CSI UNDERGRADUATE CONFERENCE

RESEARCH, SCHOLARSHIP, AND PERFORMANCE

Thursday, April 28, 2022

College of Staten Island
The City University of New York

VIRTUAL EVENT

with LIVE In-Person Performances

(In-Person format subject to change)

www.csi.cuny.edu/ugconference

CC CLUE

IN MEMORIAM

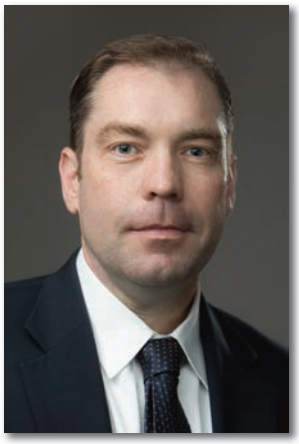
Debbie Mahoney *– Administrative Assistant*
Office of the President
and
Jennifer Straniere *– Performing Arts Technical Manager*
Department of Performing and Creative Arts

Two beloved staff members at the College of Staten Island and important figures behind the development of the Undergraduate Research Conference for many years…

We will continue to celebrate both your lives and legacies!

There is no night without a dawning
No winter without a spring
And beyond the dark horizon
Our hearts will once more sing…
For those who leave us for a while
Have only gone away
Out of a restless, care worn world
Into a brighter day.

~ Helen Steiner Rice



CSI Undergraduate Conference

Message from the President

Undergraduate research is one of the hallmarks of a top-tier institution, and the College of Staten Island can truly claim a legacy of this activity. Our faculty work with and involve students in an impressive array of high-impact practices, providing meaningful exposure to research in the sciences, humanities, business, education, performing and creative arts, as well as the social and health sciences. What you see before you is the culmination of hundreds of hours of activity in laboratories, archives, and elsewhere. The dedication of our faculty in supporting these efforts is matched only by the enthusiasm and talented contributions of their student counterparts.

The activities you see on display at this event are proof that hands-on, experiential learning is key to a college curriculum. Through undergraduate research, our students are able to apply the theories, concepts, and constructs they learned about in lectures to the real world. The linkage of theoretical and applied knowledge is a crucial component of undergraduate education, and represents the very best of both teaching and learning.

The annual Undergraduate Research Conference is, along with Commencement, one of the proudest days for the College of Staten Island. It allows us to celebrate the accomplishments of so many students in so many disparate areas; I am pleased to share with you all the hard work of our students and their faculty mentors. Enjoy the event!

Sincerely,

Timothy G. Lynch, Ph.D. (he/him/his)
Interim President

Conference Schedule

START TIME	TRACK 1 Engineering & Environmental Science	TRACK 2 Biology | Chemistry | Physics & Astronomy | Computer Science Mathematics	TRACK 3 Psychology | Nursing	TRACK 4 Accounting & Finance Management | Marketing | English English/Linguistics | History Curriculum & Instruction	TRACK 5 Philosophy | Social Work World Languages & Literatures Political Science & Global Affairs
			SESSION ONE		
12:30 PM	* WELCOME * OPENING REMARKS ********** Provost Michael Parrish President Timothy G. Lynch	* WELCOME * OPENING REMARKS ********** Provost Michael Parrish President Timothy G. Lynch	* WELCOME * OPENING REMARKS ********** Provost Michael Parrish President Timothy G. Lynch	* WELCOME * OPENING REMARKS ********** Provost Michael Parrish President Timothy G. Lynch	* WELCOME * OPENING REMARKS ********** Provost Michael Parrish President Timothy G. Lynch
12:40 PM	**EES-01** *Provenance of Sediments (hemipelagic muds) in Accretionary Wedges - Interpretation of Major, Trace, and Rare Earth Element Signatures* **Nourhan Elzayat**	**BIO-01** *Effect of Pathological Human Tau in Non-Neuronal Cells* **Amani Elmaadawy**	**PSY-01** *Sit Still and Pay Attention! The Impact of Postural Control on Focused Attention* **Haley Essig, Olivia Abdelshahid**	**ACCT/FNC-01** *What is Blockchain's Effect on Business and Its Impact on the Job Market?* **John A Buscini**	**PHL-01** *Can Computers Think and Understand?* **Abdulaziz Mugren**
12:50 PM	**EES-02** *Project Insight: Discovering the Secrets of the Newark Basin using Geochemistry* **Jay B Tobon**	**BIO-02** *The Fate of the PH-TAU, Exocytosis or Degradation?* **Momtahina Akter, Marven Fam**	**PSY-02** *Metalinguistic Awareness of Turkish Grammar Among College Students at Early Stages of Language Learning* **Angela Cortez**	**ACCT/FNC-02** *Changing World Order* **Michael C Stora**	**PHL-02** *The Inextricable Theoretical Dependency of Measurement: Why Epistemic Loops Lead to Coherentism* **David Checchi**
1:00 PM	**EES-03** *Composition of Calcite in Fossil Bivalve Mollusk Shells* **Javonni E Banks**	**BIO-03** *The Intricate Tie Between the Body and Mind* **Savannah Patsakos**	**PSY-03** *How Does Working While in College Affect Students' Mental Well-being?* **Herman Low**	**MGT-01** *Confidence and Humility and the Effect on Managers and Employees Alike* **Kathleen R Preis**	**PHL-03** *Alexander Hamilton's Legal Character in the Making: Rutgers v. Waddington & People v. Croswell* **Maxwell Velikodny**
1:10 PM	**EES-04** *Variability of CSO Pollutants within New York City Waterways* **Madison M Burgos**	**BIO-04** *The Global and Media Effect of Covid-19* **Cassandra Ayoub**	**PSY-04** *Evaluating Autism Stigma within a Cross-Cultural Context: A Quantitative and Qualitative Analysis of University Students' Perspectives on Autism Stigma in Canada and Hong Kong* **Deondre D Williams**	**MKT-01** *How Machine Learning will Help Identify Risks in Project Management* **Angela M Philip**	**ECO-01** *The Economics of Crime* **Michael Zakaria**
1:20 PM	**EES-05** *The Water Sweeper* **Khuyen Vo, Maximilian Golubowski**	**BIO-05** *Concussions in Football and the Effects it has on the Body* **Andreo Alonzo C Puno**	**PSY-05** *Predictors of Autism Understanding in Autistic Teenagers* **Kyle J Gravitch**	**MKT-02** *The Personalization of Advertising Through the Use of Digital Analytics* **Michael A Crescente**	
1:30 PM	**EES-06** *Smart Wheelchair* **Kerolous Shehata, Ahmed Aboudewan**	**BIO-06** *Lead (Pb2+) Intoxication Impedes Synaptic Function in Planarians* **Brigitte A Franco**	**PSY-06** *Trans Biases in Education* **Annet Sokol**	**MKT-03** *Aesthetics of Diamond Culture: Traveling the Seven Seas* **Nikolozi Davlianidze**	
10 Min	BREAK	BREAK	BREAK	BREAK	BREAK
			SESSION TWO		
1:50 PM	**EES-07** *Engineer Me Chatbot* **Laila Basyouni**	**BIO-07** *The Role of Human Leukocyte Antigen (HLA) in Glioblastoma Multiforme (GBM)* **Lara A Colombo**	**PSY-07** *Too Much of a Good Thing: A Sociocultural Analysis of Hypersexual Disorder* **Andrew J DeMeo**	**ENG-01** *How Literature Can Raise Awareness Towards Animal Cruelty: Mustering Up The Strength to Read the Facts* **Heather Mancino**	**SWK-01** *Mental Health Awareness in College Campuses* **Alexandra R Agosta**
2:00 PM	**EES-08** *Chessboard Buddy* **Kaitlyn Kundmueller**	**BIO-08** *Stimulation of the Endocannabinoid System in a Mouse Model of ASD* **Sayuri H Sayakkara**	**PSY-08** *How Do Our Brains Use Our Experiences to Evolve/Create Information?* **Jonathan R Falcone**	**ENG-02** *Exploring Pre-1800s Children's Literature* **Mehnoor Khan**	**WL&L-01** *How Do Men and Women Live under a Patriarchal System in China?* **Stephanie Lui**
2:10 PM	**EES-09** *Rescue Inhaler Tracker* **Diana Bilous, Monique Ayala, Ahmed Shehab**	**BIO-09** *A Systematic Review of Breast and Cervical Cancer Screening in Muslim American Women in Urban Areas* **Albina Kukic**	**PSY-09** *The Effects of Language Dominance on Working Memory* **Victoria F Nicoletta**		**PSGA-01** *Peace in the Middle East? The Role of Israeli-Palestinian Peace Plans in the Ongoing Conflict* **Sandra Abdellal**

