North
American Breeding Bird
Abundances**

Anna Theodoropoulos

Faculty Mentor: Professor Lisa Manne

Department Of Biology

Although climate change is believed to have had a large impact on many species' distributions, a strong link between climate and species abundance has yet to be established. We tested whether extreme mean annual temperatures in a particular year (or years) would result in changed abundance the following year for North American resident terrestrial bird species. For these species, using time series methods, we assessed the strength of maximum summer temperature as a driver for local abundance, during the period 1985 - 2005. Previous work from Europe indicates that avian species abundances decline following heat wave events. We expect to observe a smaller effect for North American birds, because climate has not warmed uniformly across North America.

POSTER 17

Bioactivity of Curcumin Derivatives

Amram Averick

Faculty Mentor: Dr. Krishnasawami Raja
Department of Chemistry

Curcumin, a derivative of the tumeric (*Curcuma longa*) plant, has strong anti-oxidant and anti-cancer potential. However, because of its poor bioavailability and water solubility it has impaired functionality. In order to overcome these impediments, derivatives of curcumin have been made that attach functional groups to it or attach it to a polymer. These derivatives include: Curcumin-COOH, Sweet Curcumin, Curcumin-Alkyne, Curcumin-Star Polymer conjugates, and Curcumin-Brush Polymer conjugates. This project will assess the bioactivity of these derivatives, both absolutely and relative to un-modified curcumin. Anti-oxidant assays will be used to determine the anti-oxidant potentials of the derivatives and curcumin. MTT assays will be used to determine the anti-cancer effectiveness of the derivatives and curcumin.

POSTER 18

Japan Air Raids

Monica Kumar

Faculty Mentor: Dr. Cary Karacas
Department of Political Science, Economics, and Philosophy

During the Pacific campaigns of World War II, the United States Army Air Forces conducted air raids in Tokyo and most of Japan's other cities. The firebombing raid on Tokyo between March 9th and 10th in 1945 was one of the most destructive bombing raids in history in that it killed an estimated 100,000 people. I had the opportunity to conduct research about the air raids through a study of a bilingual historical archive called JapanAirRaids.org that was established by my faculty mentor, Professor Cary Karacas. One important aspect about the website is that it features a number of moving images, including American newsreel footage, documentaries, and propaganda films from the 1940s, as well as interviews of air raid survivors. The videos are hosted on the dotSUB.com website, which allows them to be easily translated and subtitled into any language. Given that I am from India and speak Hindi, I translated three of the videos into that language. In addition to a 1946 newsreel about the city of Hiroshima one year after the atomic bombing, I translated two November 2010 interviews of air raid survivors Kiyooka Michiko and Toda Shigemasa, who share with us the horrific tales of the March 10 firebombing raid on Tokyo and the aftermath. Hindi is the most predominant language in India, spoken by around 180 million people. Therefore, my research and translation has the potential to reach a wide audience and educate them about the World War II air raids on Japan.

POSTER 21

An Investigation of the Effects of Socialization of Language Acquisition within Infancy

Nicholas Dalonzo, Kristin Lenzo, Allyson Pawlosk

Faculty Mentor: Professor Naomi Aldrich
Department of Psychology

Language acquisition in infancy has long been a confounding topic in the field of linguistics. Experts have hypothesized that several factors may contribute to word acquisition and association. The present study explored four main causal factors that have been associated with promoting the onset of language development in infancy: mother/child interaction, sibling relationships, media exposure, and schooling enrollment and environment. Specifically, we examined infants' (6- to 14-months) behavior with respect to language development and the social interactions that promoted these behaviors. Twenty-five parents located in New York City were administered a detailed questionnaire about their infants, assessing whether different forms of socialization have a significant impact on language acquisition. Questionnaires were divided into sections based on the aforementioned subtopics: mother-child interaction, day care interaction, sibling interaction, and media interaction. We used a correlational design for our survey results. Results established a relationship between both the age of initial language development and the four categories of socialization. Based on our findings, we concluded that external factors lead to language development. We found there to be a strong relationship between exposure to socialization and the development of language in infancy.

POSTER 23

An Investigation of the Impact of Children's Programming on Developing Gender Roles

Jennifer Carrion, Alyssa Fazio, Jacqueline Imbemba, Kayla Mera

Faculty Mentor: Professor Naomi Aldrich
Department of Psychology

The present study examined the impact of children's television programming on developing gender roles. Research suggests that as children are becoming aware of their gender, they begin to shape their behavior and personality according to role models of the same sex (Luecke-Aleksa et al., 1995). Research has shown that children's selection of television programs is gender-based as well: boys tend to watch male-oriented television shows, whereas girls tend to watch female-oriented television programming. In doing so, researchers have found that children who are exposed to gender stereotypes on television are more likely to endorse gender stereotypes and act in a gender stereotyped manner (Aubrey & Harrison, 2004). In an effort to assess the gender-stereotyped content of children's television programming, the current study examined the content of two shows that vary according to gender orientation: *Go, Diego, Go!* (male-oriented) and *Dora the Explorer* (female-oriented). The episodes were selected based on similar thematic focus and equal running times. To evaluate the stereotypical content within the episodes, 22 research assistants coded the color scheme of the characters' clothing and accessories, the gender of the characters (giving assistance and receiving assistance), the use of singing and laughter to express emotions, and the color scheme of the environment. Analyses revealed differences between the episodes that are consistent with the gender-stereotypical content identified in the literature. Overall, the results indicate that the content of *Dora the Explorer* and *Go, Diego, Go!* promote gender stereotypes that could potentially affect children's gender role development.

POSTER 25

The Effects of Signaled Delay and Intertrial Interval Duration on Discrimination Learning in Pigeons

Alexa J. Cimbali, Julyse A. Migan-Gandonou Cu

Faculty Mentor: Dr. Bertram Ploog
Department of Psychology

Sixteen pigeons learned a series of reversals of a simultaneous red-green visual discrimination with a reinforcement delay of 6 s. The signal presented during the reinforcement delay and the intertrial interval (ITI) was varied between 40-session conditions. The main finding was that performance with the 8-s ITI was higher than with the 40-s ITI and that the introduction of a novel delay signal disrupted performance, at least temporarily. The finding of an ITI effect suggests that performance depends critically on remembering the outcome of the immediately preceding trial. The novel signal effect suggests that performance depends, at least in part, on the delay signal's acquisition of conditioned reinforcement properties. The study is still in progress. Future conditions will be conducted in order to (a) replicate the ITI effect and (b) to further understand the role of the delay signal.

POSTER 26

Extending The Census of Simplest Hyperbolic Knots

Timothy Mullen

Faculty Mentor: Dr. Abhijit Champanerkar
Department of Mathematics

Thurston's seminal work established the importance of hyperbolic geometry in the study of 3-manifold topology and knot theory. It is an interesting problem to study the geometric properties of hyperbolic knots. The minimum number of ideal tetrahedra used to triangulate a hyperbolic knot complement gives a natural measure of its geometric complexity.

The census of hyperbolic knots using this measure of complexity gives a different view of the space of all knots than the view using the diagrammatic complexity of knots i.e., the crossing number of knots. For example, many of the geometrically simple knots have very high crossing numbers. Hyperbolic knots with geometric complexity up to 6 tetrahedra were found by Callahan-Dean-Weeks and extended to 7 tetrahedra by Champanerkar-Kofman-Patterson. In this project we extended the existing census of simplest hyperbolic knots to 8 tetrahedra and are working on providing a diagrammatic description of all the knots.

POSTER 27

Geographical Range Size Related to Niche Breadth

Erica Zito

Faculty Mentor: Professor Lisa Manne
Department of Biology

Niche breadth measures how tolerant (or intolerant) a species is to a range of conditions. Species' niche breadth can be measured along many different axes (i.e.: temperature, humidity, soil salinity, etc.), so that species that only tolerate a narrow range of (e.g.) temperature and moisture conditions will be very specialized, and also able to live in a small number of locations. So: the expectation is that species with narrow niche breadths will also have small geographic ranges. I test this idea with tree species of the northeastern U.S.

POSTER 30

The Rape of Nanjing and Sino-Japanese Relations Since

Matthew Greger

Faculty Mentor: Dr. Charles Liu
Department of Engineering Science and Physics

The Rape of Nanjing is one of the most underrepresented genocides in the history of war. Most people do not know that World War II started in 1931 for China. The Japanese army invaded from the North and by 1937 reached the city of Nanjing. What ensued was a mass murder of over an estimated 300,000 soldiers and civilians in an event still raw with emotion. There has been considerable effort to conceal the war crimes and atrocities carried out by Japanese soldiers which included rape, beheading, torture, looting, burying alive, and dismemberment. The goal of my research is to showcase Sino-Japanese relations since WWII and more importantly modern relations on the subject. It remains emotionally charged among many Chinese and Japanese to this day, young and old. My perspective as a young American citizen may bring a unique perspective in the study of this subject.

POSTER 31**Cloning and Expression of the Transmembrane Domain of NKG2D Natural Killer Cell Receptor**

Vadim Dushkin

Faculty Mentor: Dr. Sebastien Poget
Department of Chemistry

Natural Killer Cells (NK cells) are a crucial component of the innate immune system. These cytotoxic lymphocytes play a major role in the apoptosis of virally infected and tumor cells. What makes these immune system cells unique is their ability to perform these functions without previous exposure to the abnormal cells and without the dependence on MHC molecules of infected cells. A stressed or an infected cell's ability to express the MHC-I molecule can be inhibited resulting in the inability of the cell to be recognized by the body's immune system. However, the cell does express stress-induced molecules which are displayed on the surface. The NK cell contains receptors on its surface which detect the presence of the stress-induced surface molecule and the absence of the MHC-I molecule. This combination, if detected by the NK cell results in the activation of the NK cell and the release of perforin and granzyme molecules into the infected cell leading to the cell's eventual death. The activation of the NK cell depends on the cell's triggering receptors. The structure of these receptors includes transmembrane domains which connect the extracellular ligand binding domains with the intracellular domain that triggers the activation signaling cascade through a phosphorylation event. A major triggering receptor of the NK cells is NKG2D. While the extracellular part of the receptor has been structurally characterized, the conformational changes of the transmembrane domain before and during activation are of interest. In this presentation, we summarize our attempts to generate protein samples of the transmembrane domain region of NKG2D for structural studies. Overlapping primers were utilized to construct a synthetic gene, the synthesized gene was cloned into a maltose binding protein fusion vector and expression of the gene was tested in several E. coli strains. Purification of the fusion protein was attempted.

POSTER 32**Cognitive Development In Toddlers: Exploring Individual Differences in Locomotor Ability**Melinda Andrade, Regina
Feldman, Yekaterina RikhterFaculty Mentor: Professor Naomi Aldrich
Department of Psychology

Toddlerhood is a critical time in motor development for children as coordination is not yet fully developed. During this period, motor development is not limited to low-level perceptual-motor skills, such as grasping, crawling, or visual exploration. Research shows that toddlers use "means-ends" problem solving when performing locomotor tasks (Berger & Adolph, 2003). For instance, Berger and Adolph showed that cognitive understanding is essential in toddler's use of tools during a difficult locomotor task: children will use a handrail to help them successfully cross a narrow bridge. The present study, as a replication of the study by Berger and Adolph, examines children's decisions to use a handrail when given narrow bridges. Twenty-two toddler boys (16-month-olds) participated in two trials each. Trials varied by bridge width (from 12 to 48cm) and by handrail presence. Using archival video data from the original study, we examined: children's attempts to cross the bridge, number of steps taken in crossing the bridge, amount of time to cross the bridge, whether or not they used the handrail, and latency (i.e., amount of time the child waited before attempting to cross the bridge). Results demonstrated that toddlers attempted to cross the bridge more often when they had a wider bridge to cross. Additionally, toddlers utilized the handrail more often when confronted with a narrow bridge, and changed their body positions when presented with a narrow bridge. Infants who used more cognitive abilities, were more likely to accomplish the goal of crossing the bridge successfully. Toddlers also showed conceptualization of tool use while walking over wide and narrow bridges being that they explored the handrail when they felt it was needed. Overall, the findings of the current study suggest that exploratory behaviors and gait modifications combine with cognitive thinking in order to help toddlers successfully achieve a locomotor goal.

POSTER 33

**Prejudices and Stereotypes
Among Four Major Divisions of
College Majors**

Benjamin Silfen

Faculty Mentor: Dr. Florette Cohen
Department of Psychology

The purpose of this study was to investigate the varying prejudices that exist among students who are enrolled in different academic majors. Previous research has indicated that a variety of factors influence prejudices between academic disciplines; including physical and psychological gender, ethnicity, personality, and academics. This study touched basis on all of these factors, but the main question was whether or not prejudices that exist occur specifically because of which academic major an individual is associated with. This study focused only on the academic majors at the College of Staten Island, which were divided up into four specific groups (social sciences, natural sciences, arts, and businesses). Participants in the study were asked a variety of questions concerning personality traits such as (kind, intelligent, lazy, extraverted, and understanding) when it came to analyzing each of the four groups of majors. Participants were also asked questions such as which group of majors they felt were most difficult, which group they felt was most important, and the ethnic and gender disparity amongst the varying groups. The hypothesis for this study was that there would be empirically significant differences in opinions of individuals based on which academic major they were enrolled in. Results about specific prejudices will be discussed in further detail.

POSTER 34

**Effect of Pressure on the
Stability of Water on a
Superhydrophobic Membrane**

Meagan Derbyshire

Faculty Mentor: Dr. Alan Lyons
Department of Chemistry

Superhydrophobic surfaces, both naturally occurring and fabricated in the laboratory, are composed of small posts. The roughness of the surface and the hydrophobic material properties combine to support water droplets on top of the posts (Cassie state), instead of falling between the posts and wetting the entire surface (Wenzel state). When the superhydrophobic surface is placed at the base of a column, water can be supported on top of the posts up to a critical height (or pressure). However, only a limited height of water can be supported before the water pressure exceeds the surface tension and the Cassie state transitions to the Wenzel state. This transition occurs at relatively low pressures and limits the usefulness of superhydrophobic surfaces.

The goal of this experiment is to increase the water pressure that a superhydrophobic surface can support. Our approach is to fabricate a superhydrophobic surface supported on a porous mesh instead of a solid base. In this way we can control the air pressure below the membrane independently as the water height is increased. Measurements of the water pressure that can be supported on a porous superhydrophobic surface as a function of air pressure below the membrane will be reported.

We will explore the characteristics of the surfaces that make them superhydrophobic, also. Through the use of ultraviolet light, we will expose the surfaces in order to increase their superhydrophobicity. The ultra violet light will be used at varying power settings, distances from the surface and time intervals in order to increase the contact angles, simultaneously increasing the surface's superhydrophobicity.

POSTER 35

Engineering Printed Polymeric Superhydrophobic Surfaces

Mark Barahman

Faculty Mentor: Dr. Alan Lyons

Department of Chemistry

Super-repellent surfaces pose an extraordinary opportunity for researchers. These surfaces display very high contact angles and low slip-angles with liquids. Research groups around the world have been motivated by the beauty of this phenomenon and the potential real-world applications of such coatings. These efforts have concentrated on creating coatings that exhibit very high roughness and low surface energy. Such coatings can be applied to devices for self-cleaning, non-wetting and anti-icing purposes, and in many fields related to microfluidics, and fluid transport.

We have been able to fabricate robust, low-cost, and highly applicable superhydrophobic surfaces and demonstrate the ability to tune the slip-angle of our coatings according to need. To achieve very low slip-angles (easy rolling), we have investigated introducing a secondary layer of roughness to printed silicone features.

This surface design is seen in what is perhaps the most referenced natural superhydrophobic surface, the lotus leaf (*Nelumbo Nucifera*), which gives the plant self-cleaning and water collecting abilities.

A discussion of the cause of this effect based on contact-angle and slip-angle data, and several methods of microscopy will be included.

POSTER 36

Analysis of Tau Over-Expression in Breast Cancer Cell Lines

Kristina Toropova, Peter Hannon

Faculty Mentor: Dr. Jimmie E. Fata

Department of Biology

The Tau protein is a microtubule-associated protein that is abundant in neurons of the central nervous system. It is known to stabilize microtubules by binding to both their inner and outer surface and is a critical regulator of chromosomal alignment and separation during mitosis. Although Tau is predominantly found expressed in neurons, it is also ectopically and abnormally expressed in breast cancer cell lines and tumors. In an effort to better understand the function of Tau in breast tumors, we have begun to examine the outcomes of over-expressing Tau in breast cancer cell lines. Here we report our findings, which indicate that over expression of Tau in two breast cancer cell lines suppresses Tumor Necrosis Factor alpha (TNF α)-induced cell signaling. Our data has indicated that Tau can affect both pro-survival and pro-death outcomes in breast cancer cell lines. These findings have begun to provide insight into the functional significance of Tau in breast cancer cell lines may in turn influence therapeutic modalities.

POSTER 37

Unraveling the Structural Basis of a Snake Toxin/Potassium Channel Interaction

Tony Jin

Faculty Mentor: Dr. Sebastien Poget
Department of Chemistry

Presentation Abstract: Potassium (K⁺) channels are integral membrane proteins that, when activated, allow highly specific K⁺ ion flux through the plasma membrane of cells at near-diffusion rates. They play central roles in such physiological processes as neurotransmission, secretion of insulin, and regulation of the heartbeat. KcsA is a bacterial potassium channel known to share homology with K⁺ channels of most other species, including humans.

Certain varieties of toxins, poisonous biological peptides, have long been known to target potassium channels, collectively causing cardiac arrest and respiratory failure. These toxins typically work by binding to potassium channels to restrict K⁺ ion flow. However, we isolated a toxin—coined Tx7335—from the venom of the Eastern Green Mamba (*Dendroaspis angusticeps*) and discovered via electrophysiological assay that it increases the frequency of activation of as well as the duration of openings, leading to an increase of K⁺ ion flow through KcsA—a rare effect among toxin-channel interactions.

This project aims at unraveling the structural basis underlying KcsA's increased frequency of activation upon binding of Tx7335, via methods of 2D solution-state protein NMR spectroscopy. Our current approach involves 1) creating a solution of KcsA that gives optimal spectral quality, 2) assigning each peak in the spectrum to its corresponding amino acid residue, and 3) examining changes in peak position upon addition of the toxin, which will reveal the location of the Tx7335 binding site on KcsA. So far, we have found a detergent species that allows us to reconstitute KcsA and monitor toxin binding. We are currently further optimizing NMR sample conditions. Conclusive findings from this project will further our understanding of the biophysical driving forces in K⁺ channel activation and may aid the design of novel and more effective K⁺ channel openers—presently used to treat hypertension and hair loss—as well as other drugs that act by modulating K⁺ channel activity.

POSTER 38

Substrate-Dependent Regulation of Cytochrome-2E1 (Cyp2E1) Activity in Mouse Primary Hepatocyte Culture

Kaitlin Kelly, Diana I. Aparicio-Bautista
Faculty Mentor: Dr. Jimmie E. Fata
Department of Biology

Primary hepatocyte cultures are widely used for in vitro investigation and as a screening tool to evaluate hepatic metabolism, cytochrome P450 (CYP) induction or inhibition, and hepatotoxic potential of xenobiotics. However, the use of cultured hepatocytes in these applications is dependent on adequate and relative stable expression of CYP enzymes over the culturing period. The culture conditions, in particular the configuration of cell-substrate interactions and the formulation of culture medium are crucial for maintaining the activity of CYP enzymes. Cytochrome 2E1 (Cyp2E1), a member of the cytochrome P450 family is involved in the oxidative metabolism of different substrates such as tobacco derived N-nitrosamines and benzene, which are potential carcinogens in breast tissues of human and rat respectively. In this study, we evaluated the Cyp2E1 enzyme activity of mouse primary hepatocyte, which were cultured 48 hrs on three different substrates; plastic, collagen type I and Matrigel (basement membrane). Our results showed that the level of enzyme activity of Cyp2E1 increased significantly using Matrigel as substrate when compared to collagen type I or plastic. These results suggest that Matrigel is an effective way to maintain the optimal cytochrome activity in mouse primary hepatocyte cultures.

POSTER 39**Curcumin and Curcumin Derivatives Affect on Amyloid Beta Plaque**

Robert Truzzolino

Faculty Mentor: Dr. Alejandra Alonso
Department of Biology

In Alzheimer disease brain the two most prominent pathological lesions are the plaques outside the neurons and the tangles inside the neurons. Plaques are mainly composed of amyloid beta peptide, derived from the amyloid precursor proteins, as a 40 and/or 42 amino acid peptide. A great amount of effort has been devoted to dissolve the amyloid plaques from Alzheimers disease brains. Moreover, vascular amyloidoses is also a very serious problem from the vascular deposits of the amyloid-beta peptide. In this project, we are studying the effects of curcumin and the glycosilated derivatives in dissolving those plaques. The data we obtained is qualitative in the form of pictures obtained using a very powerful microscope known as a transmission electron microscope and quantitative using a specific antibody that will detect the different amounts of the amyloid beta peptide. The results obtained remain skeptical with the notion that the glycosilated derivatives of curumin were effective in dissolving the amyloid-beta plaques. There is a great potential of this study to be able to generate drugs applicable to these diseases.

POSTER 40**Mercury Assessment in Seafood**

Pawel Pieluszynski

Faculty Mentor: Dr. William Wallace
Department of Biology

The main aspect of this research is mercury detection in aquatic organisms. Mercury is a metal that was, and still is, widely used in many industrial applications, especially in urban areas such as the New York Metropolitan area. Fish and shellfish found in such areas will often concentrate this metal in their tissues, as mercury is fat soluble. Mercury concentration is higher in larger fish and predators, because as these carnivores eat smaller organisms contaminated with mercury, the metal concentration accumulates in the bodies of these larger fish, in a process known as biomagnification. This can be seen as a major concern for human populations, as the consumption of such contaminated fish will increase mercury concentration in human tissues, which can cause a plethora of health problems. Therefore, it is extremely important to monitor mercury concentrations in aquatic life, especially the species that are most harvested and consumed by humans. In this project, the tissues of various aquatic species that are of culinary value will be tested for their concentration of mercury using a FIMS spectrometer. Some of these aquatic animals will be local species, while others will be non-local, which can be bought in a supermarket. This will be done to determine whether local seafood contains less mercury and is safer to eat than imported seafood, or if the opposite is true.

POSTER 41

Bypassing Web-Based Wireless Authentication Systems

Ahmed Hassan

Faculty Mentor: Dr. Xiaowen Zhang
Department of Computer Science

Most college wireless networks use software systems and web-based logins to authenticate users. In this work we find that it is not hard to bypass such authentication. Attacker can use DHCP request to collect information about the users on the network. It makes the attacker possible to perform unauthorized access to the network facilities. This can be done by putting the network card on monitor mode, and filter the network frames based on the collected MAC addresses. Once any client is disconnected from the network, the attacker can spoof the client's MAC address and connect to the network. The authentication system is going to accept the spoofed MAC address and let the attacker to connect to the network. We suggest that authentication software should not leak any identifiable information. Switches should forward any network related requests to the right server. For example, DHCP requests to the DHCP server without broadcasting it to all the users on the network.

POSTER 42

The Effects of Mortality Salience on Muslim American Perspectives toward Israeli Leadership Styles

Elias Taweel

Faculty Mentor: Dr. Florette Cohen
Department of Psychology

The Israeli-Palestinian conflict has been a major source of development for prevalent negative stereotypes held in the Muslim world toward Jews and Israel conjointly. Research in terror management theory has demonstrated that when mortality is made salient to individuals, out-group prejudice as well as preferences to view out-group members in a stereotype-consistent manner tends to increase. In concordance with past findings, the model suggests that mortality salience effects on Muslim participants will increase stereotypic thinking and liking for the stereotype-consistent extremist Israeli/Jew despite distal proximity from the related conflict's location. In the present study we found that contrary to initial presumptions, under mortality salient conditions participants' liking actually increased for the stereotype-inconsistent moderate Israeli/Jew and decreased for the stereotype-consistent extremist Israeli/Jew. Results suggest that American Muslim perspectives lean more toward preferring Israelis/Jews who hold a moderate style of orientation toward the Israeli-Palestinian conflict. Further implications will be discussed.