	TRACK 1	TRACK 2	TRACK 3	TRACK 4	TRACK 5
2:20 PM	**EES-10** *Energy Recovery Ventilators* **Jeffrey Liebman**	**BIO-10** *Importance and Effectiveness of Technologies in Type 1 Diabetes Mellitus and Type 2 Diabetes Mellitus Treatment* **Egor Volcotrub**	**PSY-10** *Language Development of Bilingual Children Fluent in the Russian Language using the KORABLIK Test* **Michael Feldman**	**ENG/LING-02** *Investigating Consonant Production Following Resection of the Oral and Base of Tongue Using Real-Time MRI* **Ashley C Roberts**	**PSGA-02** *Mapping the COVID-19 Pandemic in Staten Island* **Vincenzo G Mezzio**
2:30 PM	**EES-12** *A Secure Way of Handling Medical Information* **Jesse Itepu, Ahmed Abdellatif, Ahmed Salem**	**CHM-01** *Investigation of Mitochondrial Interactions with Tau and Pathological Tau in Mammalian Cells* **Anila Fecanji**	**PSY-11** *Dopamine Neuron Axons in the Corpus Callosum: Potential Role in Experience-Dependent Myelination* **Zahid Hassan**	**ENG/LING-03** *Compensatory Speech Mechanisms Following Oral Tongue Resection* **Jaclyn A Kateridge**	**PSGA-03** *The Effect of 9/11 on Airport Security: the Creation of TSA and Implementation of Current Policies* **Iman Bedrolli, Ariana Gaytan, Valentina Schembri, Amanda Cronin**
2:40 PM	**EES-13** *Dual Flywheel Propulsion System for Cars* **Thomas C McCullough, Muzzamil Shaukat, Denis Ladyzhensky**	**CHM-02** *Quantifying Singlet Oxygen Required to Eradicate Oral Pathogens* **Danielle Ohana, Aya Ashour**	**NRS-01** *Diabetic Patient Preference Using Alternate Site Testing (AST) Versus Fingertip Site for Blood Sugar Monitoring* **Vincent DePinto**	**HST-01** *The Harlem Nine: A Fight Against Zoned District Lines and Segregated Public Schools, and a Fight for Equal Access to a Proper Education in Minority Communities in New York City in the 1950s and 60s* **Aurora Haxhari**	**PSGA-04** *Chinese Immigration: New York in Comparison to Other Cities* **Kenny Feng, Frank Feng, Jenalyse Alarcon, Michael Kehoe**
2:50 PM		**PHY/AST-01** *Development of Virtual Reality Mapping for E+A Candidates in the Coma Cluster* **Sam Pakravan**	**NRS-02** *The Best Skin Grafting Method* **Yana Svintsitskaya, Karen Cherkas**		**PSGA-05** *The Rise of Anti-Immigration Sentiments During Coronavirus and Other Infectious Diseases: A Comparative Study* **Hannah Varughese, Shannon Farnum, Lizbet Rodriguez, Jordan Swanson, Anthony Attenborough**
10 Min	BREAK	BREAK	BREAK	BREAK	BREAK
			SESSION THREE		
3:10 PM	**EES-14** *LCD Marketing Sign* **Sebastian Broncano, Mensur Serdari**	**CSC-01** *Groupvie* **Joseph DeMario**	**NRS-03** *The Pig with a Human Heart: Xenotransplantation* **Amber L Boylan, Kayla Curcio, Fanny Liao**	**C&I-01** *African Diaspora in New York City* **Katherine Yenna, Ava Thompson, Christopher Vitale, Tal Ohana, Sylwia Ossowska**	**PSGA-06** *The Roots of First Amendment Values in Colonial New York* **Colin P Alarcon, Philip Nicotra, Nikolas-Kaan Yilmaz, Brian Kerliu**
3:20 PM	**EES-15** *Distance-Based Cruise Control Using mm Wave Radar* **Aaron Aviles, Syed Mansib Miftah, Muhammad Usman**	**CSC-02** *Scheduling Surgeries with Limited Resources During the COVID-19 Pandemic* **Kaitlyn Kundmueller**	**NRS-04** *Pronation Therapy in COVID-19 Patients* **Jennifer Yu, Vincent DePinto, Anna Plonka**	**C&I-02** *The Role of Wall Street in Immigration* **Joshua Kats, Andrew Thomas, Michael Caligara**	**PSGA-07** *The Other Victims: Ethic and Racial Backlash after a Terrorist Attack* **Karen Correa**
3:30 PM	**EES-16** *The Effects of Invasive Rubus phoenicolasius and Celastrus orbiculatus on Soil Chemistry in a NYC Urban Forest* **Matthew Wilhelmsen**	**MTH-01** *Clustering Algorithms in Ocean Surface Drifter Data* **Sheryar N Choudhry**	**NRS-05** *Impact of Virtual Crossmatch on Kidney Transplant* **Shazia Sarwar, Sviatlana Fedarovich, Jonathan Rouach**	**C&I-03** *Immigration to Brooklyn from the Greater Russian Area* **Jacob Lebedinsky, Aidan Sawczyk, David Poggioli, Charles Cusumano**	
3:40 PM	**EES-17** *Analyzing the Textural Maturity of Fluvial Sediment at Varying Distances from the Hudson River* **Jacklyn Reiszel**		**NRS-06** *The Effects Precipitated By Alcohol Use Disorder* **Fanny Liao**	**C&I-04** *The Impact of Immigration Policies on Women* **Megan Trapanese, Joey Yu, Milena Olkhovetsky, Jenna Como, Hebah Syed**	
3:50 PM	**EES-18** *Partial Melting of a Xenolith in the Jurassic due to the Split of Pangaea, and the Resulting Finds and Confusion of the Finds* **Amaury Acevedo**			**C&I-05** *The Relationship Between Social Mobility and Immigration in New York Over Time* **Michael Plishchin, Victoria Cannava, Adrian Rosales, Nickolay Munoz**	

THE DEPARTMENT OF

PERFORMING AND CREATIVE ARTS

PRESENTS

AN ART AND MUSIC EXPOSITION

at the

21st Annual
CSI Undergraduate Conference
on Research, Scholarship,
and Performance

MUSIC PERFORMANCES BY CSI YOUNG ARTISTS, CSI JAZZ ENSEMBLES, AND CSI GUITAR ENSEMBLE
Recital Hall, 1P-120
2:30pm-4:25pm

The Music Program presents a program of performances by Music majors and other CSI students featuring works in a variety of genres spanning three centuries. Students practice and rehearse these works all semester under the guidance of faculty mentors. They tackle the technical and artistic challenges of public performance, learning works in a wide range of styles written by composers from many cultures. This intensive preparation results in high-quality performances that are offered to the student body and the general public.

CSI Young Artists
2:30pm-3:05pm

CSI Young Artists: Victoria Amodeo, soprano; Diana Claps, mezzo-soprano; Christian Marizan, baritone; Jacqueline Pelcastre, soprano; Angel Muñoz-Avila, harp; YouHeng Huang, composer and pianist; Jerrol Bowman, violin

Faculty mentors: Prof. Bill Bauer, Coordinator of Performances; Prof. Ed Brown, guitar; Prof. Elena Heimur, voice; Prof. Sylvia Kahan, piano; Prof. Chelsea Lane, harp; Prof. Michael Morreale, trumpet and jazz piano; Prof. Johnna Nan Wu, violin.

CSI Jazz Ensemble
3:15pm-3:50pm

CSI Jazz Combo: Adam Alvarez, tenor saxophone; Christopher Armenia, drums; Sean LaMantia, piano; Prof. Dominick Tancredi, electric bass

CSI Jazz Ensemble: Adam Alvarez, tenor saxophone; Matthew August, electric bass; Scotty Cerbin, drums; Robert Drapkin, double bass; Pablo Garcia, drums; Emily Jimenez, trombone; Isabella Lazzara, trumpet; Nicholas Michelizzi, tenor saxophone; Theresa Pagani, alto saxophone; Ari Parness, guitar

Faculty mentor: Prof. Michael Morreale

CSI Guitar Ensemble and the CSI Young Artists Guitarists
3:55pm-4:25pm

CSI Guitar Ensemble: Jenny Brown, Scotty Cerbin, Ryan Chisefsky, Anthony Delcore, Christian Hoffman, Jonathan Hoffman, Vincenzo Mezzio, Mano Merca, Dilara Oner, Salvatore Pate

Faculty mentor: Prof. Ed Brown

Outpourings and Offerings: Student Art Exhibition
Student Gallery in 1P
2:30pm-4:25pm

This exhibition reveals the intense emotions of young artists transitioning out of the most isolating period of the decade. Their work reflects a range of distressed states: from painted eyes ceaselessly watching, plaster hands holding bloody teeth, and a storm coming to a self-portrait in a KN95 mask. As society reopens, these artists strive to connect, while taking a measure of their own depths.

Faculty advisor: Professor Beth Livensperger, Assistant Professor of Painting

Student curators: Janessa De Gaetano, Sisi Hammoudi-Patout, Yuki Lin

Participating artists:

Mars Atriz
Janan Babayev
Stephanie Brunetti
Evelyn Bruno
Richard Calixto
Stephanie Caputo
Marianne Carlina
Juliana Coiro
Nina Davis
Ia Estrella
Lorianna Fernandez
Leon Ferrer
Luis Guaman
Dayshon Holder
Michal Karas
Vic Kleinau
Julinda Kurti
Tyla Lanovoi
Yuki Lin
Grace Miranda-Villalobos
Kristiana Nicotra
Dustin Oriente
Gary Pizzolo
Camille Roman

Fragments of Beauty: Student Work from the Drama Program
Lab Theatre, 1P-110
2:30pm-3:00pm

Beautiful moments from the Spring production of Brandon Jacobs Jenkin's play *Everybody* and from senior directing students' scenes from Naomi Wallace's *Trestle at Pope Lick Creek*.

Faculty advisor: Maurya Wickstrom

Participating students:

Davion Osbourne
Kyla Besett
Maria Vasquez
Regan Sou

POSTER PRESENTATIONS

ACCOUNTING AND FINANCE

POSTER: ACC/FNC-01

What is Blockchain's Effect on Business and Its Impact on the Job Market?

John A Buscini
Faculty Mentor: Professor Patricia Galletta
Department of Accounting and Finance

An innovative society provides ample opportunities for growth. There are few things that currently match the same level of innovative potential as that of blockchain. Blockchain is a digital ledger that can record anything of value in a safe, inclusive, and transparent way. How is blockchain going to change the way the world transacts business? While blockchain is still in its early stages of development, the potential it can have on any aspect of the business cycle is monumental. Blockchain's multiple functions pose a significant threat to the security of several jobs. As the Digital Age matures, it is critical to understand the impact that blockchain will have on the job market and to adapt with the concepts introduced by this new theory.

This research project will cover major topics of discussion involving blockchain, aiming to provide the reader with a comprehensive understanding of the subject matter. The blockchain report will be broken up into several sections that pertain to its components and functions, relationship to Bitcoin and other crypto-currencies, current disadvantages in the business environment, extent of regulation surrounding the subject, and the industries that will be disrupted by the increased usage of blockchain. These sections of research will highlight the major effects that blockchain will have on the job market.

POSTER: ACC/FNC-02

Changing World Order

Michael C Stora
Faculty Mentor: Professor Paul Orzechowski
Department of Accounting and Finance

Entering into the recent decade, there has been a series of events unfolding across the world that have created new problems that are affecting every individual on the macro and micro level. The first major catastrophe came with COVID-19 that has been taking a huge toll on human health, political discussions, and the country's resources. When it seemed that downtrends in COVID-19 cases were evident due to mandatory vaccine requirements, it seemed as if there was control over the situation. However, the most current catastrophe has become evident with Russia invading Ukraine under the basis that they have historical rights to the land. Because of this, countries around the world are being affected and are having to make decisions about the future, similar to COVID-19. These events that are unfolding in current times are changing world order for a new age that every business professional is looking into, with the incentive of understanding the models of the future on a financial basis. With current events showing evidence of inflation, cryptocurrency is gaining more popularity on an increasing scale. Evidence of this is seen by Biden's executive order on digital assets. Cryptocurrency is a digital currency in which transactions are verified and records maintained by a decentralized system using cryptography, rather than a centralized authority. The purpose of this research is to understand the role that cryptocurrency is playing in the current events of the world and after analyzing; predict the main outcome of cryptocurrency in this changing of world order.