POSTER 43**Cloning of Critical Domain of Ino2p Responsible for Recruiting Chromatin Remodeling Activities**

Eugene Lempert

Faculty Mentor: Dr. Chang-Hui Shen
Department of Biology

The INO1 gene codes for inositol-1-phosphate synthase, which catalyzes the rate-limiting step in the conversion of glucose-6-phosphate to inositol-3-phosphate. This intermediate is used in the production of phosphatidylinositol and other important phospholipids and phosphoinositides. When inositol becomes limiting, INO1 activity is upregulated by the Ino2p-Ino4p dimer; in the presence of inositol, Opi1p inactivates the Ino2p-Ino4p dimer, thus downregulating INO1 transcription. According to our research and the work of others, the Ino2p-Ino4p dimer interacts with the UAS_{ino} elements in the INO1 promoter and recruits chromatin-remodeling complexes, such as SWI/SNF and the Ino80p-associated complex. The structure of the Ino2p subunit contains two transcriptional activator domains, a repressor interaction domain, and a basic helix-loop-helix motif that it shares with Ino4p. To determine the necessity of each domain, truncated versions of the INO2 gene were produced using polymerase chain reaction and ligated into a plasmid containing a TRP1ARS1CUP1 sequence. This sequence allows for selectivity of transformed ino2 delta yeast cells and selective activation of the truncated INO2 variants. In order to determine which INO2 variants would save the cells from inositol auxotrophy, individual colonies containing one version of the INO2 sequence were grown in media lacking inositol. The optical density was recorded over a 24-hour period and growth curves were produced. Our current results indicate that inositol auxotrophy can be avoided in cells that contain a plasmid with the sequence coding for the second transcriptional activator domain.

POSTER 44**Interference in Consolidation of Emotional Learning of Pigeons**

Gary Mulligan, Samantha Scicchigno

Faculty Mentor: Dr. Edward Meehan
Department of Psychology

Using a series of training and interference sessions, White Carneaux pigeons were tested with stimuli associated with different reinforcement outcomes, e.g., A++, B+, C-, and X. In order to assess their sensitivity to emotional learning (through Pavlovian Conditioning). The birds were exposed to multiple schedules during training and then given retroactive interference sessions that included presentation of the relevant (A, B, & C) and irrelevant (X) stimuli without reinforcement (extinction). The birds were then tested to explore the effect of the retroactive tasks on consolidation of emotional learning. Results indicated that the birds were sensitive to differential outcome and were discussed in terms of the interaction between Instrumental and Pavlovian Conditioning as well as the emotional sensitivity of the Avian nervous system.

POSTER 45

Asymmetric Allylation of Aldehydes Catalyzed by Optically Active SPINOL-Based Phosphoric Acids

Yimei Zhang, Monica Bassous, Chun-Hui Xing

Faculty Mentor: Dr. Qiao-Sheng Hu
Department of Chemistry

The asymmetric allylation of allylborons with aldehydes constitutes one of the most attractive methods to access homoallylic alcohols. Transition metal-catalyzed such addition reactions have been previously reported. However, reported catalyst systems suffer from relative harsh reaction conditions and/or selectivity. We are interested in developing “green” catalysts, i.e., organocatalysts – the use of small organic compounds as chiral catalysts, for such addition reactions, especially with high enantioselectivities.

1,1'-Spiroindane-7,7'-diol (SPINOL) and its derivatives have been demonstrated to be highly enantioselective chiral scaffolds for a number of useful transformations. However, SPINOL-derived Bronsted acids, which constitute a large family of chiral organocatalysts, remain underexplored. In this presentation, the use of spiroindanediol-based phosphoric acids as chiral catalysts for asymmetric allylation of aldehydes will be presented.

POSTER 47

Analysis of MIA-Induced Keratin-6 Upregulation in Mammary Tissue

Surendar Ravindran

Faculty Mentor: Dr. Jimmie Fata
Department of Biology

The development of the mammary gland requires co-ordinated tissue and cellular signals that direct proper branching morphogenesis. Using three-dimensional (3D) tissue cultures of mammary gland development we have previously found that a drug of the amiloride family, (N-Methyl, Nisobutyl) amiloride (MIA) drastically disrupts mammary development in this assay. MIA abrogates the function of the Na⁺/H exchanger type-1 (NHE-1), which is directly responsible for maintaining intracellular pH of mammary epithelial cells. Among a number of MIA-induced tissue and cellular phenotypes, we found that associated with this inhibited morphogenesis was an increased and ectopic expression of Keratin 6 (K6), an intermediate filament protein rarely expressed in mammary epithelial cells and one that is involved in hyper-proliferation. To determine whether K6 expression occurred because of increased transcriptional expression, I set out to measure K6 mRNA levels in untreated and MIA-treated mammary tissue using quantitative PCR. The experimental procedure of RT-PCR, the isolation of mRNA, and initial results are provided here along with the technical hurdles we encountered. Determining whether MIA induces K6 upregulation of transcription in mammary tissue may shed light on how co-ordinated signals become disrupted during breast cancer.

POSTER 48**Development of Optically Active SPINOL-Based Organocatalysts for Asymmetric Catalysis**

Darya Sabarova, Chun-Hui Xing, Qiao-Sheng Hu

Faculty Mentor: Dr. Qiao-Sheng Hu

Department of Chemistry

The addition reactions of organoborons with aldehydes/ketones constitute one of the most attractive methods to access chiral alcohols because organoborons are readily available and air/moisture-stable. Transition metal-catalyzed such addition reactions have been previously reported. However, reported catalyst systems suffer from relative harsh reaction conditions and/or selectivity. We are interested in developing "green" catalyst systems, i.e., organocatalysts – the use of small organic compounds as chiral catalysts, for such addition reactions, especially under mild conditions.

1,1'-Spirodiindane-7,7'-diol (SPINOL) and its derivatives have been demonstrated to be highly enantioselective chiral scaffolds for a number of useful transformations. However, SPINOL-derived Bronsted acids, which constitute a large family of chiral organocatalysts, remain underexplored. In this presentation, the preparation of spirodiindanediol-based phosphoric acids for asymmetric catalysis will be presented.

POSTER 49**SPINOL-Based Phosphoric Acids as Organocatalysts for Asymmetric Reactions**

Amy He, Chun-Hui Xing

Faculty Mentor: Dr. Qiao-Sheng Hu

Department of Chemistry

Asymmetric catalysis, the use of a small amount of chiral catalysts for the production of a large quantity of chiral compounds, constitutes one of the most attractive methods to access optically active organic compounds. Enormous efforts have been devoted to asymmetric catalysis with chiral transition metal complexes as catalysts. In our laboratory, we are interested in developing "green" catalysts, i.e., organocatalysts – the use of small organic compounds as chiral catalysts, for asymmetric catalysis, especially with high enantioselectivities.

1,1'-Spirodiindane-7,7'-diol (SPINOL) and its derivatives have been demonstrated to be highly enantioselective chiral scaffolds for a number of useful transformations. However, SPINOL-derived Bronsted acids, which constitute a large family of chiral organocatalysts, remain underexplored. In this presentation, the use of spirodiindanediol-based phosphoric acids as chiral catalysts for asymmetric reactions will be presented.

POSTER 50

Asymmetric, SPINOL-Based Phosphoric Acid-Catalyzed Addition Reactions of Indoles with Isatin*

Christopher OgaJa, Chun-Hui Xing

Faculty Mentor: Dr. Qiao-Sheng Hu
Department of Chemistry

The asymmetric addition reaction of indoles with aldehydes/ketones constitutes one of the most attractive methods to access a large family of indole-containing compounds, which are potentially biologically active. We are interested in developing "green" catalysts, i.e., organocatalysts – the use of small organic compounds as chiral catalysts, for such addition reactions, especially with high enantioselectivities.

1,1'-Spiroindane-7,7'-diol (SPINOL) and its derivatives have been demonstrated to be highly enantioselective chiral scaffolds for a number of useful transformations. However, SPINOL-derived Brønsted acids, which constitute a large family of chiral organocatalysts, remain underexplored. In this presentation, the use of spiroindanediol-based phosphoric acids as chiral catalysts for asymmetric addition reactions of indoles with isatin will be presented.

*We would like to thank the NIH for financial support. We also thank members of the Hu research group for their help and support.

POSTER 51

Mobile Computing Devices: Memory Management Issues

David Galeano, Ahmed Elhassan

Faculty Mentor: Dr. Deborah Sturm
Department of Computer Science

Tablets and smartphones are projected to surpass laptops as the preferred mobile computing device. Developing applications on these memory-constrained devices presents numerous challenges. We examine memory management strategies for two and three-dimensional graphic-based games. In particular, we compare various scenarios with the use of performance tools on the iPad/iPhone and Windows Phone 7 platforms.

POSTER 52**Development of New Pd-Catalyzed Tandem Reactions for Organic Synthesis**

Henry Sanjurjo, Yuan-Xi Liao

Faculty Mentor: Dr. Qiao-Sheng Hu
Department of Chemistry

Transition metal-catalyzed addition reactions of arylboronic acids with carbonyl-containing compounds constitute some of the most attractive methods to access arylmethyl alcohols, imines and ketones. Combining such addition reactions with other bond forming reactions to produce tandem/domino reactions would provide highly efficient tools for organic synthesis. In our group, we are interested in developing new tandem reactions involving transition metal-catalyzed addition reactions and other bond-forming reactions, which has never been explored previously.

Type I metalacycles including platinacycles have been previously found to be effective catalysts for the addition reaction of arylboronic acids with aldehydes. In this presentation, a new tandem reaction, which combines Type I platinacycle-catalyzed addition reaction with the aldol condensation reaction, will be presented.

*We thank the NSF and NIH for financial support. We also thank members of the Hu research group for their help and support.

POSTER 54**Synthesis and Clinical Applications of Mono-Functional Derivatives of Curcumin**

Olga Vishneva

Faculty Mentor: Dr. Krishnaswami Raja
Department of Chemistry

There has recently been tremendous interest in curcumin, [(1E, 6E)-1, 7-bis (4-hydroxy-3-methoxyphenyl) hepta-1,6-diene 3,5-dione] the primary active ingredient in turmeric, because it has been shown to have antioxidant, anticancer, anti-inflammatory, anti-Alzheimer's disease activity and antibiotic activity. Hence, we plan to develop convenient routes to biologically relevant curcumin conjugates via the synthesis of novel mono-functional curcumin derivatives in which one of the phenolic groups of curcumin has been chemically modified with reactive groups. The synthesis of mono-functional curcumin derivatives affords two advantages: (a) The presence of at least one free phenolic group is necessary for the biological activity of many antioxidants like curcumin (b) Bioconjugation and polymer modifications using mono-functional derivatives produce soluble conjugates in high yields whereas bi-functional derivatives would result in insoluble cross-linked products. We plan to develop a general methodology for preparing reactive mono-functional curcumin derivatives; the unique carboxylic acid/NHS groups serve as covalent functional handles for modifying both synthetic polymers and proteins. In order to make a targeted drug delivery vehicle we have conjugated curcumin to Antibody via NHS chemistry. The synthesis of Antibody-curcumin adduct showed a great promise in destroying GL261 glioblastoma cells as well as B16F10 melanoma cells in nano molar concentrations compared to curcumin which is effective in micromolar concentrations. The in vivo studies indicated that mice treated with antibody-curcumin conjugate not only causes a significant decrease in tumor size but also helps increase in survival of mice.

POSTER 55

The Role Of Fmrp in Regulating Gfp and Somatostatin Expression

Olga Vishneva

Faculty Mentor: Dr. Abdeslem El Idrissi
Department of Biology

This experiment looks at the level of regulation involved in green fluorescent protein (GFP) and somatostatin expression in mice with fragile X syndrome. Fragile X syndrome is characterized by hyperarousal, increased prevalence of seizures, and hypersensitivity to sensory stimuli. The mouse model is a knockout of the *fmr1* gene (fragile X mental retardation 1 gene), which has a reduction in the expression of the fragile X mental retardation protein (FMRP). The mice also express GFP on autosomes. FMRP, the protein product of *fmr1*, is an RNA binding protein and is thought to regulate translation of proteins in dendrites and dendritic spines. It has been found that FMRP is a translation suppressant, so we hypothesize that mice that are knockouts for FMRP will exhibit a notable lower GFP expression than wild type mice throughout the organism. Results showed that somatostatin expression is directly related to the presence of *fmr1*. Confocal imaging and Imaris reconstruction illustrated increased expression of somatostatin in the wild type mouse. GFP expression is variable across the organs. GFP is upregulated in the KO pancreas and intestine, however this is not the case in the testis.