BIOLOGY

POSTER: BIO-01

Effect of Pathological Human Tau in Non-Neuronal Cells

Amani Elmaadawy
Faculty Mentor: Professor Alejandra Alonso
Department of Biology

Alzheimer's disease (AD) is the most common form of dementia, and it starts from confusion, loss of memory, and dementia. Inside the brain of AD patients, there is an accumulation of two proteins, amyloid, and tau. Tau is a protein that plays a role in the microtubules, which are like the train tracks that guide the transport of information in the communication of the neurons. We study tau, and how it becomes toxic in AD. From our studies, we have developed a way to mimic the Pathological Human Tau (PH-tau). PH-Tau, like tau from AD, breaks down microtubules in the neurons blocking neuronal communication. It has been reported from epidemiological studies that AD has a positive correlation with diabetes. Therefore, a higher incidence of diabetes correlates with a higher incidence of AD. We have developed a mouse model that expressed PH Tau in the brain, and it mimics AD pathology. Surprisingly, our mouse model has a higher fasting glucose level than the control animals. A higher glucose level means that there may be a problem related to the pancreas as it is the source of insulin that regulates glucose levels. We propose then to study the changes in the pancreas of this mouse model to see if the expression of PH Tau can affect the function of the pancreas. For this research, I will be looking at the slides from both mice expressing PH-Tau and control animals under the microscope after labeling with antibodies to investigate the effect of PH-tau in the pancreas and how it affects the function of the pancreas, studying the structure, the levels of insulin and glucagon that regulate glucose levels in the organism.

POSTER: BIO-02

The Fate of the PH-TAU, Exocytosis or Degradation?

Momtahina Akter, Marven Fam
Faculty Mentors: Professor Alejandra Alonso, Viktoriya Morozova
Department of Biology

Tau is a microtubule-associated protein (MAP). Tau is essential because it aids in the maintenance of microtubules in the central nervous system's (CNS's) neuronal axons. Tau is a phosphoprotein, and its level of phosphorylation is critical for its proper functioning. Normally, each mole of tau contains three moles of phosphate. However, tau protein becomes hyperphosphorylated in Alzheimer's disease patients, resulting in 7-10 moles of phosphate per mole of protein. When Tau gets hyperphosphorylated it can't bind to tubulin and stabilize microtubules. Additionally, aberrant and hyperphosphorylated tau attaches to normal tau, separating it from the microtubules. As a result, the microtubules are disrupted, and the neuron dies.

When pathological TAU (PH-TAU) is taken up by cells, a portion of the protein is transferred by the endo-lysosomal route to lysosomes for degradation or can be excreted in the form of exosomes, resulting in the disease spreading further. The purpose of this research is to figure out what happens to PH-TAU after it has been taken up by cells. To do so, we looked for tau protein colocalization with RAB5 (early endosome marker), RAB7 (late endosome marker), and RAB11 (endo-lysosomal marker). Moreover, the Direct Current (DC) stimulation is the technique that was shown to promote the upregulation of heat shock proteins, which are responsible for the identification and degradation of misfolded proteins. In this project, we also want to see if DC stimulation will lead to increased PH-Tau degradation (colocalization with Rab11) compared to unstimulated cultures.

POSTER: BIO-03

The Intricate Tie Between the Body and Mind

Savannah Patsakos
Faculty Mentor: Professor Michelle Esposito
Department of Biology

Immune response and function is one of the most vital keys to a long and healthy life. For decades, scientists studied how immune responses can be enhanced for optimal performance. Research has shown that physical exercise is one of the most successful ways to promote immunological functioning in the body. It is important to recognize, however, that psychological wellness and physical wellness are not isolated, but intertwined. Mental illness can reduce immune functioning and physical well-being, portraying an intricate tie between the body and mind. This research project aims to portray this tie and the importance that both physical and mental wellness have on immune function, while emphasizing the fact that physical exercise helps improve immunology.

POSTER: BIO-04

The Global and Media Effect of Covid-19

Cassandra Ayoub
Faculty Mentor: Professor Michelle Esposito
Department of Biology

The Coronavirus, SARS-Cov-2, also commonly known as Covid-19, was initially discovered in China in the year 2019. This virus was novel, resulting in no one knowing what they were dealing with. Many scientists and other medical professionals thought that this virus would be controlled and did not expect it to be a big deal. However, Covid-19 has proved many experienced professionals wrong, and it resulted in a worldwide pandemic that has made a huge impact. Since the end of 2019/beginning of 2020, it has been seen through social media how a virus so serious was taken so lightly, many people made memes and jokes. No one realized that this virus would cause countries to shut down completely, as well as many lives being changed drastically. The main topic of this study will be looking into how the media and the internet played a role in the minds of consumers and how seriously they took the virus. It is hypothesized that with numerous resources and websites right at our fingertips, along with people's ability to include their own opinion on it, played a major role in people's perception of the virus, with those who viewed it as fake versus those who took it seriously.

POSTER: BIO-05

Concussions in Football and the Effects it has on the Body

Andreo Alonzo C Puno
Faculty Mentor: Professor Michelle Esposito
Department of Biology

When it comes to football, injuries have been very common within the sport. Concussions have been associated with the game of football for several years, and have recently developed into one of the most alarming injuries a football player can face. When the term "concussion" is brought up to any individual, usually their first idea would be headaches and brain injury. Although this assumption would be correct, new studies have discovered that concussions not only have a major effect on the brain, but researchers have also proven how concussions affect other important systems in the body. The goal of this independent project is to bring to light the other body systems that are affected by concussions around the upper and lower extremities of the body, examples would be the respiratory and cardiovascular system. This claim would be supported by several different medical research and sports medicine articles. These articles would be addressing a specific body system and would further explain the different effects concussions would have on that exact body system, such as, the *Hormone Health Network* stating how TBI (traumatic brain injury) can injure the pituitary and hypothalamus, causing hormone problems. To further support the objective of this project, other research papers addressing different retired and active NFL players suffering from concussions will also be used. Articles such as npr.org, reference the case of Aaron Hernandez, who was a successful athlete turned into a murderer and later on proven to have been showing signs of severe CTE. By revealing the other major systems affected by concussions and the impact it leaves on the body, it may lead to further advancements on prevention and treatment methods for this injury.

POSTER: BIO-06

Lead (Pb2+) Intoxication Impedes Synaptic Function in Planarians

Brigitte A Franco
Faculty Mentor: Professor Sara Guariglia
Department of Biology

Heavy metals enter an organism through ingestion, inhalation or absorption, and cause dysfunction because of interactions with specific molecular and cellular targets. Lead (Pb2+) is cheap and robust, and has a long history of being used to manufacture goods due to those qualities. As the usage of Pb2+ increased, so did its presence in the environment. This induced toxicity and illness in those exposed. Pb2+ is well studied in public health, and there is more known about its neurodegenerative and toxic effects than nearly any other substance.

When Pb2+ is introduced to the human body via ingestion, inhalation, or absorption, it travels via circulating blood to tissues and cells. As the concentration of Pb2+ increases in the blood, the intensity of both its longitudinal and acute effects worsen. Acute effects of Pb2+ can be treated and reversed with chelation treatments. Effects in children are permanent, it impedes their development. It is recognized that childhood Pb2+ intoxication may contribute significantly to intellectual disabilities. The way Pb2+ induces behavioral pathology is not entirely understood. Pb2+ intoxication research conducted on rodents revealed neurological detriments that are relevant to those found in humans [1][2]. In this study, we conducted Pb2+ toxicity testing on Planarians. The planarian model is selected for toxicity research to increase the speed at which data may be obtained. Planaria are small and inexpensive and undergo neurodevelopment within days. Synapsin expression in the brain of planarians decreased as a function of Pb2+ dose, suggesting that increased Pb2+ exposure reduced the number of synapses in planarians' brain and body. No significant differences in synapsin head to body ratio were found. These attributes may be exploited for understanding fundamental principles of toxicity which could be useful in furthering our scientific understanding of Pb2+.

POSTER: BIO-07

The Role of Human Leukocyte Antigen (HLA) in Glioblastoma Multiforme (GBM)

Lara A Colombo
Faculty Mentor: Professor Nancy Liu-Sullivan
Department of Biology

Glioblastoma multiforme (GBM) is widely known as the most aggressive form of brain cancer and has a substantially low overall survival rate. Glioblastoma multiforme continues to pose a challenge in treatment efficacy and overall patient survival. A major challenge in ineffective cancer treatment stems from the failure of sufficient immune defense responses in patients by natural killer (NK) cells and cytotoxic T cells (CTL). This compromised defense provides cancer cells a survival advantage. Human leukocyte antigens (HLA) play an essential role in coordinating with the activation of NK and CTL cells. HLAs are vital for the immune system to thrive due to the ability to regulate immune responses as well as detect foreign cells or agents that are then transferred to T-cells receptors. Understanding the role of HLAs helps better characterize and understand how GBM evades immune defense. This information is also helpful in providing potential candidates of therapeutic targets in GBM. Using the Oncomine database, numerous studies were analyzed for the following genes, IL-6, HLA-A, HLA-B, HLA-C, HLA-DRB1, HLA-E, HLA-F, and HLA-G. Based on preliminary data, there is a significant overexpression for each gene when the values are averaged. HLA-B and HLA-C have the greatest discrepancies between the control median and the cancerous tissue. HLA-B aids the T-cells in the recognition process of foreign invaders while the function of HLA-C is to mediate the activation and responses of T-cells as well as natural killer cells. Since glioblastoma multiforme is a very aggressive grade four glioma and is a form of astrocytoma, patient age is imperative to consider and investigate. Each set of patient age ranges for each available case study has indicated that middle age to elderly population are the most common patients for glioblastoma multiforme. The research topic is built upon and an extension of my previously completed CUNY Research Scholars Program project that focused on Interleukin-6 (IL-6) with a role in immune activation as well as immune suppression in Metastatic Breast Cancer.