POSTER 56

Best Practices for the Nursing Care of Older Adults with Congestive Heart Failure

Cora-Ann O'Regan

Faculty Mentor: Dr. Arlene T. Farren
Department of Nursing

The purpose of the project is to examine best practices for the nursing care of older adults with congestive heart failure (CHF). As older adults are the fastest growing segment of the population, it is important to understand their special needs. The methodology is a literature review using CINAHL and Medline databases, as well as evidence-based databases to identify guidelines for the care of older adults with CHF. The search terms included heart failure, older adults, and nursing care. The results revealed 11 articles, eight of which were deemed appropriate based on inclusion and exclusion criteria. The preliminary findings suggest that older adults require a specific set of approaches, which should be integrated with nursing care for CHF in older adults. The literature suggests there are barriers to effective self-management of symptoms in older adults including the lack of recognition or misinterpretation of symptoms. Preliminary conclusions include the availability of literature to guide clinicians in the care of persons with CHF and that older adults require specific nursing care approaches to overcome barriers and achieve positive outcomes. The nursing practice implications include providing evidence-based care through the use of guidelines and the importance of individualized patient care. As nursing care in the hospital and in the community is largely involved with the care of older adults, it is essential for nurses to be knowledgeable about best practices and deliver the best possible evidence-based care to older adults with CHF.

POSTER 57

Python, Papers, Proplyds

Athena Brensberger

Faculty Mentor: Dr. Charles Liu
 Department of Department of Engineering
 Science and Physics

Proto-planetary disks around newborn stars, or proplyds, have a wide variety of shapes and appearances. It is possible to determine the formation and shapes of proplyds, why they have the shape they do and what composition and structure they have. Some proplyds are bright, and some are dark silhouettes; also, they will never live long enough for an entire solar system to form inside of their molecular clouds. It is possible to calculate the mass-loss rate of the ionization fronts in a proplyd, as well as the effect that mass-loss will have on the lifetime of the accretion disk forming inside of the proplyd. When the mass-loss rate is higher, the lifetime of the proplyd is lower, thus decreasing the possibility of a solar system forming inside the proplyd. When the mass-loss rate is very high, there is not much material to accumulate and form planets to orbit the baby star.

POSTER 58

How the Culturally Competent Therapist Facilitates Client Satisfaction with the Therapy Experience

Renee L. Mills

Faculty Mentor: Dr. Lauren Rogers-Sirin
 Department of Psychology

Multicultural counseling competence can be defined as the awareness, knowledge and skills that mental health professionals use when working with culturally diverse clients.

In response to this development, mental health professionals have become more aware of the importance of incorporating cultural factors when working with diverse client populations. The field of psychology is committed to improving cultural competence among practitioners, but to date there is little research examining whether this commitment is resulting in improved services to racially and ethnically diverse clients. This study will attempt to address this issue. The current study consisted of a survey, administered to 86 immigrant college students who had been in therapy at some point in their lives. The survey consisted of the Attitudes Towards Seeking Professional Psychological Help Scale – Short (ATSPPH-S; Fischer and Farina, 1995), and the Brief Symptom Inventory- 18, (BSI-18; Derogatus, 2000), the Cross Cultural Counseling Inventory Revised (CCCI-R; Lafromboise, Coleman & Hernandez, 1991), and the Satisfaction with Therapy and Therapist Scale-Revised (STTS-R; Oei & Green, 2008). A sub-sample of 10 students who had been in therapy were interviewed about their counseling experiences, focusing specifically on their perceptions of whether, and how, culture, race and ethnicity may have impacted their presenting issues and the therapy process. Results from the survey study indicated that client satisfaction with therapy was highly correlated with clients' perception of therapist cultural competence. A regression analysis revealed that, after controlling for psychological symptoms, perceptions of therapist's cultural competence significantly contributed to the variance in attitudes towards seeking professional psychological help. Qualitative data provides more in depth information about what clients' identified as their therapists' culturally competent or incompetent behavior.

POSTER 59

Efficacy of Taurine in Altering Somatostatin and Gad Levels in a Pancreatic β Cell Line

Christina Cuttitta

Faculty Mentor: Dr. William L'Amoreaux
Department of Biology

Release of insulin and glucagon from the endocrine pancreas is regulated by a number of neurotransmitters, including glutamate, GABA, and somatostatin. In the GABAergic system, GABA binding to GABAA receptors opens chloride channels on α cells, hyperpolarizing these cells thereby regulating glucagon release. We have previously shown that taurine treatment alters glucose homeostasis and alters insulin and GABA levels in a pancreatic β cell line (Hit-T15). Here, we test the efficacy of taurine in altering somatostatin and GAD expression in Hit cells. In pancreatic islets, glucose uptake serves as an electrogenic switch to regulate insulin and GABA release. With concentrations > 2.8 mM, glucose uptake and glycolytic processing increases cytoplasmic ATP concentrations, shutting off ATP-sensitive K^+ channels. Inhibition of the K_{ATP} channels increase Ca^{2+} currents required for exocytosis. We tested whether taurine treatment can affect somatostatin release and whether taurine directly affects GAD expression in β cells. The β cell line were grown in culture, and treated with either 1 mM glucose, 3 mM glucose, and 1 mM taurine. Cells were treated for 24hr, fixed and prepared for immunohistochemical analyses. Our data show that while 3 mM glucose significantly decreases somatostatin and increases GAD levels compared to controls, 1 mM taurine is insufficient to elicit this response. Since taurine has been reported to affect release of insulin and GABA from large dense core vesicles, we demonstrate here that the mechanism by which taurine promotes exocytosis of these vesicles is different from the mechanism by which somatostatin is released. Further, we provide evidence that the taurine-dependent upregulation of GAD expression requires a feedback mechanism from α cells.

POSTER 60

Laser Control Board

Valerie DeAngelo

Faculty Mentor: Dr. Jessica Jiang
Department of Engineering Science and Physics

A tunable laser is a laser whose wavelength can be adjusted and controlled over a certain range. The tunable laser used in this project is an Emcore TTX1994 tunable laser that “consists of a cooled external-cavity diode laser that uses thermally tuned etalon filters to achieve single-mode operation at selectable wavelengths.” (Emcore Datasheet)

This project consists of designing and building an interface board to power the tunable laser assembly and allow communication to it through the use of a 3 wire RS 232 interface. The tunable laser interface board will send commands to the tunable laser assembly as well as monitor it's health and alarms, and detect any faults in the tunable laser's system.

POSTER 61

Collaborative Translation of a Free Culture Design Text

Qimei Luo

Faculty Mentor: Professor Michael Mandiberg
Department of Media Culture

Digital Foundations is a digital media instruction book licensed under a Creative Commons license. This free culture licensed text has been ported from the original Adobe software to open source software (GIMP, Inkscape, Processing, etc.) Encouraged and instructed by Professor Michael Mandiberg—one of the authors of the book—I, Qimei Luo, a senior Communications major, initiated and managed a collaboration with more than ten different volunteers to translate this book from English into Chinese. All the translators for this Chinese translation project are located either in Hong Kong or mainland China. The volunteers never met each other in person and were communicating purely via the Internet from the project's inception to its completion. Each contributor to the project has been given credit for every edit and revision they made through the version control software that the translation software is built upon.

Translating this book from English to Mandarin will help to expand the availability of free culture of Chinese content and allow more Chinese speakers, especially Chinese educators, to have access to the book. This translation work enhances participants' understanding of digital media, and allows them to be part of software education reform and the free culture movement.

POSTER 62

Painting Staten Island: A Historical Analysis of Frederick Stahr's *The Evolution of Staten Island from 1620-1935*

Gabriella Leone

Faculty Mentor: Dr. Catherine Lavender
Department of History

If one visited Staten Island's Borough Hall, he or she would be able to take a brief trip through approximately four hundred years of the borough's history. This unique opportunity is provided by a series of murals, called *The Evolution of Staten Island from 1620 to 1935*, which were funded by the Works Progress Administration (WPA) and painted by a local artist named Frederick C. Stahr during the late 1930s. The paintings, based on a combination of historical fact, local legend and artistic interpretation, highlight a variety of events in the history of the island from European discovery through the building of the Bayonne Bridge. The scenes shown vary in obvious, historical significance and cause one to question why they were chosen specifically. Not only are the works intriguing for the events they depict, but also for the style in which they were created. Indeed, Stahr's more traditional style was rare amongst the progressive artistic spirit of the Depression Era. Although he was singular in relation to his fellow WPA artists, Stahr meshed quite well with John Carrere and Thomas Hastings, the architects of Borough Hall and the main branch of the New York Public Library, who also favored a more traditional approach to design.

POSTER 63

The Effects of Mortality Salience on Jewish Perspectives Toward Palestinian Leadership

Carla Musacchio

Faculty Mentor: Dr. Florette Cohen
Department of Psychology

The objective of the present study was to examine the effects of Mortality Salience on Jewish perspectives toward Palestinian leadership. Mortality Salience (i.e., the awareness of the inevitable occurrence of one's own death) increases and continues negative stereotypes, in turn creating a cycle of prejudice, violence, and conflict. It was predicted that under controlled conditions, Jewish participants would prefer the Palestinian moderate "peace activist," who is willing to negotiate an agreement with Israel, over the Palestinian extremist "religious fanatic, suicide bomber," who does not acknowledge the nation of Israel. However, once exposed to the condition of death, participants will favor the Palestinian extremist, reinforcing the notion of stereotypical perspectives towards the out-group being more trustworthy than the counter-stereotypical perspective. Results indicated that Mortality Salience increased participants' liking of the stereotype-inconsistent under moderate Palestinian leadership. Implications will be discussed.

POSTER 64

Determining the Natal Origins and Population Distribution of Globally Endangered Green Sea Turtles (Chelonia Mydas) at Palmyra Atoll through Genetic Analysis

Stephanie G. Jones

Faculty Mentor: Dr. Eugenia Naro-Maciel
Department of Biology

The natal origins of globally endangered green sea turtles (*Chelonia mydas*) foraging along the flats of Palmyra atoll, a wildlife refuge in the Central Pacific, are unknown. Sea turtles have a highly specialized natal homing skill to aid in their migrations. In order to determine their population distribution and natal origins, genetic analysis of mitochondrial DNA (mtDNA) was conducted through DNA extraction, sequencing and data analysis. Maternally inherited gene (mtDNA) sequences are used because they show strong population structure among specific nesting colonies. While there is no known nesting site on the atoll, there is a range of turtles feeding at Palmyra, from small juveniles to mature adults. Samples were extracted from over 100 green sea turtles. Three of our specimens have the DNA and morphological characteristics of "black turtles," which some scientists consider a separate subspecies (*Chelonia mydas agassizii*). This research is crucial because of the endangered status of these turtles. Since the sea turtle population biology at Palmyra atoll is unknown, data collected from this research will be useful in implementing appropriate conservation measures at foraging sites as well as mating and nesting sites.

POSTER 65**Students' Perceptions and Use of Technology at CSI**

Ilona Rabinovich

Faculty Mentor: Dr. Irina Sekerina

Department of Psychology

The College of Staten Island as well as the entire CUNY system is heavily investing in instructional technology. There are many factors that play an important role in success of technology on the CSI campus, and one of them is students' perceptions.

An Internet-based survey is currently being administered to collect students' attitudes about technology. Its 65 questions fall in several categories: (1) access to computers, Internet, smartphones and electronic gadgets; (2) preferences for electronic communication with CSI faculty and administration; (3) access to software tools and electronic resources at the library and on campus; (4) experience with online learning (web-enhanced, hybrid, and online courses); and (5) preferences in So far, 165 CSI students (75% female) took part in the survey, 91% of them are freshmen and sophomores who attend CSI full-time. Among various preliminary results, 42% are neutral with respect to technology in the classroom, 22% are skeptical, and only 28% like it; 62% never took an online course and would not take one.