POSTER: BIO-08

Stimulation of the Endocannabinoid System in a Mouse Model of ASD

Sayuri H Sayakkara
Faculty Mentor: Professor Greg Phillips
Department of Biology

Autism Spectrum Disorder (ASD) is a developmental disability characterized by deficits in social communication, and repetitive/restricted behaviors. ASD is diagnosed through clinical behavioral assessments, as there is no biomarker. The occurrence of ASD is 1 in 54 children. The endocannabinoid system (ECS) is a neuromodulatory cell-signaling system that has been implicated in the pathology of ASD. The ECS consists of two main components: the cannabinoid receptors type 1 (CB1) and type 2 (CB2), and the endogenous molecules anandamide (AEA) and 2-arachidonoylglycerol (2-AG). The majority of the CB1 receptors are found in the brain, and expression is the highest in the hippocampus, basal ganglia and cerebellum, while moderate levels are seen in the amygdala and hypothalamus. The ECS regulates sleep, appetite, memory and mood. Our hypothesis is that the ECS is understimulated or less active in people with ASD, and stimulating it through either direct agonism (CP-55940) or by blocking the enzymatic degradation of 2-AG (JZL-184) will lead to improvements in the behaviors related to ASD. The effects of JZL-184 and CP-55940 will be tested on social communication, social behaviors, and learning and memory using the following behavioral tests: Social Approach, Direct Social Interaction and Contextual Fear Conditioning. It is expected that the drugs will lead to increased levels of social behavior and improved associative learning. CP-55940 led to a decrease in the total distance traveled by the C57BL/6J and BTBR mice, suggesting a sedative-like effect that interfered with the behavioral analysis. JZL-184 had modest effects, increasing sniffing of the novelty mouse and reducing social sniffing during the direct social interaction experiment. In the final analysis, the endocannabinoids only expressed modest effects on behaviors in the ASD mouse model which could be a result of the doses used in these experiments.

POSTER: BIO-09

A Systematic Review of Breast and Cervical Cancer Screening in Muslim American Women in Urban Areas

Albina Kukic
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Department of Biology

This systematic review explored studies conducted in various urban areas across North America, including NYC, to understand the barriers preventing Muslim American women from getting the established breast and cervical cancer prevention screening examinations. The purpose of examining other urban areas like Detroit, Michigan and Chicago, Illinois, was to retrieve more data regarding the rates of participation in breast and cervical cancer screening as well as incidence, mortality, and morbidity rates of both breast and cervical cancer in those urban areas. This all helped to further understand the urgency of this matter, which is the known fact that this minority group, Muslim American women, are falling behind in seeking gynecological care when compared to the general population. In addition, there has not been enough research done on this topic, which is another reason for branching out of NYC to other similar urban populations to collect as much suitable and appropriate data as possible. A total of eight studies were retrieved via multiple sources like the National Library of Medicine, *ScienceDirect*, Department of Health & Human Services, and other public health journals. The studies were categorized based on their focus on either breast, cervical, or both cancer screening barriers. Each study was analyzed for various barriers preventing the Muslim American women participants from seeking the FDA-established screening tests, as well as the statistics regarding those decisions reported by the participants. Findings showed the percentage of Muslim American women participating in preventative breast and cervical cancer screening examinations was lower than the national average or the average of the general population of that particular urban area, whichever one it may have been, in every study examined except for one that was conducted in NYC. In addition, the decision to adhere to breast and cervical cancer screening in the Muslim American women population was found to be influenced by many barriers related to religion (fatalism), culture (modesty/language), lack of knowledge, access to a PCP, male healthcare providers, and fear associated with a poor perception of the prognosis of the diseases.

POSTER: BIO-10

Importance and Effectiveness of Technologies in Type 1 Diabetes Mellitus and Type 2 Diabetes Mellitus Treatment

Egor Volcotrub
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Department of Biology

As of 2019, in the United States, approximately 35.5 million people had type 2 diabetes mellitus and 1.9 million people had type 1 diabetes mellitus. With every following year, those numbers continue to grow. Affected individuals face a significant decline in life quality and are required to manage blood glucose levels to minimize associated complications. Glycated hemoglobin (HbA1c) test quantifies the amount of glucose attached to the hemoglobin and serves as the main indicator of diabetic control. Depending on the diabetes type, traditional treatments such as oral medications or subcutaneous insulin injections are available. The recent developments in technologies, however, provide innovative equipment that revolutionizes the treatment of diabetes and improves health outcomes for affected individuals. This research focuses on describing newly available devices and their effectiveness in treating diabetes. Such devices include insulin pumps, continuous glucose monitoring systems, and associated software. Those devices working independently from each other (or in combination) are pre-programmed to continuously inject insulin and monitor blood glucose. Enhanced health outcomes and lowered risk of complications were indicated by decreased values of HbA1c. The data collected from medical journals and peer-reviewed articles clearly indicate improved management of diabetes and a clinically significant reduction in HbA1c levels.

CHEMISTRY

POSTER: CHM-01

Investigation of Mitochondrial Interactions with Tau and Pathological Tau in Mammalian Cells

Anila Fecanji
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Department of Chemistry

Beta amyloid plaque and abnormal accumulations of neurofibrillary tangles largely consisting of the microtubular tau protein are the morphological hallmarks of the Alzheimer's Disease (AD) pathology. Transfection will be used as a tool to study protein interactions between tau and MARCH5. HEK and CHO cells will be used during the transfection process. MARCH5-EYFP and GFP-tau will be transfected in the above-mentioned cells alone and together. The latter will be done in order to study the expression of the two genes simultaneously. Previous work from Dr. Alonso's lab has shown that pathological tau is toxic to HEK cells, and that the toxic effect can infect other cells. This does not happen with CHO cells. This is why they may be more effective for this study where we want to focus on interactions between tau and MARCH5. After the cells are transfected, confocal microscopy will be used to study the protein – protein interaction. If our two proteins, tau and MARCH5, are close enough, we may be able to analyze Forster Resonance Energy Transfer (FRET). This will be seen by an increase in yellow fluorescence which would be activated by a close green fluorophore. If the result is successful and it is proved that there is an interaction between these two proteins, then there will be studies of the interaction of MARCH5 and pathological tau. This project will include molecular biology, mammalian cell culture, and confocal microscopy.

POSTER: CHM-02

Quantifying Singlet Oxygen Required to Eradicate Oral Pathogens

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Department of Chemistry

The prevalence of periodontal diseases, such as periodontitis, is widespread, and their advanced forms affect approximately 11% of the global population. Through recent treatment and analysis of periodontal pathologies, it has become evident there is a great need for an innovative treatment with greater capabilities than traditional scaling and root planning alone or the use of antimicrobial agents. Photodynamic therapy (PDT) has the potential to fulfill this need. PDT is a non-invasive therapeutic modality that can be used to treat various periodontal pathologies. PDT is reliant on the combination of ground-state molecular oxygen (3O2), a photosensitizer (PS), and light to form reactive oxygen species with cytotoxic action. Specifically, by a Type II photo-process, energy transfer from the PS triplet state to ground state molecular oxygen (3O2) occurs, which creates excited state singlet oxygen (1O2). Singlet oxygen oxidizes many biological molecules and ultimately leads to complete inactivation of target cells. However, when considered as a treatment modality for periodontitis, the hypoxic environment of periodontal pockets limits the effectiveness of PDT treatments.

This project utilizes PDT with superhydrophobic surfaces, which are highly effective supports for photosensitizers as they trap air at the solid-liquid-vapor interface, thus precluding the reaction from becoming limited due to hypoxic conditions. Superhydrophobic surfaces were fabricated from polydimethylsiloxane, loaded with chlorin e6 (Ce6), and illuminated with 669 nm light from a diode laser. The efficacy of the PDT generated from this device was determined against planktonic cultures of P. gingivalis, the main etiological factor in periodontal disease. Cultures were exposed to PDT in light fluences ranging from 850 - 5000 J/cm2, and the resulting colony forming units (CFU) were analyzed. Singlet oxygen yield was inferred from the decrease in the absorption peak of a uric acid trapping compound and directly compared to the bacterial reductions.

COMPUTER SCIENCE

POSTER: CSC-01

Groupvie

Joseph DeMario
Faculty Mentor: Professor Tatiana Anderson
Department of Computer Science

Two subjects that appear to stay prevalent in media these days are film and social media. Whether that is hearing which newest Marvel movie led the box office the past weekend or seeing which social media app is the latest craze, it seems as if these are always worth discussing today. As of January 2022, 58.4% of people use social media; that is some 4.62 billion people worldwide, with 424 million users joining within the last year. Additionally, the average user spends about 2 hours and 27 minutes on social media. On the flip side, the film's popularity has grown over the course of time, even with the current subsiding pandemic. As of when I'm writing this, *The Batman* is estimated to make a whopping $238.5 million within its second weekend, accumulating its total money over $400 million. With these facts in mind, I thought of an idea to combine the two subject matters into a singular project. As a computer science major and cinema studies minor, I decided to combine my passion for tech and my love for movies by designing, implementing, and developing a complete iOS mobile application. The app would act as a blend of a typical movie app like Fandango or AMC and have the social media capabilities of the likes of Instagram and Tinder. The app's primary purpose would be to match users to others based on common movie interests where they can chat and set up potential movie nights with each other. Through this application, I will demonstrate that the cross between film and social media is very much possible.

POSTER: CSC-02

Scheduling Surgeries with Limited Resources During the COVID-19 Pandemic

Kaitlyn Kundmueller
Faculty Mentor: Professor Yumei Huo
Department of Computer Science

This research studies the problem of scheduling surgeries in a hospital with limited resources due to the influx of patients suffering from COVID-19. This system can be modeled as a no-wait wait flow shop model with two stages. The first stage would have m_i1 machines which would represent the surgery rooms. The jobs for this part would be the patients' surgeries. Each of the surgeries on the first machine would have a different duration p_j1, which is pre-decided by the surgery the patient is having. The second stage will have m_i2 machines which would represent the hospital beds. The jobs for the second stage will be the patient recovering. This job will have a duration, p_j2, that is designated by the patient and their prior surgery. In this research, we will first look at special cases whose optimal schedules can be solved, as well as other general cases that are NP-hard, but the approximations bounds can be found for scheduling.

CURRICULUM AND INSTRUCTION

POSTER: C&I-01

African Diaspora in New York City

Katherine Yenna, Ava Thompson, Christopher Vitale, Tal Ohana, Sylwia Ossowska
Faculty Mentor: Professor Deborah De Simone
Department of Curriculum and Instruction

Since the first Africans were forcibly transported to the Dutch Colony of New Amsterdam in the 1620s, the African diaspora has been an indelible part of the history of New York. The history of the African diaspora in the United States largely started with the Trans-Atlantic Slave Trade, the process to which most black people living in the United States can trace their roots. Today, black people comprise a quarter of the City's population. The cruel and long-standing institution of slavery in the United States does not, however, explain the experiences of all members of the African diaspora in New York. New York City was and continues to be built on immigrant cultures, and black immigrants are no exception.