These results and others collected; show a mixture of attitudes and preferences toward technology among a sample of CSI students and can provide useful recommendations for implementing technological innovations on campus. Data collection with this survey will continue for the next two years.

POSTER 66**Fabrication of Microscale Carbon Surfaces by 3D Printing**

Brian Iskra

Faculty Mentor: Dr. Alan Lyons

Department of Chemistry

3D printing has many applications in surface chemistry. In this study, a novel application for 3D printing was developed to fabricate three-dimensional arrays of carbon posts. Due to their high thermal conductivity and surface area, such materials have potential uses as thermal interface materials and battery electrodes. Carbon is an inorganic material that cannot be directly formed into such complex three-dimensional objects. The ability to make complex features and patterns using 3D printing technology was leveraged to first fabricate polymeric features in the desired shape and pattern. A phenolic resin was selected based on its ability to thermally decompose to form carbon in high yields. We modified the rheological properties of the phenolic to enhance the ability to print high aspect-ratio polymer features. In addition, we created a series of composite materials by incorporating filler materials that modify the mechanical properties of the structures such as graphite fibers and hollow phenolic spheres. The process of surface fabrication is examined in depth, general guidelines for printing with polymeric materials were found and proper substrate selection and creation was examined. Mechanical properties of the substrate and posts were characterized using a Dynamic Mechanical Analysis.

POSTER 67

Competitive Lotka-Volterra Equation and Existence of Periodic Orbits

Ilirjana Duka

Faculty Mentor: Dr. Jesenko Vukadinovic
Department of Mathematics

The competitive Lotka-Volterra system, a logistic model of the population dynamics of species competing for the same available resources, is studied for the existence of periodic orbits. This is achieved by the search for a Lyapunov function, the existence of which indicates that periodic orbits do not exist. It is also expected by Dulac Criterion that no such orbits can be found. These results have applications to the modeling of species survival and coexistence within a niche.

POSTER 68

Regulation of Hippocampal Development and Signaling by the Serotonin 1A Receptor

Joseph Inigo

Faculty Mentor: Dr. Probal Banerjee
Department of Chemistry

Aberrant dopamine release in the prefrontal cortex (PFC) is believed to underlie schizophrenia, but the mechanistic pathway through which a widely used antipsychotic, clozapine (Clz), evokes neurotransmitter-releasing electrical stimulation is unclear. Prior studies from this group analyzed Clz-evoked regulation of neuronal activity in the PFC to observe an increase in population spike (PS), which was mediated by 5-HT_{1A}-R, phospholipase C β , and Ca²⁺/calmodulin-dependent protein kinase II (CaMKII). Additionally, the Clz-activation of CaMKII was 5-HT_{1A}-R-mediated. Intriguingly, the N-methyl-D-aspartic acid receptor (NMDA-R) antagonist (+)-2-Amino-5-phosphonovaleric acid (APV) also eliminated the Clz-mediated increase in PS, suggesting that the 5-HT_{1A}-R, NMDA-R and CaMKII form a synergistic triad, which boosts excitatory post-synaptic potential (EPSP), thereby enhancing PS. In corroboration, Clz as well as NMDA augmented field EPSP (fEPSP), and WAY100635 (a 5-HT_{1A}-R antagonist), APV, and a CaMKII inhibitor eliminated this increase. As previously shown, CaMKII binds to the NMDA-R NR2B subunit to become constitutively active, thereby inducing α -amino-3-hydroxy-5-methyl-4-isoxazole-propionate (AMPA) receptor recruitment to the postsynaptic membrane and an increase in fEPSP. The current study will use coimmunoprecipitation to demonstrate that Clz potentiates interactions among CaMKII, NR2B, and 5-HT_{1A}-R. Possible complex formation in the membrane rafts of the postsynaptic density will be tested by pretreatment with methyl- β -cyclodextrin, an agent that disrupts rafts. Taken together, we this project will test if clozapine functions in the PFC by orchestrating a synergism among 5-HT_{1A}-R, CaMKII, and NMDA-R, which augments excitability in the PFC neurons of layers II/III.

POSTER 69**The Genetic Analysis of Green and Loggerhead Sea Turtles of Florida, USA**

Vladimir Shikhman

Faculty Mentor: Dr. Eugenia Naro-Maciel

Department of Biology

The genetic analysis of Atlantic green (*Chelonia mydas*) and loggerhead (*Caretta caretta*) sea turtles is one of the fundamental research areas necessary for the effective protection of these endangered and threatened species. These two sea turtle species represent some of the most widely distributed marine reptiles, and are being actively researched for their ecological significance. The purification and analysis of genetic samples from wild sea turtles is a crucial part in understanding the population distribution of these species as the oceans and coastal areas they have occupied for thousands of years are irrevocably changed. By understanding their population distribution, we may be able to significantly advance the conservation of these ancient species.

We are basing our analysis on selectively neutral non-coding regions of mitochondrial DNA that have already been proven to be variable among populations and individuals. The genetic samples are being extracted from the nucleated erythrocytes of the specimens with a DNeasy kit that elutes a DNA suspension in buffer. The elution then is being primed and amplified via the PCR method. Each amplified sample is then being compared in its movement through a 1.5% agarose gel run at constant voltage for 30 minutes and visualized through a SYBR Safe filter.

Throughout the entire experimental process we strive to use methods that limit the unnecessary production of environmentally unsafe wastes. Sequencing is carried out followed by editing and results are collected and analyzed before being prepared for presentation and eventual publication in collaboration with researchers in this field. We are only one of the few research labs around the world that are actively contributing to the ongoing research in the protection of these threatened and endangered species.

POSTER 70**Internship Observations at the Summer Therapeutic Program (STP): An Evidence-Based Treatment Program for Children with ADHD**

Melissa Tinaphong, Kristine Principe

Faculty Mentor: Dr. Rima Blair

Department of Psychology

Children with Attention-Deficit Hyperactivity Disorder (ADHD) face new challenges every day. The most prominent factors are social, academic, and occupational problems. ADHD is a disorder marked by inattentiveness, over-activity, and impulsivity. Approximately one in twenty elementary school-aged children is diagnosed with ADHD. Several types of multimodal treatments are available; however recent research studies are finding that a more combined approach of medication, behavioral treatment, and early interventions is highly effective for treatment. A relatively new and different combined approach is the Staten Island Mental Health Summer Therapeutic Program (STP). It is the only evidence-based therapeutic summer camp treatment for ADHD. Instead of the usual stereotyped medical and therapy setting, STP displays a comfortable and child oriented environment that sustains sufficient improvement in each child's targeted areas of impairments. STP follows a behavior modification model based on token economy, contingency management, positive reinforcement, recreational activities, social skills, and daily report cards. Counselors work hand in hand with each child by establishing companionable relationships with them and diminish targeted behaviors by motivating them to reach specific goals. This type of intervention provides significant change in behavior, continuity in peer status, academic abilities, and social functionings. Because of this pioneering model, various schools across the world have expanded and flourished implementing the same STP protocol. Furthermore, afterschool or camp programs that implement multimodal methods prove to be an efficacious tool in improving behaviors and academic skills for children with ADHD. The results from these children are that they keep on coming back to "summer camp" to reconcile with their friends and earn a rack of points for their remarkably good, and appropriate, behaviors.

POSTER 72

The Design of Thermoelectric Modules as a Waste Heat Convertor

BiBi Ghafari

Faculty Mentor: Dr. Alan Lyons
Department of Chemistry

Automobiles consume a significant amount of fuel and generate large quantities of greenhouse gases. Although fuel economy has improved significantly over the years, internal combustion engines are inherently inefficient and dissipate a significant amount of this wasted energy as heat. One approach to reduce this lost energy is to use the waste heat to power a Thermoelectric Module (TEM). A TEM is a solid state device that converts heat to electricity. For automobile applications, this would require that the TEM can withstand large temperature extremes – going from -40oC (when the car is parked during the winter) to +500oC (car exhaust) when the engine is running. To remain reliable when repeatedly subjected to these temperature extremes, all components of the TEM must be thermally stable. In addition, the materials must be highly thermally conductive.

We have proposed a novel thermal design to accommodate the thermal stresses while achieving high thermal conductivity. The design is based on the use of copper substrates (which are thermally conductive) with a thin enamel coating to provide electrical isolation. This design, however, depends upon the enamel adhering well to the copper and not cracking after repeated thermal cycling. We designed an experiment to evaluate if this enamel coating on car exhaust systems could withstand harsh conditions over many cycles. To measure the robustness of the enamel, we subjected test coupons to progressively more harsh cycling conditions while monitoring the mechanical and electrical properties of the enamel. Only after a large number of extreme thermal shocks did the enamel coating begin to degrade. Further design of new modules is underway; these newer modules are expected to have an even higher capability of stress endurance by using materials which will generate less compressive stress during temperature cycling.

POSTER 73

Social Tags for Recommending Government Computing Applications and Services

Mark Toralballa

Faculty Mentor: Dr. Soon Chun
Department of Business

A challenge in organizational and personal computing solutions is how to select the most suitable products or services in the face of a dizzying array of software products and web applications. Typically, organizations rely on recommendations from selected and/or favorite vendors, and an individual has to do some research to select the best possible application. However, the rise of social networking has caused individuals to often get influenced by what their friends or colleagues recommend. This social recommendation has been reflected in computerized recommender systems where the pattern of other customers or buyers is used to recommend the related products. However, this model has not been widely applied in process oriented domains such as software components or applications. Recently, the federal government has launched the HYPERLINK “<http://apps.gov/>”\o “blocked::<http://apps.gov/>”\t “_blank” apps.gov Website, where information about business applications, productivity applications, Cloud IT services, and social media applications are collected to be shared by different government agencies. This portal will encourage sharing computing resources across government agencies. Government agents, IT managers, and other government officials should be able to get more information about these computing resources before they make decisions on purchasing, adopting and implementing them. We are developing a rating and comment system where each computing resource can be commented on, rated and tagged by the government end users who identify themselves with certain functional roles (e.g. IT manager, IT developer, process designer, etc.) and with social relations (e.g. a friend of another person). Their comments for each application or service will be searchable by these roles and social relationship types to view the comments and to recommend the most popular or highly rated government applications. The role-based and social relationship-based recommendations will provide more reliable or trusted advice by a circle of friends to government officials who have similar tasks with similar job functions. We will present a demonstration of the prototype system.

POSTER 74**An Analytical Study of Quantifier Comprehension with Eye Tracking Data**

Nicholas Dalonzo

Faculty Mentor: Dr. Patricia Brooks
Department of Psychology

Grade-school children often make errors in universal quantifier interpretation for sentences like Every apple is in a bowl. Whether these errors are due to children's unfamiliarity with the complexities of sentence structure (faulty grammatical knowledge) or to processing limitations (faulty attention or memory) is not known. This study seeks to explore the most common sources of children's errors in comprehending sentences containing the universal quantifier every. We will also compare the comprehension error rates found with passive-voice sentences like The cow was pulled by the horse with those of sentences containing universal quantifiers. The experiment presented 23 children (ages 5 to 12) with pictures demonstrating a particular relationship and asked the children to state whether a spoken sentence matched the picture shown. We measured eye-movements as the child scrutinized the picture and came to a conclusion as to whether the sentence was true or false. Half of the quantifiers sentences had the universal quantifier modifying the container-noun (e.g., Every bowl has an apple in it) and the other half had it modifying the object-noun (e.g., Every apple is in a bowl). Half of the time the picture matched the sentence, and half of the time it contained extra containers or objects (e.g., extra bowls for the sentence Every bowl has an apple in it). We found that children made numerous errors when encountering pictures that depicted sets of objects in partial one-to-one correspondence, along with a sentence containing the quantifier every. This trend was more pronounced in the 5 to 9 age grouping, denoting developmental differences amongst our examined population. Additionally, children also made errors with the passive sentences which suggests a general difficulty in assigning syntactic representations to sentences.