History has shown how victims of the slave trade and black immigrants who chose to come to New York have had very different experiences. One group has dealt with the generational trauma of a system that profited from their labor and suffering. The other groups come willingly, but have faced xenophobia, racism, and other forms of discrimination. This project seeks to examine the similarities and differences between the experiences of the descendants of Africans who came during the slave trade and the more recent African Diaspora immigrants with particular focus on their experiences with racism. Our findings have shown that there is a significant divide between those descended from the slave trade and those who willingly immigrated to New York. Understanding the differences between these experiences helps us to understand the history and nuances of racism in this country, in order to have an impact on the sociological factors that influence racism.

POSTER: C&I-02

The Role of Wall Street in Immigration

Joshua Kats, Andrew Thomas, Michael Caligara
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Department of Curriculum and Instruction

Economic opportunity has long been one of the driving forces for immigration throughout American history, especially in New York, one of the largest financial centers in the world. This project explores the situations that caused these people to flee their homes and covers how Wall Street played a significant role in making New York the popular choice for many immigrants. Considering how business and finance are such a big part of our lives in New York today, we wanted to explore the degree to which Wall Street influenced immigration. We used various primary and secondary sources to support this claim, including books, academic articles, audio recordings, stories, photographs, and videos. These sources highlighted how New York's dominance in the world of finance, corporate management, and business services generated millions in revenue and created thousands of jobs that would support New York's waves of immigrants. Through our research, our project illustrates the importance of New York's businesses in fostering the growth of New York and giving the city its vibrant, diverse identity.

POSTER: C&I-03

Immigration to Brooklyn from the Greater Russian Area

Jacob Lebedinsky, Aidan Sawczyk, David Poggioli, Charles Cusumano
Faculty Mentor: Professor Deborah De Simone
Department of Curriculum and Instruction

Throughout its history, America has seen many waves of immigrants enter and alter the course of its history. In this poster, we focus on the migration of Russian speakers to New York City, particularly Brooklyn. We aim to map waves of immigration to New York, and study where the immigrants settled, what changes they brought, and how they affected both New York and America. We also examine the background of these immigrants from greater Russia, as they are more diverse than previously assumed. Our reason for undertaking this project is to understand what it means when large amounts of Russian speakers immigrate to New York. Our methods include studying testimonies and primary sources from immigrants themselves, as well as secondary sources from journalists and historians that examine the waves of immigration. We found that Russian speaking immigrants made substantial contributions in the field of software engineering, technology, and medicine without which our world would not be the same. We also found that there may be a large wave due to the Russia Ukraine war. This war may see millions of Ukrainian refugees fleeing war and Russian immigrants fleeing poverty or persecution. Understanding previous patterns of Russian immigration can enable us to understand, welcome, and employ these immigrants for the better of our city and our nation.

POSTER: C&I-04

The Impact of Immigration Policies on Women

Megan Trapanese, Joey Yu, Milena Olkhovetsky, Jenna Como, Hebah Syed
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Today's political climate calls for a necessary discussion on the history of female immigration. The simultaneous rise of global conflicts that displace women from their countries with a growing anti-feminist sentiment in the US and abroad creates a need for an exploration of the historical impact of immigration on women. Change must start in the history classroom, more specifically in the teaching of immigration history. The research presented will examine how migration policies, rules, and mandates have impacted women's livelihoods, gender roles, and world views. As of 2000, the United Nations Population Division estimated that 49 percent of all international migrants were women or girls, and upwards of 51 percent in more developed regions. It is known that women often migrate as dependent family members, moving to other countries because of their spouse or family. The participation of women in immigration heavily depends on their social roles, autonomy, access to resources, and their existing status in their countries. It is important to analyze and understand the causes and consequences of immigration from the viewpoint of gender to better understand the evolution of hierarchical gender roles that persist until today. We will present information that can help differentiate between several causes for the migration of women, including familial obligations, gender inequalities, and self-driven motives. Cross-analyzing this data with differing migration policies throughout history will allow conclusions to be drawn about the evolution of more inclusive immigration policies. These conclusions will have two related effects: first, to educate the youth of today on the impacts of immigration on women; second, to spark the call for change in future immigration policies.

POSTER: C&I-05

The Relationship Between Social Mobility and Immigration in New York Over Time

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Department of Curriculum and Instruction

For centuries, New York has been a shining beacon to many daring individuals who were willing to risk it all for the chance of a fresh start because of the ease of upward social mobility in the city. However, since New York industrialized, it has become significantly more difficult for the average immigrant to replicate the "rags to riches" tales that defined early New York due to the resulting and intense stratification of social classes. This topic is important to us because many of us are the children of immigrant parents, and so the complexities of social hierarchy bear personal implications for our futures as well as for those of our peers. By combining modern economic statistics, narrative evidence found by scholars, primary sources, and oral interviews, we have determined the following conclusions: the societies many early immigrants were emigrating from were extremely stratified; pre-industrial New York allowed for greater social mobility than the home societies; in post-industrial New York many immigrant workers became victims of increasing social stratification; and social stratification remains a major issue for many Americans today. Thus, social mobility, especially for immigrants, has diminished dramatically over time. However, by constructing a thorough timeline illustrating changes in social classes in America, we can more accurately assess when and why the window started to close on what made America the "Land of Opportunity" for so many immigrants since first contact between Europeans and Native Peoples in America. By encouraging a more critical understanding of the social issues, we can begin to assess and possibly even address them.

ECONOMICS

POSTER: ECO-01

The Economics of Crime

Michael Zakaria
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Department of Philosophy

When considering a topic to research, I think it's helpful that the subject matter be applicable and practical to some extent. As interesting as academic discussions can be, it's a much more productive use of time and resources if our research and conclusions are doing real work in the world. This is ultimately why I chose to write on the economics of crime. Understanding criminal behavior through the scope of economics gives us guidance on more important matters, like criminal justice or economic relief policies, and in researching this subject, I learned that it wasn't always as straightforward as I thought.

Regarding the research itself, I leaned heavily on statistics gathered by other researchers and government agencies which showed how potential criminals responded to various incentives, deterrents and circumstances. For the most part, I leaned towards economic models which applied the law of demand, which ultimately means criminals will consider the cost and utility of potential criminal behavior, or in simpler terms, potential criminals perform a sort of 'risk/reward' analysis. This isn't always reliable, because people are complex and don't always act as rationally as economic theories would have us believe. Ethical considerations can also pose a challenge for economic theories like this. When people act ethically, they often do so to the detriment of their own interests, whereas economics generally expects people to act self interested. So while this is not perfect for modeling behavior, it was a good approximation.

ENGINEERING AND ENVIRONMENTAL SCIENCE

POSTER: EES-01

Provenance of Sediments (hemipelagic muds) in Accretionary Wedges - Interpretation of Major, Trace, and Rare Earth Element Signatures

Nourhan Elzayat
Faculty Mentor: Professor Jane Alexander
Department of Engineering and Environmental Science

Subduction is a geological process in which the oceanic lithosphere is recycled into the Earth's mantle at convergent boundaries. Where the oceanic lithosphere is less dense than the convergent tectonic plate, the heavier plate dives beneath the other plate and sinks to the mantle. When this happens, some of the sediment on the subducting plate is scraped off into a large structure called an accretionary wedge. This study uses samples collected from Ocean Drilling Program (ODP) cores from four subduction zone accretionary wedges: the Nankai Trough (Japan), the northern Barbados Ridge, the Cascadia margin, and the Costa Rica accretionary wedge. The chemistry of sediments, including major, trace and rare earth elements, is related to the chemistry of the rocks that they were derived from. In this study we are examining whether the major, trace, and rare earth element concentrations tell a consistent story about the origins of the sediment at an individual location, or whether different groups of elements indicate different sediment sources. We are also comparing the sources of sediment at the four different accretionary wedges.

POSTER: EES-02

Project Insight: Discovering the Secrets of the Newark Basin using Geochemistry

Jay B Tobon
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Department of Engineering and Environmental Science

The places rocks appear don't tell us its full history. We use geochemistry to track its complete story as to why and how it ended it there. In the Stockton Formation, which is an outcrop of metamorphosed sedimentary rock in the Newark Basin in North Bergen New Jersey, there was a sample of metasammite (slightly metamorphosed sandstone) with an unusual profile. We have 10 rock samples around the metasammite area. With these samples we can confirm with major elements the types of rocks we have and the continental setting, but with trace elements we get a completely different story. We suspect that there was a trace of volcanic ash in the original sediment due to the high amount of thorium. There could have been volcanic landforms that are no longer there that were there that could have influenced the formation of the rocks we see today, and that's what we hope to understand in the project.

POSTER: EES-03

Composition of Calcite in Fossil Bivalve Mollusk Shells

Javonni E Banks
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Department of Engineering and Environmental Science

The Navesink Formation is a Cretaceous aged marine deposit that is rich with an abundance of invertebrate fossils. The fossils are relics, found in the Monmouth County of New Jersey, when the Atlantic Coastal Plain was submerged underwater and developed into a marine shelf environment. These macrofossils consisted predominately of oysters, several species of mollusks and extended to brachiopods and gastropods as well. The geochemistry of these fossils had not previously been determined, although was assumed to be low in magnesium content based off of the nature of their preservation. These fossils were chemically stained to produce carbonate peels that were then utilized to determine the composition of the minerals creating the fossil. These fossils will be categorized by their iron and magnesium content, as well as whether the fossil is made up of aragonite or dolomite. The findings of this research will provide further information necessary to properly describe the geology and paleontology of the area.

POSTER: EES-04

Variability of CSO Pollutants within New York City Waterways

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The island of Manhattan and the neighboring boroughs are all connected by the waterways mainly distributed by the nearby Hudson River. Due to our proximity to that river, we have a heavy influence on the amount of pollutants that end up in it. Combined Sewer Outflows (CSO's) are our direct input of sewage wastewater into the Hudson River. There are numerous CSO locations throughout the city and in varying accesses to the Hudson. Meaning each of the surrounding water bodies would have varying amounts of pollution. The hydrology team of The Secondary School Field Research Program (SSFRP) collected data from six different areas, Central Park, River Side Park, Inwood Hill Park, Dyckman Park, Prospect Park, as well as samples from each of the team members' homes from the different boroughs. To get an approximation of the amount of CSO water stalled within these water bodies, by using nitrate and phosphate as pollutant indicators. Another aspect of the research was comparing the Atlantic vs. the Freshwater fraction, to further examine how much of the water was able to be discharged out of the various systems. In our study we found that the CSO located in Dyckman Park is within a creek and cannot easily be flushed out compared to the one found in Riverside Park which is directly on the Hudson. Therefore, all the pollutants coming out of the Dyckman CSO are trapped and unable to be released into the Hudson River. Prolonging of this can lead to health problems of the nearby communities. Further research can be done to investigate correlation between the boroughs and where the CSO's are located to have maximum drainage.

POSTER: EES-05

The Water Sweeper

Khuyen Vo, Maximilian Golubowski
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Department of Engineering and Environmental Science

The project is to develop a water-based robot prototype that will spot the waste and collect on its own, aided by modern technologies of machine learning and computer vision. In modern society, there is a lot of waste flowing within and beneath the water's surface. For many years, this waste has been damaging the marine life in these areas and has accelerated climate change. Because of the increasing amount of pollution in the water, the quality of the water has been deteriorating. The goal of this project is to help remove garbage contaminating the water surrounding numerous sites in the environment.

This prototype consists of a semiautonomous boat with Polyvinyl Chloride (PVC) pipes moved by thrusters, a camera to spot the trashes, and a micro-controller to communicate with a human-operator. The sweeper can operate in confined water surfaces. The sweeper can collect different types of wastes such as: plastics, micro-plastics, alien vegetation, and floating debris. This sweeper supports two types of operations: autopilot and user control operation. When the sweeper is in autopilot mode, the sweeper will scan the surrounding area to see if there are any trashes. When it detects trashes, it will go to the trashes area and collect them. When the sweeper is in the user control mode, the human operator will move the sweeper using the remote controller to the trashes area to collect them.

The boat structure is designed using software such as Canva and Solidworks. PVC pipes and connectors are used to make the base of the sweeper. The brushless thrusters connecting with Electric Speed Controls (ESCs) are used to move the boat properly. Lead acid batteries will supply power to the boat. The transmitter and receiver circuits of the controller are built in the lab by soldering the circuit components on the Printed Circuit Boards (PCBs). C++ and machine learning codes are developed and compiled onto the Arduino IDE to develop the two types of operations for the sweeper. A Husky Lens camera is installed on the boat and trained to spot trashes by inserting a waste data library. For the waterproof purpose, an acrylic box is developed to cover the micro-controller as well as the transmitter circuit. The boat can be operated by itself or remotely controlled by a user.

POSTER: EES-06

Smart Wheelchair

Kerolous Shehata, Ahmed Aboudewan
Faculty Mentor: Professor Xin Jiang
Department of Engineering and Environmental Science

This project is to build a prototype using a hand gesture control to help move the wheelchair forward, backward, left, right, and around in all directions without the requirement of assistance. The goal is to tackle disability in mobility which leads to serious difficulty walking or climbing stairs.

The prototype consists of an accelerometer, an RF wireless transceiver, a microcontroller, and a small-scale demo wheelchair equipped with DC motors. The accelerometer is used to detect the movement of the hand of the user. By moving four fingers forward, backward, and rotating the wrist left and right, the user can control the wheelchair's movement. The accelerometer data will be sent to a microcontroller which is an Arduino nano board through an RF wireless transceiver. The Arduino will analyze and process data and send commands to drive the DC motors to move the wheelchair. All the devices will be powered by a 9V battery.

The demo wheelchair is designed using AutoCAD for the 3D drawing and SOLIDWORKS for the final prototype design. The base of the wheelchair is acrylic and the sides are aluminum to reduce the overall weight of the prototype. Four (4) DC motors are added to drive 4 wheels and get the full operation of the wheelchair. One important thing is to control the speed of the wheelchair. Depending on the weight of the person sitting on the chair, rotating at a fast speed might lead to the falling of the patient. In this prototype, 6V DC motors that operate around 300 RPM rather than 12-volt motors around 550 RPM are used to limit the highest speed and reduce the overall cost.

POSTER: EES-07

Engineer Me Chatbot

Laila Basyouni
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Department of Engineering and Environmental Science

Engineer Me Chatbot is a conversational software application that provides an interactive chatting assistant for college-level engineering students. The main objective of this project is to serve as an engineering acronym expander. Acronyms are used in numerous engineering courses where it's critical for the students to expand them. The created bot is capable of gathering plenty of user feedback using engaging questions that can help it to accurately return the correct expansion. The bot is built on Microsoft Teams and other commercial messaging platforms. The bot will call on 4 different Application Programming Interfaces (APIs) after it comprehends the user acronym intent. Its programmed algorithm stores the user input to help better understand the intent. In addition, it's running on a Waterfall class which creates a smart response system. Features include not only expanding the acronym, but generating an action menu with three options to select: view the full technical definition functioning as a dictionary; view videos containing formulas and solved examples on the jargon; view books that have any mention of the acronym. Engineer Me Chatbot provides a one-stop-shop to enhance the students' overall learning experience and reduce resource referrals.

POSTER: EES-08

Chessboard Buddy

Kaitlyn Kundmueller
Faculty Mentor: Professor Changmin Kim
Department of Engineering and Environmental Science

The game of chess has been around for centuries but has never truly moved past playing against an opponent in person or playing online verse another player or computer. Both of these versions have their strengths and limitations. Playing chess in person allows players to get the feel of the board and play against another person in front of them. However, it is limited by needing a place to play, and an opponent that can be in the same place at the same time to play you. The online versions of chess solved the limitations of the in-person chess by allowing players to not have to be in the same location and can be played anywhere there is internet, however, this is at the cost of the players not losing the physical aspect of the game in moving the pieces and watching how they move around the board as the game unfolds. The solution to this would be to combine the physical chessboard with a way to play people or computers while still having a physical chessboard as the interface. This would allow users to play the game of chess at any time while still being able to move the physical pieces and having the computer in the chessboard move the pieces for the opponent. The Chessboard Buddy serves as a prototype of the first step in combining the online game with a physical chessboard. This project will utilize an electromagnet inside the chessboard. The user will then be able to input their desired move and using stepper motors inside the electromagnet will be turned on and moved to and from the proper location using an x-y table. The conclusion of the project will be the Chessboard Buddy being able to move at least one chess piece on the board based on user input. This will allow for further development of the concept in the future.

POSTER: EES-09

Rescue Inhaler Tracker

Diana Bilous, Monique Ayala, Ahmed Shehab
Faculty Mentor: Professor Alfred Levine
Department of Engineering and Environmental Science

A lot of people in America suffer from asthma. In many cases when asthma attacks happen a person's life could be saved by locating the inhaler in a time-efficient manner. Therefore, we decided to concentrate on designing a system that will help people in case of an emergency to locate the rescue inhaler.

Our system works as a mesh of Bluetooth 4.0 beacons to locate the inhaler. One beacon is located on the inhaler itself and the other beacons are used as a reference to help locate the inhaler. For this system, everything was designed to be small enough to fit on the inhaler and to be able to communicate with cell phones. To find the distance of the user to the inhaler we are using the reading of the Received Signal Strength Indicator (RSSI) in decibels and converting them to distance in meters. Since RSSI readings catch a lot of noise, the system uses a Kalman filter to improve the distance estimated. The accuracy of the distance measurement was improved approximately 25% for each run by using a filter.

In addition to providing the user the improved distance to the inhaler, all the beacons are mapped to the location by using 2-D triangulation which is the method of determining the relative location of points by using the measurements of distance. Afterward, these distances are classified by the K-Nearest Neighbor algorithm to estimate which data points are located the closest to the inhaler. The system described operates in MATLAB and is able to collect the data in 50 seconds to provide the filtered distance reading in meters as well as the direction to where the inhaler has located the closest.

POSTER: EES-10

Energy Recovery Ventilators

Jeffrey Liebman
Faculty Mentor: Professor Alfred Levine
Department of Engineering and Environmental Science

When heating or cooling a house, especially during the winter and summer, a lot of energy gets lost due to ventilation. During COVID, ventilation must be increased to reduce viral transmission, but doing so also leads to more energy loss. An energy recovery ventilator (ERV) recycles air and transfers heat from the exhaust air in a building to the fresh air that enters the building. One type of ERV is an energy recovery wheel (ERW), through which fresh air and exhaust air runs counter currently. As the excurrent air flows through the ERW, a part of the wheel absorbs the heat, energy, and moisture from the air, and transfers it to the incurrent air. The system that is being built consists of the wheel with a counterflow heat exchanger. The efficiency of this system depends on the speed of the wheel, which affects the temperature of the incurrent and excurrent air. Two hairdryers will blow the hot and cool air through the inlets of the ERV system, and a Raspberry Pi wired to a DS18B20 temperature sensor will adjust the speed of the ERW to determine the speed required to achieve the optimal efficiency for the wheel.

POSTER: EES-11

Magnetometer Circuit Tracer

Michael Pantaleone
Faculty Mentor: Professor Alfred Levine
Department of Engineering and Environmental Science

Live circuits pose a significant risk to workers in the construction industry. When conductors have a current flowing through them, they produce a magnetic field that is perpendicular to the conductor. Using magnetometers, we will be able to read the magnetic fields of the wires. Vector magnetometers read the magnetic field on the x, y, and z planes. Orientation plays a vital role when measuring the magnetic field. The weakest magnetic field component determines the direction in which the current is flowing, which makes it possible to trace a circuit. Today's magnetometers can detect magnetic fields 1000 times smaller than the earth's magnetic field which in comparison is approximately 60-70 micro-Teslas. Therefore, after filtering noise and earth's magnetic field using these devices, the current and direction can be discovered in an unseen circuit. This process would be non-invasive and a better option than what is currently available.

POSTER: EES-12

A Secure Way of Handling Medical Information

Jesse Itepu, Ahmed Abdellatif, Ahmed Salem
Faculty Mentor: Professor Alfred Levine
Department of Engineering and Environmental Science

A significant issue found surrounding personal medical information is the lack of simplicity and security when sending to the medical facility. Having this personal information on paper is more time consuming when going to a new medical facility and the possibility of losing it is much higher than when entered electronically. Moreso, the complication of listing this information to doctors is strenuous for that of older individuals. The main goal is to simplify the time spent looking for medical information to allow more time on the patient.