POSTER 75**Effects of Curcumin on Tau-Interactions in Transgenic Drosophila Melanogaster Motor Neuron and Eye**Kalpita Abhyankar, Tanya Nelipa
Faculty Mentor: Dr. Alejandra Alonso
Department of Biology

It is pivotal to understand the mechanistic function of synaptic breakdown that precedes in cell death in Alzheimer's disease (AD) and other neurodegenerative diseases. Accumulation of hyperphosphorylated tau causes the disruption of microtubules, which are related to synaptic loss and pathology of Alzheimer's disease. Impaired cognitive function and pathology of AD is correlated with this lesion. We have previously shown that the cytosolic Alzheimer hyperphosphorylated tau (AD P-tau) sequesters normal tau, MAP1A, MAP1B and MAP2, which results in the inhibition of microtubule assembly and disruption of microtubules and self assemble into filaments. We would like to study the effects of curcumin, which is an active ingredient in the spice turmeric, in causing reversal of the effects of tangles formed by hyperphosphorylated tau. Tau promotes the assembly and stabilizes microtubules. Our model of study is the Drosophila which has the tau homolog exhibiting 46% identity with the sequence of human tau protein and has similar features such as microtubule-binding domain. Transgenic flies (*Drosophila melanogaster*) that express the human tau in different phosphorylated forms, wild type and mutations display important features of the human disorder. The effects of curcumin on pseudophosphorylated tau on the transgenic *Drosophila* motor neuron and eye will be explored.

POSTER 77

Mathematically Mapping the Cosmos: Contemporary Topological Applications in Cosmology

David Di Lillo

Faculty Mentor: Dr. Prabudh Ram Misra
Department of Mathematics

Topology is the logical yet abstract pairing of many geometric, algebraic, and analytical concepts that are utilized in many fields of contemporary mathematics; the term itself is derived from the two Greek words topos and logos, meaning place and study, respectively, and its relevance and popularity in the mathematical world has increased greatly during the mid-twentieth century beyond its initial theoretical conception. For such an abstract subject, topology claims many applications in remarkable fields of modern study, including robotics, computer science, and biochemistry. Its historical connections to cosmology in particular are intertwined with the continual push for groundbreaking concepts relating to human perception as well as the endeavor to define the nature of our universe. This investigation aims to introduce several key basics of topology, present integral details about the development of the cosmological science, and utilize contemporary data and models to present a concise and organized review of the role topology now plays in understanding the cosmos.

POSTER 78

Perceptions of Islamophobia in the Westernized Society

Hebba Saker

Faculty Mentor: Dr. Florette Cohen
Department of Psychology

Islamophobia is a growing factor within the United States and the uproar of discrimination towards Muslims and Arab Americans in New York City increased hatred or showed a relative amount of hate and racism towards the Arab/Muslim community. This study emphasized on the mortality salience effect of discrimination and hatred towards Muslims and Arab. Also whether physical appearance of Muslim women affected perception of the westernized society towards Muslims and whether they were accepting of their appearance in regards to Islamophobia. We found that mortality salience implications will be discussed, results were inconclusive.

POSTER 79**Synthesis of Rufigallol for Liquid Crystal Applications**

Abdullah Chughtai

Faculty Mentor: Dr. Krishnaswami Raja
Department of Chemistry

Discotic liquid crystals have been attracting growing interest, not only because of the fundamental importance as model systems for the study of charge and energy transport, but also due to their potential application in organic electronic devices. A typical DLC material is a large planar conjugated molecule that forms into stacks or columns like gambling chips. Because of the high electron wave function overlap along the stacks in the columnar phase, the charge transfer along the stack is expected to be effective leading to high carrier mobility. Furthermore, because of their liquid crystalline properties any defects on the stacks are expected to rapidly self anneal further improving their electronic properties. Gallic acid was reacted under Friedel Craft's acylation conditions to produce crude rufigallol. Rufigallol was further purified by producing Rufigallol hexaacetate (RHA). RHA was hydrolyzed to produce pure rufigallol. Rufigallol was further reacted with propargyl bromide to produce a hexa alkyne derivative (RhAlkyne). RhAlkyne will be reacted in future with a long-chain azide, utilizing 'click' chemistry principles, to produce a gallic-acid based discotic liquid crystals.

POSTER 80**Youth Indicators in Very Cool Stars**

Daniel Feldman

Faculty Mentor: Dr. Charles Liu
Department of Engineering Science and Physics

This is a study that searched for a correlation between having a weak Na absorption doublet (8183, 8194 Å) and strong H-Alpha emission (6563 Å) in late M dwarf stars (M6-M9), as both are indicative of youth. M dwarfs are stars that are much smaller and cooler than our sun. Finding the ages to field stars (stars without companions) can be extremely difficult, and studying these spectral features can help us to better constrain the ages of these stars, and further our understanding of the evolution of M dwarfs. The utilized sample comes from the LSPM Survey (Lepine and Shara, 2005), which contain stars with high proper motions ($\mu > 0.5''$) and spectra indicative of late M dwarfs. Measurements for emission and absorption strength were made using spectral indices. The study's preliminary results suggest the absence of a correlation between Na absorption and H-Alpha emission. This could indicate that these youth indicators are sensitive to different time periods in an M dwarf's life. Further research hopes to solidify and expand upon the preliminary results, and to look into other youth indicators, such as the kinematics of the stars.

POSTER 82

Effect of Ps-tau on the Ommatidia Transgenic Drosophila

Justin Chacko

Faculty Mentor: Dr. Alejandra Alonso
Department of Biology

Alzheimer's disease falls into a category with other diseases such as frontotemporal dementia with Parkinsonism linked to chromosome-17 and Pick's disease called tauopathies. Tauopathies are caused by the abnormal hyperphosphorylation of the microtubule associated protein tau. Tau binds to axonal microtubules and helps provide organization, stability and function. The abnormal hyperphosphorylation of tau is caused by enzymes called kinases which phosphorylate specific serine and threonine residues. Phosphorylation causes the addition of a negative phosphate group to the protein causing conformational changes. Normal tau contains approximately 3 moles of phosphate per mole of protein, while hyperphosphorylated tau contains approximately 7-10 moles of phosphate per mole of protein. The conformational change brought on by this excess phosphorylation causes the formation of filaments. The phosphorylation of tau decreases its interaction with microtubules and through in-vitro studies it was shown that sites Thr212, Ser214, Thr231, Ser235 and Ser262 are major sites for inhibition of tau-microtubules binding. Through site-directed mutagenesis sites Thr212, Thr231 and Ser262 were changed to a glutamic acid. The negative charge of the glutamic acid side chain can mimic the effect of the negative phosphate group in hyperphosphorylated tau. Transgenic flies containing this pseudophosphorylated tau were created and regulation of the pseudophosphorylated tau is controlled by a GAL4 inducible system. The transgenic drosophila containing pseudophosphorylated tau allows the study of tau hyperphosphorylation in-vivo and the mechanism of tau phosphorylation induced toxicity. The effect of tau toxicity caused by the pseudophosphorylated tau can be seen through the effect of its expression on the eyes of transgenic drosophila. The expression of the abnormal tau in the drosophila eyes is examined using scanning electron microscopy (SEM) which provides high resolution and magnification. This is optimal to see the effect of pseudophosphorylated tau on the ommatidia of drosophila eyes.

POSTER 83

Fabrication of Porous Superhydrophobic Surfaces

Kristi Abbatemarco, Mark Barahman

Faculty Mentor: Dr. Alan Lyons
Department of Chemistry

Superhydrophobic surfaces exhibit various properties that can be used to facilitate a broad range of applications. Among these properties are large contact angles and decreased hydrodynamic drag. Superhydrophobic surfaces are limited, however, by the maximum water pressure difference that can be sustained at the air/water interface. Above this pressure, the liquid transitions to a wetted, non-superhydrophobic state. Our lab is developing a method to increase the stability of superhydrophobic surfaces and maximize the pressure of water that can be supported. We counter the liquid pressure by introducing gas pressure from below the surface. A porous surface to support the superhydrophobic structures is necessary to apply counter-pressure.

In this poster we describe the fabrication of superhydrophobic surfaces on porous fabric meshes to create superhydrophobic membranes using printing technologies. Fabric meshes of different types were evaluated based on material composition as well as pore size. The pore size needs to be small enough to support printing while large enough to be financially feasible. A robotic 3D printer was used to dispense arrays of polydimethylsiloxane features, which render the surface superhydrophobic, by a previously established method. Several modifications to the protocol were necessary as a result of the change in substrate. We used double-sided tape on a glass slide to flatten the substrate fabric and hold it in place for printing. We will present specific changes to printing parameters and discuss patterns observed, as well as approaches to increasing surface stability.

POSTER 84

Binary Tree Classifier Based on Kolmogorov-Smirnoff Test

Mohit Choudhary

Faculty Mentor: Dr. Natacha Gueorguieva
Department of Computer Science

The aim of this research is developing algorithms for estimating the feature importance in pattern recognition systems as well as design of binary tree classifier based on Kolmogorov-Smirnov.

Hierarchical Classifiers or Decision Tree Classifiers (DTC's) are used successfully in many diverse areas such as radar signal classification, character recognition, remote sensing, medical diagnosis, expert systems, and speech recognition etc. Perhaps, the most important feature of DTC's is their capability to break down a complex decision-making process into a collection of simpler decisions, thus providing a solution which is often easier to interpret. Hierarchical classifiers are a special type of multistage classifiers which allow rejection of class labels at intermediate stages.

This research includes development of

- a. Algorithm for calculating the information of different features of patterns (samples) for the purposes of classification (clusterization).
- b. Algorithm for partitioning of a feature space based on Kolmogorov-Smirnov test which requires the calculations of K-S distances and threshold coefficients as well as design of hierarchical pattern classifier.
- c. The software implementation includes development of friendly GUIs, with all necessary visualization and output files in appropriate format.
- d. Testing by using some of the existing benchmarks.

POSTER 85

La Voz del Pueblo (The People's Voice): An Oral History of Mexicans in New York City

Irvin Ibarguen

Faculty Mentor: Dr. Calvin Holder
Department of History

This project is born out of the conviction that the Mexican experience in America is far too broad, far too complex, and far too multifaceted to be properly addressed by standard historical works. Through a process of interviews, it seeks to salvage forgotten voices and reconstruct as fairly as possible the life, plights, concerns, and achievements of Mexicans in NYC. For the reader's convenience, a supporting narrative that gives context to the individual interviews is also included. This is not a rigorous academic argument about Mexicans in America; instead, it is the beautiful, emotional, and thought-provoking story of Mexican immigrants in NYC, as told by the people themselves.

POSTER 86

Site Directed Mutagenesis Effects on Tau Phosphorylation and Accumulation in the Nucleus of Cells

Regina Miller, Fatabardha Shala

Faculty Mentor Dr. Alejandra Alonso
Department of Biology

A wide range of factors trigger synaptic breakdown that precedes cell death in Alzheimer's disease. It has previously been shown that the cytosolic Alzheimer hyperphosphorylated tau (AD P-tau) sequesters normal tau, MAP1A, MAP1B and MAP2, which results in the inhibition of microtubule assembly and the disruption of microtubules as well as their self assembly into filaments. One of the unique characteristics of Tau is its ability to form paired-helical filaments. In fact the hyperphosphorylated microtubule-associated protein Tau is the major component of the paired helical filaments of Alzheimer's disease.

Phosphorylated Tau proteins accumulate early in neurons, prior to the formation of neurofibrillary tangles. Subsequently throughout the progression of Alzheimer's disease there is an assembly and accumulation of neurofibrillary tangles. Tau also has a putative sequence to bind importins and then is translocated into the nucleus. Specific amino acids are now being recognized as the site for the phosphorylation of Alzheimer's disease brain Tau. Through the use of site directed mutagenesis we altered two lysine residues to alanine, at amino acid sites 140 and 141, by changing four nucleotides, in order to see if the importins are still being bound to by tau. We are ultimately trying to find out if changing the amino acid sequence hinders tau's movement into the nucleus and thereafter recognize the mechanism of transport after phosphorylation of tau.