Our project emphasizes the use of a secure 1024-bit Exclusive-Or Encryption (XOR). By XORing every bit of plaintext words with a random key, this will yield an encrypted word. In order to decrypt it, we would simply use the random key again onto our encrypted text, and this would yield our plaintext. With this method, we would go on to develop an advanced and secure medical app which contains an individual's important medical information (meds, surgeries,vaccination records, etc.).

POSTER: EES-13

Dual Flywheel Propulsion System for Cars

Thomas C McCullough, Muzzamil Shaukat, Denis Ladyzhensky
Faculty Mentor: Professor Alfred Levine
Department of Engineering and Environmental Science

To date, no kinetic energy storage devices have been used in passenger vehicles due to the limitations of gyroscopic effects, specifically when changing directions while turning. However, our dual flywheel motor-controlled design will fix this. Our design eliminates gyroscopic effects by implementing a second flywheel with equal speed and opposite direction. The result is a negation of these gyroscopic effects. The final design is to be implemented within a RC car and to be scaled up to be the primary power source of a passenger vehicle. In theory, our design will be able to store and release energy with 100% efficiency. Typically, flywheels can pack more energy than chemical batteries of comparable weight without any of the environmental drawbacks: not requiring rare-earth elements such as lithium, leading to a more sustainable future. In our design, a microprocessor controller in parallel with a dual motor drive system monitors the speed of both flywheels and adjusts them, allowing the RC car to operate freely or without issue while changing direction or turning.

POSTER: EES-14

LCD Marketing Sign

Sebastian Broncano, Mensur Serdari
Faculty Mentor: Professor Alfred Levine
Department of Engineering and Environmental Science

A prevailing issue most individuals face when selling real estate is the absence of visibility from marketing signs at night. Our approach is to use a sign with liquid crystal display "LCD" to be illuminated from behind. The LCD marketing sign is designed to capture a pedestrian's attention because of its brightness feature especially at night. The LCD sign will have a battery power source ideally to not be reliant on wired connections. Designing this liquid crystal display requires a raspberry pi acting as a mini computer in which the hardware would transmit the necessary data to be shown on the marketing sign. The information needed to be displayed on the marketing sign would render important contact information and a "For sale" message. Another essential feature to a simpler solution would be incorporating a QR code to the marketing sign which would direct the viewers to a website of the listed property. The LCD sign will be portable in the sense that it can be mounted on a sign post without tipping over to function as a regular "For sale" sign where it can be posted on lawns.

POSTER: EES-15

Distance-Based Cruise Control Using mm Wave Radar

Aaron Aviles, Syed Mansib Miftah, Muhammad Usman
Faculty Mentor: Professor Alfred Levine
Department of Engineering and Environmental Science

In this project we are conducting experimental research for distance-based cruise control and comparing it to speed-based cruise control. The radar system used in the Honda Accord 2018 can detect distances in the range of approximately 5 km and can detect movement at an accuracy of a fraction of a millimeter. The distance cruise control mode can operate in a long-distance setting at a speed of 65mph and a distance of approximately 60 m (196 ft) from a vehicle in front of it. Measurements were taken and are being taken for distance-based cruise control and speed-based cruise control for the Honda. A brief description of speed- and distance-based cruise control; when using constant speed-based cruise control, the car maintains a constant speed regardless of the distance with other cars. For distance-based cruise control the acceleration or deceleration, in the forward direction, must depend on what is happening to the car in front. The throttle valve of the engine is assumed to be controlled by the Proportional Integral Derivative (PID) component of the controller/processor of the cruise control system. The controller decides the throttle valve opening times to maintain constant distance or speed for the respective mode. We will compare our theoretical formulations of the system, that we are working on, to our experimental performance calculations of the Honda vehicle by using g-force (accelerometer), experimentally obtained graphs.

POSTER: EES-16

The Effects of Invasive Rubus phoenicolasius and Celastrus orbiculatus on Soil Chemistry in a NYC Urban Forest

Matthew Wilhelmsen
Faculty Mentor: Professor Samantha Tramontano
Department of Engineering and Environmental Science

The establishment of invasive plant species in urban forests may pose a threat to the ecological health and structure of these natural spaces. Yet, the mechanisms by which these exotic plants establish themselves in foreign habitats is not well understood. This research study investigates whether invasive plants create chemical changes in soil that may be beneficial to their proliferation. Samples were obtained from the soils surrounding two invasive plants commonly found in Staten Island forests, *Rubus phoenicolasius and Celastrus orbiculatus*, and nearby native plants. The chemical composition (P, K, N) and pH of invasive and native soils is determined and analyzed. These results may provide useful information to guide exotic plant management in urban forests.

POSTER: EES-17

Analyzing the Textural Maturity of Fluvial Sediment at Varying Distances from the Hudson River

Jacklyn Reiszel
Faculty Mentor: Professor Samantha Tramontano
Department of Engineering and Environmental Science

The Hudson River meanders throughout New York State, creating point bars and cut banks that get developed for residential or commercial use. As time passes these cut banks continuously erode, which results in the sediment being transported to the succeeding point bars on the same side downstream. The textual maturity of the sediment from one point to the other may vary. Sediment was collected from three pairs of cut banks and point bars of different distances. That sediment was then sieved and analyzed using the program GRADISTAT to determine the effect distance has on the textual maturity of cut bank sediment. The information gained from this analysis can be used to further the knowledge on the characteristics of cut bank and point bar sediment.

POSTER: EES-18

Partial Melting of a Xenolith in the Jurassic due to the Split of Pangaea, and the Resulting Finds and Confusion of the Finds

Amaury Acevedo
Faculty Mentor: Professor Samantha Tramontano
Department of Engineering and Environmental Science

Tectonic forces have shaped the east coast of the United States over Earth's history and in particular the rifting that occurred during the Jurassic, has left its mark on the NYC area. The goal of this paper is to look at and examine a rock, preliminarily described as a Diabase, found at one of the exposures from the Palisades sill which formed during the rifting of Pangaea, which was found in Staten Island. A thin section has been made of the sample and will be given a preliminary petrographic analysis which includes identifying individual minerals, phase changes, size of grains within the thin section, and comparing it to past research and previous thin sections in order to have a more complete look at the formation. This will be followed up with an investigation of said exposure at location, and with time permitting, basic geochemical analysis if needed. This will look into the idea that the formation, found in the Graniteville quarry, is a xenolith which has been believed to have been baked and partially melted by the magma which would eventually become the Palisades sill. This particular section of the formation is made of 3 distinct parts which would be Diabase, Trondhjemite, and a baked hornfels. This investigation will show if the Trondhjemite was formed due to the partial melting of the xenolith, which is described as being part of the Lockatong formation, which is sedimentary in origin, or if it was formed due to melting unrelated to the Palisades magmatic event. This work will serve to shed more light on the Trondhjemite, which has been described in the past, as well as add on to the study of the Geology of NYC.

ENGLISH

POSTER: ENG-01

How Literature Can Raise Awareness Towards Animal Cruelty: Mustering Up The Strength to Read the Facts

Heather Mancino
Faculty Mentor: Professor Timothy Gray
Department of English

The purpose of this research project is to educate readers to the harsh reality of animal cruelty. 10 million animals are abused to death every year in the United States, and the most common victims are dogs, cats, horses, and livestock. Aside from eating meat, one of the most popular forms of animal abuse, many people still unknowingly fund animal torture. Although unintentional, humans contribute to the mistreatment of animals when buying particular cosmetic products or clothing, when taking trips to a zoo or circus, or paying to take photos with tigers or swim with dolphins on vacation. Although funding things like this seems harmless and all in good fun, it is at the expense of Earth's most innocent creatures. In order to create a more proactive society, we humans need to become knowledgeable of the different ways we take part in animal abuse along with ways to be proactive in the fight against it.

I have a passion for being an advocate for those who don't have a voice and believe that a great way to do so is through the power of literature. If you don't see or hear or read something yourself, you will never understand its true severity. Reading about this sensitive topic through first-hand accounts like, *Voices for Animal Liberation*, by Brittany Michelson allows readers to become more aware of what goes on in the world through the eyes of another. Even fiction stories like, *The Plague Dogs*, help to promote empathy and connect us with our own humanity. In a world clouded by money and greed, we need this type of eye-opening realization that comes from literature. We must do what we can to keep animals safe and cease funding industries that use animals for their own selfish needs.

POSTER: ENG-02

Exploring Pre-1800s Children's Literature

Mehnoor Khan
Faculty Mentor: Professor Lara Saguisag
Department of English

This poster presentation will establish a deeper understanding of children's literature produced in the pre-1800s. The textbook, *From Instruction to Delight: An Anthology of Children's Literature to 1850*, (Fourth Edition, Oxford University Press, 2015) explores different themes and plots in the book and gives a holistic understanding of the historic pre-1800s era. It includes children's texts dating back to 1000 A.D., including Puritan cautionary tales, Christian lyrics, fairy tales, and fables.

The most prominent and significant theme that can be seen in several pieces is the construction of gender. I will explore the representation of gender in these pre-1800 texts. Children's stories and poems of the period illustrate the responsibilities of fathers and mothers, of sons and daughters. Hopefully, this poster will provide a better understanding of how children's literature constructs gender in past and present literatures.

ENGLISH/LINGUISTICS

POSTER: ENG/LING-01

Is Good Writing Rhythmic?

Khadija Hamadou
Faculty Mentor: Professor Jason Bishop
Department of English/Linguistics

One of the defining properties of prose is that, unlike poetic verse, it does not adhere strictly to a meter—i.e., a fixed patterning of word groupings, or of stressed and unstressed syllable sequences. Nonetheless, a common observation is that prose writing—at least "good" prose writing—is intuitively rhythmic in some way. However, if prose does not follow a fixed meter, how does one identify it as rhythmic? In the present study, we attempt to quantify rhythmicity in novice prose writing in order to determine the extent to which writing quality (determined using writing samples that were independently evaluated for quality on a range of non-rhythm-related metrics) exhibits more rhythmic properties. The findings of our study have implications for writing assessment, particularly automatic writing assessment using computational tools.