POSTER 87

Valuation of Transportation Facilities and Asset Transfers— A Case Study of the Dulles Greenway

Galitano Gjoni

Faculty Mentor: Dr. Jonathan Peters
Department of Business

Macquarie Bank limited is an Australian bank that through various corporate entities manages transportation assets world-wide. One of the assets is the Dulles Greenway highway, which connects Dulles International Airport and Leesburg, Virginia. During the course of their ownership, the Dulles asset management and ownership has been shared and transferred between a number of Macquarie owned and controlled entities. The last major transfer of ownership occurred in January 2010. This project will examine the purposes of these transfers. What are the benefits to the Macquarie Bank, specifically for the year 2009-2010? The main tool of analysis will be an examination of the financial statements of the Dulles Greenway and Macquarie corporate entities. This project looks to explore what are the losses or gains from the asset and how they are actually received from the Bank through the ladder of the entities? The potential to utilize tax management strategies both nationally and internationally as well as the structure of tax shelters or tax benefits, if any, will be examined.

POSTER 88**Taurine Role in Hemodynamics**

Evelyn Okeke

Faculty Mentor: Dr. Abdeslem El Idrissi
Department of Biology

Taurine is a sulfur containing amino acid that functions as an inhibitory neurotransmitter. It also acts as an allosteric transmitter, mimicking gamma-aminobutyric acid (GABA) by binding to the GABAA receptor not only in the brain but also in the peripheral tissue. Therefore, taurine plays an important role in the modulation of cardiovascular functions. Our study was designed to elucidate the differences between acute and chronic taurine supplementation. We determined how acute and chronic taurine supplementation in Long Evans Hooded rats influences the blood pressure and further investigated the possible taurine-induced biochemical changes. The rats that received the acute taurine treatment (via i.p. injection) showed lower blood pressure after 15 minutes post injection. In contrast, the rats that received the chronic taurine supplementation, which was added to the drinking water (0.05% taurine in dH₂O) for a period of four weeks, displayed higher blood pressure. Further investigation in vitro showed that the chronic taurine supplementation resulted in a down regulation of the GABAA receptor, and the enzyme glutamic acid decarboxylase (GAD) was up regulated. In addition, in both, males and females, that received the chronic treatment, we observed an increase in heart rate. We conclude that acute administration of taurine maybe beneficial in lowering high blood pressure by taurine activating the GABAA receptor which initiates vasodilation. However, chronic intake of taurine shows increased blood pressure in our study, and therefore seems counter therapeutic in treating high blood pressure.

POSTER 89**Characterizing Ataxia Profiles of Taurine Treated Fragile-X Mice**

Elizabeth Che

Faculty Mentor: Dr. Abdeslem El Idrissi
Department of Biology

Fragile-X is part of hereditary genetic conditions, called trinucleotide repeat disorders, which are expressed through mutations of the FMR1 gene. Patients suffering from Fragile-X Associated Tremor/Ataxia Syndrome (FXTAS) exhibit ataxia related balance problems such as "parkinsonism" due to difficulty in learning and motor adjustment and are observed to have more noticeable conditions as they age. Males with Fragile-X are often better at gross motor skills, movements by larger muscles of the body, compared to fine motor development. Their low muscle tone, balance, flat feet, and hyperextensible joints cause awkward movements and poor motor control. In this study, male wild-type and knockout (Fragile-X) mice are given taurine, an abundant free amino acid found in most tissues - especially the heart and brain, to understand the influence of taurine in disturbances of the cerebral cortex and its GABA receptors as associated with Fragile-X patients. Gait ataxia profiling is the only noninvasive technique conducted to analyze the affect of chronic taurine on locomotor activity of mice in stride length, overlap, base width, angle measurement and linearity. Ataxia tests are performed for WT, WT-Tau, KO and KO-Tau mice at the age of 3 (young) and 8 (old) months. Analysis is then conducted in each category to provide us with the best indicator of motor behavior in Fragile-X mice with relation to age.

POSTER 90

Counterfeit Prescription Drugs

Paskualine Rotani

Faculty Mentor: Professor Alan Zimmerman
Department of Business

As Americans become more dependent on prescription drugs, drug counterfeiters are seizing new opportunities to infiltrate the market. Unfortunately, it is a major challenge for U.S. law enforcement to control the importation of these potentially dangerous pharmaceuticals. A U.S. investigation by the Food and Drug Administration found that about 88 percent of pharmaceuticals that are imported from other countries contain unapproved drugs. Many of these drugs pose potential health risks. About 200,000 people die from taking tainted malaria medications each year. In Nigeria, for example, more than 2,500 have died from fake vaccinations, according to a report released by the World Health organization (WHO). China, Mexico and India are the primary suppliers of these illicit medications.

Counterfeiting of medications is having a deep effect on U.S. pharmaceutical companies and is, without doubts, doing harm on a world wide scale. In Europe, the Organization for Economic Cooperation and Development (OECD) is doing a major analysis of the drug counterfeiting issue and is recommending various measures of how to deal with this matter. The fight against counterfeited pharmaceuticals will not be easy and it will take a long effort by the world community to put an end to this latest curse that humanity has inflicted on itself.

POSTER 92

**Eigenmodes of Advection
Diffusion Operators**

Ensela Mema

Faculty Mentor: Dr. Andrew Poje
Department of Mathematics

We use Chebyshev spectral methods to numerically determine the spectrum of the advection-diffusion operator on bounded domains with Dirichlet boundary conditions. We show that the long time behavior of solutions, for large sets of initial conditions, is dominated by the “gravest” eigenmode, the mode with the slowest decay rate.

POSTER 93

Jazz Vocal Improvisation

Linda Soria

Faculty Mentor: Dr. William Bauer
Department of Music

Since last September I have been actively engaged in the study of jazz singing. I am exploring the intricacies of jazz vocal technique through the study of such popular jazz standards as “Black Coffee,” “St. Louis Blues,” and “What are You Doing the Rest of Your Life?” In my practice, I approach these songs from the various perspectives of bandleader, arranger, storyteller, actress, improviser, and performer. I examine each song in detail, paying attention to every note and lyric. Phrasing—the way a performer links musical ideas to other ideas to create ongoing flow and movement—plays an important role in this investigation, as it helps me to form and to bring forth my own personal vision of the song. I explore ways to produce tension between the band and the singer by suspending the sense of predictable time in the vocal line, using a technique known as “back phrasing”—lagging behind the beat—that Billie Holiday brought to a high level of development. In the process of working on this technique, I learned that the relationship between accompanist and singer is essential to the success of any song that I am interpreting. In order to establish a musical relationship between singer and accompanist, both must listen to and trust each other. Improvisation enables them each to follow their creative impulses as they adhere to the song’s harmonic plan. When I improvise vocally using syllables (also known as scatting), listening to the accompaniment allows me develop new ideas on the spot, helping me to become more engaged in the song’s delivery. The approach I have taken in this investigation has given me more confidence in myself, not only as a performer, but as a creative artist. I hope that approaching songs in this manner makes my delivery of a song effective and compelling for the listener. It certainly makes the process of building an interpretation into a creative journey.

POSTER 95

Performance Management of Transportation Systems: Lessons from Australia and New York

Kenneth Browne

Faculty Mentor: Dr. Jonathan Peters
Department of Business

In this project we will compare and contrast the performance standards and operational practices of mass public transportation systems in Australia and the United States of America. The focus will be emphasized on the regions of Canberra, Australia and Staten Island, New York. Both regions are similar in demographics and population; and both utilize bus service as the primary means of public transportation.

The systems studied in detail will be New York City Transit (NYCT) and the Australian Capital Territory Internal Omnibus Network (ACTION). The project will compare international and domestic operating standards and performance measures for the systems deployed in Canberra and in Staten Island, New York. The topics involved in research and discovery will be: How are the transportation systems utilized and what are the user bases? What performance metrics are used by both companies? What are the different styles of performance management of the transportation systems? What is the comparative cost structure between the two companies? What type of revenue collection system is instituted? Our goal is to understand what can ACTION and NYCT can gain from examining alternative operation methods, and also how international standards of performance can be shared between systems.

POSTER 97

Navigating the Web-Enhanced College Course

Atixhe Marke, Mina Beshai,
Senada Lekperic, Stephanie Cipriano,
Marissa Dreyer, Johnathan Klingler,
Nicholas Buchanan

Faculty Mentor: Professor Louise Levine
Department of English

This year's ePortfolio presentation will look at the Social-Digital Self on the college campus through the writing class. Students will work on projects exploring how we incorporate technology in the classroom and in their own assignments. Using various forms of technology they will prepare and present college papers online along with researching the social interaction in both face to face and online discussions. Together, these projects will illustrate the influence of technology and the knowledge students are now required to have in order to be successful in the freshman writing course and future courses. Students will use their ePortfolio as a presentation platform and online blog/discussion area.

POSTER 98

Autonomous Vehicle

Michael Costantino, Konstantine Goudz

Faculty Mentor: Dr. Susan Imberman
Department of Computer Science

We will be demonstrating a project that has been ongoing for the past two years. We have converted a typical electric car used by toddlers, a Barbie Jeep, into an autonomous robotic vehicle. Our first year was spent in the conversion process. To convert the jeep we had to reengineer the jeep's motors, and circuitry to accommodate an Arduino microcontroller. The microcontroller allows us to communicate with the robotic jeep using a version of the C programming language via a laptop computer. Since last year we have made great progress towards our goal of autonomous driving. We have since equipped the jeep with video, GPS, sonar, and a compass accelerometer. We will be demonstrating how these additions have made our project approach autonomy.

POSTER 99

Dibutyl Phthalate (DBP)

Faith Avevor

Faculty Mentor: Dr. Abdeslem Elidrissi
Department of Biology

Dibutyl Phthalate (DBP) is a developmental and reproductive toxin that causes a broad range of birth defects resulting in lifelong neurological impairments. Humans are directly exposed to DBP through a variety of manufactured consumer products (e.g. water, cosmetics, and stored food, etc.). In our study we evaluated the effects of DBP during early embryonic and postnatal development in FVB/NJ WT or FMRP KO male mice. Mice were separated into four treatment groups: WT, WT-DBP, KO, and KO-DBP mice [treated 0.1mg/ml DBP], each group contained two pregnant females. DBP was first administered to the WT-DBP and KO-DBP pregnant females at E7 (embryonic day 7; seven days after the copulatory plug appeared). 20 day after birth, the off springs were subjected to three different behavior tests to characterize anxiety, locomotor activity and hippocampal-dependent memory using the elevated plus maze, freeze monitor, the open field the passive avoidance apparatus respectively. 10 minutes in an elevated field, and a 2 day fear conditioning freeze monitor test, 10 minutes in an open field and finally the passive avoidance paradigm to test for their memory. After the behavior tests, mice were sacrificed, perfused and their brains were processed immunohistochemically and examined under confocal microscopy to evidence the effects of DBP treatment on the expression of proteins that are known to be involved in the etiology of autism (e.g. GABA (A) receptors, GAD, KCL cotransporter).

POSTER 100

The Expression of Pseudophosphorylated Tau Protein in *Drosophila melanogaster*

Phoebe Arriescado, Cindy Beharry,
Faisal Bashier, Princy Paulose

Faculty Mentor: Dr. Alejandra Alonso
Department of Biology

Alzheimer's is the most common form of dementia. It affects the loss of memory and other intellectual abilities that interfere with daily life. A distinct lesion associated with Alzheimer's disease is the formation of neurofibrillary tangles in the cytoplasm of affected neurons. These tangles are composed of hyperphosphorylated tau, a microtubule associated protein, which has been polymerized into paired helical and straight filaments. Hyperphosphorylated tau disrupts microtubule structure and prevents axonal transport of protein and chemicals along the axon.

Drosophila fly have counterparts for 60-70% of human genome, and its low cost, small size, and short lifespan make it an attractive organism to be used in research studies. Transgenic flies with human wild type tau, Thr212, Thr231 and Ser 262 are replaced for glutamine, Arginine replaces tryptophan and arginine replaced for tryptophan plus Thr212, Thr231 and Ser 262 mutant for glutamine was crossed with inducers that will express the Alzheimer phenotype in the offspring.

The life span and survival rate of the progeny will be monitored to determine whether the pseudophosphorylated tau affects age. The possible degeneration of motor neurons with hyperphosphorylated tau will be studied through conducting climb tests to observe the *Drosophila* behavior. Our preliminary results show that some lines of hyperphosphorylated tau die faster and display abnormal behavior. Further tests will confirm these results.

POSTER 102

U.S. Employment Status and Gender, Educational Attainment, and the 2008 Economic Crisis Effects on It

Sisi Luo, Vonetta F. Sutton

Faculty Mentor: Dr. Alexandru Voicu
Department of Political Science, Economics and Philosophy

People with different characteristics present largely different employment status in the labor market, and they were affected differently by the 2008 economic crisis. Empirical data shows that women and men possess essentially different labor supply curves. In addition, educational attainment is associated with different employment status of workers. This paper studies two issues in the United States labor market. First, it studies the labor participate rate and hours of work over fourteen years, from 1996 to 2010, and the impact of the 2008 economic crisis on them. Second, it analyzes the differences in the labor participate rate and hours of work over the same period in terms of gender and educational attainment and the effect of the economic downturn on them. It uses data from Current Population Survey (CPS), provided by the United States Census Bureau. In this study, workers' educational attainments are categorized into seven groups: no high school diploma, high school diploma, some college education (with no degrees), associate degree, bachelor degree, professional degree, and research degree. The data is analyzed with the software SPSS (Statistical Package for the Social Sciences).

POSTER 104

A Modified Attention Task to Test the Recuperation of Dopamine Receptors in a Rat Model of Epilepsy

Tovyk A. Shohatee

Faculty Mentor: Dr. Daniel McCloskey
Department of Psychology

There is higher chance for epileptic children to have Attention Deficit Hyperactivity Disorder (ADHD) than non epileptic children. The exact cause for this correlation is not fully understood. Among the many theories produced the most plausible maybe due to modification of the dopamine system caused by epilepsy. Dopamine is a neurotransmitter that is involved in attention and studies have shown that children with ADHD have a less organized dopamine system. To study this we have used a rat model. These rodents had seizures at an early point in their life. The seizures did not occur naturally but were caused by early-life hypoxia. In the prefrontal cortex, the amount of dopamine receptors was diminished in the hypoxic animals. The control animals did not perform as well as the hypoxic animals on the attention task. The cause of this effect could be that the maze (food reward motivated 5-arm maze) used was not primarily for testing the medial prefrontal cortex for DRD4 or that there is a possibility of recuperation of dopamine receptors. The rats were tested when they were 5-6 months old and the data we collected supports the theory that dopamine recuperation did occur in rats at the age of 6 months. To achieve more evidence we have modified the maze meaning that the rats will have to use their medial prefrontal cortex (for avoidance behavior) more than in the previous maze. Our predictions are that it will be more difficult for epileptic rats than the controls.

POSTER 105

Delirium Sound and Light Design

Daniel Koehler

Faculty Mentor: Dr. Maurya Wickstrom
Department of Performing and Creative Arts

Designing sound and lighting for the physical theatre piece *Delirium* poses many challenges and artistic opportunities. Using facilities and resources available at the College of Staten Island coupled with the artistic and technical talent of the designers and faculty members, this project aims to create a realistic, stimulating aural and visual environment to support and further the actions of performers on stage. Through the use of extensive theatrical and non-conventional lighting instrumentation, actors and audience members are immersed in diverse worlds: a night club, a hotel, a man's dream, and the home of an aggressive dog-breeder among others. Direction- and location-based sound transducers aid in the creation of these atmospheres, and help to encompass several different realities taking place in the same singular theater space.

POSTER 106

Machinal Set Design

Edward Victor Turner

Faculty Mentor: Kevin Judge
Department of Performing and Creative Arts

Edward Turner started in the role of Set Designer by attending cast and crew meetings for the student production of *Machinal* at The College of Staten Island. He met with the Director, Christine Zahra Devito, to attain her vision and to get her ideas for the play. From there, Edward drew up a basic sketch of what the set could look like and meet with the director to get her approval. In response to her feedback he drew up additional sketches and built a scale model of the LAB Theater in Building 1P in which he showed where the audience seating would be placed and where the set would be positioned. At that point Edward created a 3D white model to display a visual of what the set would look like in the theater space. Once the design received acceptance from the Director and Professor Judge he assisted the production team with construction of the actual scenery for The College of Staten Island's Fall Production.

POSTER 107

Teaching Fractions Across Elementary Grades

Kimberly DiGregorio and Jillian Popper

Faculty Mentor: Prof. Judit Kerekes

Department of Education

Once these students progress in their educational years and enter into the fourth grade, the difficulty level will increase, and students will become exposed to lessons on comparing fractions. Fractions are an important concept to teach because they can appear intimidating to some students. In order to teach a successful comprehensive lesson on fractions to all grade levels, manipulatives must be incorporated. By providing students with tangible objects helps the students to gain an understanding of fractions in relation to a whole and seeing a comparison between two equivalent fractions. Whether using fractions to split costs, keep score, ensure fairness, or balancing a budget, fractions will appear in many aspects of the student's future lives. Students will continue to use fractions even after they have graduated from school, so it is imperative that students develop an understanding for the concept in their primary learning stage. If one fails to teach fractions correctly, students may never gain ownership of the idea of fractions. In our lessons taught to second grade and fourth grade honors, we both provided the opportunity for each class to gain knowledge of fractions through real-life situations to enhance their understanding. During both lessons, we taught multiple ways to solve fraction problems to appeal to every learner. When teaching how to compare fractions to the fourth grade honors class, methods such as "drawing it out" using illustrations, manipulating fraction magnets, cross multiplying, and finding the common denominator, allowed the students to see fractions clearly in ascending and descending order. When teaching parts of a whole, manipulatives such as pennies, chocolate bars, m&m's, and flower pedals were used to make connections to fractions to the second grade students.

Undergraduate Conference on Research, Scholarship, and Performance Alumni—Where Are They Now?

Arthur J. Merola, DPM received his Bachelor of Science degree in Biology in 1985. As an undergraduate he engaged in research under the tutelage of Prof. Leonard Ciaccio. He graduated from the New York College of Podiatric Medicine in 1991, receiving a Doctorate in Podiatric Medicine, and served two years as a resident, and then chief resident in podiatric medicine. Dr. Merola is board certified in Podiatric Medicine. Currently he maintains private practices in Manhattan and Staten Island, and is a consultant in Podiatry for United Cerebral Palsy Associates NYS. In addition to these, he is currently associated with the College of Staten Island Alumni Association where he serves on the Executive Committee as First Vice President.

Jonathan Blaize graduated from CSI in 2005 with a Bachelor of Science degree in Biology, and in 2007 he earned his Master's degree in Biology. Jonathan is currently a PhD candidate in Biology at CSI through the CUNY Graduate Center, studying Neuroscience. He expects to be awarded his PhD degree in January 2012. Jonathan is researching diseases of the retina under the supervision of CSI Professor Dr. William L'Amoreaux. In addition, he serves as the Activities Coordinator at CSI for LSAMP (Louis Stokes Alliance for Minority Participation in the Sciences).

Marjorie J. Hill, PhD received her Associate's degree in Liberal Arts and Sciences in 1975 and was a member of the SEEK (Search for Education, Elevation, and Knowledge) program while a student. She received a Bachelor's degree in Psychology in 1977 and her PhD in Clinical Psychology in 1981, both from Adelphi University. Dr. Hill is a licensed Clinical Psychologist and CEO of the Washington DC-based Gay Men's Health Crisis, the nation's oldest AIDS service organization. Dr. Hill is considered to be an expert who lectures and consults on issues of cultural diversity, HIV/AIDS in communities of color, and homophobia.

Mario H. Perez received his Bachelor's degree in biology from CSI in 2005 and is in his last year as a PhD candidate in Biological Sciences at Florida International University. He specializes in vector biology and his research focuses on the potential effects of pollution and urbanization on populations of disease-carrying mosquitoes at the molecular and genetic levels. Mario has been accepted for postdoctoral research in vector biology at The National Institutes of Health (NIH). In 2003, while a CSI undergraduate, he was awarded the Excellence

in Research Department of Biology Faculty Award and was the recipient of the Undergraduate Research Conference Award that same year. Mario credits CSI Professor Dr. William Wallace and retired CSI Professor Dr. Albert Burchsted for their inspiration and guidance in field biology.

Edward E. Brown received his Bachelor's degree in Music from CSI in 1976. He went on to receive two Master's degrees in Music History and Music Education from Hunter College. He is an adjunct music instructor at both CSI and Wagner College and leads the CSI Guitar Ensemble.

Kelly Lavano, PhD received her Bachelors' degree in Biology from CSI in 2003 and her PhD in Biochemistry in 2009 from the CUNY Graduate Center. Her areas of specialization include cancer and breast cancer. As an undergraduate at CSI, Kelly was involved in research with CSI Professor Probal Banerjee and was the CSI Activities Coordinator for the LSAMP program. She went on to be a NYC Louis Stokes Alliance Graduate Research Experience Program participant throughout her doctoral studies. She presently is pursuing post-doctoral work at the Albert Einstein School of Medicine in breast cancer research.

Eric Magaram is a 2005 graduate of the CSI Honors College and received his Bachelor's degree in Mathematics. He received his Master's degree in Applied Statistics from New Jersey Institute of Technology in 2007. As an Undergraduate Research Conference participant, he presented *The Synchronization of Non-linear Oscillators* under the supervision of CSI Mathematics Professor Carlo Lancellotti. Eric has gone on to work as an adjunct instructor in the CSI Mathematics Department, teaching 100- and 200-level Math courses. In September 2010, he was appointed to a full-time tenure-track position in the Mathematics Department at SUNY Rockland Community College, specializing in arithmetic.

Prashant Sharma, DO, received his Bachelor's degree from CSI in 2006, and is a graduate of the CUNY Honors College at CSI. He graduated from the New York College of Osteopathic Medicine in 2010 and is currently interning at St. Vincent Mercy Medical Center in Ohio. Starting in July 2011, he will be an active duty Flight Surgeon in the United States Air Force. Currently, he is a Captain in the Air Force Reserves, which affords him exciting opportunities for his medical career.



Faculty Mentors

Undergraduate Conference on Research, Scholarship, and Performance— Faculty Mentors

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Alejandra Alonso	Biology	39, 75, 82, 86, 100
Probal Banerjee	Biology	68
William Bauer	Music	93
Rima Blair	Psychology	70
Deborah Brickman	Business	3
Patricia Brooks	Psychology	4, 74
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STUDENT	FACULTY	DEPARTMENT
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Kalpita Abhyankar	Alejandra Alonso	Biology
Melinda Andrade	Naomi Aldrich	Psychology
Diana I. Aparicio-Bautista	Jimmie E. Fata	Biology
Phoebe Arriesgado	Alejandra Alonso	Biology
Amram Averick	Krishnaswami Raja	Chemistry
Faith Avevor	Abdeslem El Idrissi	Biology
Mark Barahman	Alan Lyons	Chemistry
Faisal Bashier	Alejandra Alonso	Biology
Monica Bassous	Qiao-Sheng Hu	Psychology
Cindy Beharry	Alejandra Alonso	Biology
Rena Berkovits	Daniel McCloskey	Biology
Mina Beshai	Louise Levine	English
Daniel Blois	Alan Zimmerman	Business
Nicole Boffa	Daniel McCloskey	Biology
Athena Brensberger	Charles Liu	Engineering Science and Physics
Thomas Brigandi	Jonathan Peters	Business
Kenneth Browne	Jonathan Peters	Business
Nicholas Buchanan	Louise Levine	English
Jennifer Carrion	Naomi Aldrich	Psychology
Justin Chacko	Alejandra Alonso	Biology
Elizabeth Che	Abdeslem El Idrissi	Biology
Mohit Choudhary	Natacha Gueorguieva	Computer Science
Abdullah Chughtai	Krishnaswami Raja	Chemistry
Alexa Cimbali	Naomi Aldrich	Psychology
Alexa J. Cimbali	Bertram Ploog	Psychology
Stephanie Cipriano	Louise Levine	English
Victoria Cooper	Janet Ng Dudley	English
Kelly Cooper	Susan Smith -Peter	History
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Deryn Cro	Mark Lewis	History
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Nicholas Dalonzo	Patricia Brooks	Psychology
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