POSTER: ENG/LING-02

Investigating Consonant Production Following Resection of the Oral and Base of Tongue Using Real-Time MRI

Ashley C Roberts
Faculty Mentor: Professor Christina Hagedorn
Department of English

This case study involved analyzing real-time Magnetic Resonance Imaging (rtMRI) and simultaneously collected audio data collected from a patient who underwent glossectomy and reconstruction of the oral and base of tongue. Previous studies have demonstrated that the speech of individuals who have undergone glossectomy is oftentimes impaired. The aim of the present case study was to leverage the global view of the vocal tract provided by rtMRI to identify specific compensatory strategies utilized by patients following partial glossectomy. Our data reveal that a patient who underwent both oral and base of tongue resection compensates to form speech sounds traditionally produced in the anterior and posterior regions of the oral cavity. Further, compensatory strategies used depend not only on a speech sound's target place of articulation (i.e., where it is traditionally produced in the mouth), but also on a speech sound's manner of articulation (i.e., how it is produced in the mouth). Compensatory strategies exhibited involved both coproduction of the target articulation and a compensatory one, as well as replacement of the target articulation with an articulation using alternate parts of the vocal tract apparatus. These production patterns have the potential to improve speech intelligibility, and the knowledge gained from this case study can be used to inform and refine existing speech intervention strategies.

POSTER: ENG/LING-03

Compensatory Speech Mechanisms Following Oral Tongue Resection

Jaclyn A Kateridge
Faculty Mentor: Professor Christina Hagedorn
Department of English

As of 2018, there are 46,667 new cases of oral cavity and pharynx cancers in the United States annually (Centers for Disease Control and Prevention, 2018). There are many different options for treating these cancers, all affecting the oral articulators, with serious implications for speech production and quality of life. With respect to lingual cancer specifically, speech may be impacted by either weakening of the muscles or the removal of portions of the tongue. Past research has revealed that speech sounds traditionally produced in the anterior part of the oral cavity pose difficulty for such patients. The specific mechanisms by which patients compensate for these sounds, however, are poorly understood. Using real-time magnetic resonance imaging, which allows visualization of the entire vocal tract in the midsagittal plane, this pilot study investigates the specific compensatory mechanisms utilized by an individual who underwent resection and reconstruction of the oral tongue as part of oral cancer treatment. The findings of this study can be used to refine existing therapeutic strategies aimed at improving speech intelligibility of patients undergoing treatment for lingual cancer.

HISTORY

POSTER: HST-01

The Harlem Nine: A Fight Against Zoned District Lines and Segregated Public Schools, and a Fight for Equal Access to a Proper Education in Minority Communities in New York City in the 1950s and 60s

Aurora Haxhari
Faculty Mentor: Professor John Dixon
Department of History

This History Honors Thesis project examines the 1958 Harlem School Boycott and associated events leading up to the desegregation of schools and zoning in New York City. Though racial segregation in American public schools is usually associated just with the South, de facto racial discrimination and segregation were features in northern school education in the 1950s and 1960s. New York City public schools were effectively segregated through practical, political, and economic rather than legal means. Thus, schools in black communities, like Harlem, were among the most overcrowded and underfunded. This Honors Thesis will also examine the general stakes and strategies involved in the Harlem Nine Protest, as well as in the resulting legal case, and locate the school boycott within the larger story of the Civil Rights Movement. It will attempt to recover the stories of key participants. The overall purpose of my research, then, is to shed light on the discrimination in the North, challenging popular and scholarly conventions that issues of racial segregation were confined to the South. This thesis will show that de facto segregation placed many limitations on young black students in the North. Additionally, it will consider the legacies of the 1958 school boycott, describing the campaign as the beginning of a very long fight for the desegregation of New York City schools that continues today.

MANAGEMENT

POSTER: MGT-01

Confidence and Humility and the Effect on Managers and Employees Alike

Kathleen R Preis
Faculty Mentor: Professor Daniel Passarello Jr.
Department of Management

Managers have a very crucial role in how a workplace runs. They have to be knowledgeable in the company they work for, understand their team, and be capable of directing people, resources, and business. Shallowness is not a good character trait for anyone to have; a friendly disposition is preferred. However, this is not always feasible in the workplace. Confidence in your abilities is important no matter which position you hold, but the humility to accept help, feedback, and other forms of aid is also important. In this paper, I will be discussing the respectable necessities of both.

My paper will take the form of a research paper based on qualitative literature analysis, as well as interviews from professionals in managerial positions. I plan to use these resources to better my understanding of the topic as I research and gain knowledge as to how to better my professionalism in my future career. I have found, in my research, the importance of balancing humility and confidence in the managerial position. I have also discovered that there are many other subsections of finding this balance. This comes in the form of finding good leadership, empathy, sympathy, and emotional intelligence. Feeling secure in your position, values, upkeep, and decisions is very important when managing people in a company. However, being humble when applicable is an important difference depending on the situation. These are paramount distinctions to make and must be understood by new managers entering the workplace, and even existing ones.

MARKETING

POSTER: MKT-01

How Machine Learning will Help Identify Risks in Project Management

Angela M Philip
Faculty Mentor: Professor Paolo Cappellari
Department of Marketing

Poor risk assessment and identification in project management, costs companies that have over 100,000 employees over $62 million. Even though there are platforms that aid project managers like Monday.com or JIRA, detecting projects at risk is still a manual, rather complex, and time consuming effort. Being able to detect projects at risk can be of great benefit to project managers, thus to companies. In this work, we study how advancement in Artificial Intelligence (AI) can be used to enable automatic detection of projects at risk, which can be of great aid to organizations. Specifically, we experimented with machine learning techniques to detect the projects that are at risk. First, we created datasets of six different projects on JIRA, and classified these as good and not-so-good projects (a project with so many risks). Second, we extracted significant data features from these projects to function as input to an ML technique. Third, the datasets have then been divided between training and validation sets, so as to create and train the ML model (we will split the data 70% training, and 30% testing). Fourth, the datasets have been used to create and train different ML models using Python Programming Language. Finally, we compared the accuracy of each model. With the help of machine learning algorithms, project managers, along with the vendors, will be able to identify the risks involved with their projects easily.

POSTER: MKT-02

The Personalization of Advertising Through the Use of Digital Analytics

Michael A Crescente
Faculty Mentor: Professor Thomas Tellefsen
Department of Marketing

A growing trend in marketing involves the use of data analytics to personalize advertising. Companies are tracking consumers online to develop rich profiles, and then using that information to direct more timely and targeted promotions. Marketers report that this practice yields greater advertising efficiency and increased customer satisfaction. However, there are ethical questions related to such intense digital tracking. In response, marketers are considering changes in their methods of data collection, storage, analysis, and application. This paper explores current practices, ethical implications, and new directions in the field. It also makes recommendations for the ethical use of enriched data for the benefit of both companies and customers.

POSTER: MKT-03

Aesthetics of Diamond Culture: Traveling the Seven Seas

Nikolozi Davlianidze
Faculty Mentor: Professor Alan Zimmerman
Department of Marketing

In this research project, I will present a paper about diamonds and their influence on developing countries, cultures, and economies. In the beginning, I will introduce the history and present physical, chemical, and material properties of the diamonds. Then, I will discuss more origins of the stones, their trade, sourcing, and traceability.

While diamonds are the hardest substance on Earth, they represent the symbol of love and commitment. In developed countries, the majority of people purchase a diamond for themselves or others at some point in their lives. Diamond engagement rings are used for marriage proposals.

Another thing that makes diamonds very special is their value. Although the 45.53-carat blue hope diamond kept in the Smithsonian Museum costs around 250 million dollars, many retailers offer smaller diamonds that are more affordable to purchase. The price of a diamond varies depending on carat, cut, color, and clarity which is referred to as the four C's. During my research, I will identify the reason some stones cost more than others and how they maintain their value.

Unfortunately, since the 19th century, diamonds were mined in the conflict territories of Africa, so forced labor and abuse were used to obtain them. Consequently, in 2003 the international initiative Kimberly Process was created uniting 82 countries for trade transparency. Rough diamonds had to be shipped with sealed containers with a Kimberley Process Certificate which ensured that the stones were not supporting rebel movements.

Finally, to create a better judgment of the topic, I will collect data from books and online sources including the College of Staten Island's Library databases, government websites, educational research papers from Google Scholar, Gemological Institute of America, and leading jewelry companies' websites. Thus, I will use mixed research methods, which will include quantitative and qualitative studies using certain geographic locations, populations, and case studies.

MATHEMATICS

POSTER: MTH-01

Clustering Algorithms in Ocean Surface Drifter Data

Sheryar N Choudhry
Faculty Mentor: Professor Andrew Poje
Department of Mathematics

Plastic waste and pollution in the ocean are important issues that must be addressed immediately. Part of the problem is keeping track of the waste and particulates on the surface of the ocean. In a previous paper by D'Asaro et.al, agglomerative hierarchical clustering was used to analyze a deployment of surface drifters in the Gulf of Mexico at the submesoscale. We refine the approach taken by considering a weighted graph to cluster the drifters. This allows us to study ocean transport processes in a more intuitive manner. We start by first performing the same analysis as done in the previous paper using our graph method and we compare and contrast the results and their efficiency. We then move on to further analysis of the data using the graph method by creating several metrics to quantify several processes seen in the data set. The first is the convergence of surface drifters trapped along an oceanfront. Another interesting phenomenon is how folding along the oceanfront affects clusters trapped on them and potential cluster merging.

NURSING

POSTER: NRS-01

Diabetic Patient Preference Using Alternate Site Testing (AST) Versus Fingertip Site for Blood Sugar Monitoring

Vincent DePinto
Faculty Mentor: Professor Barbara DiCicco-Bloom
Department of Nursing

In the United States, over 10% of the population has diagnosed diabetes. This paper will review the current literature on alternative site testing (AST), a blood sugar testing method that obtains blood from sites other than the fingertip. The review will focus on the patient's preference on using alternative site testing (AST) versus fingertip site testing on account of pain, accuracy, tissue damage, and ease/access to blood. This review will also discuss the benefits and drawbacks of each of the testing methods, limitations addressed in the literature, and how the results of current literature can guide future research. Current trends in the US are transforming the healthcare system to a more patient-centered and consumer-oriented model of care. Promoting patient decision making, and considering patient preference is especially important for a chronic condition like diabetes, where patients must consistently monitor their blood sugar and make healthy lifestyle choices.

POSTER: NRS-02

The Best Skin Grafting Method

Yana Svintsitskaya, Karen Cherkas
Faculty Mentor: Professor Regina Lama
Department of Nursing

Skin grafting is a surgical procedure where the patient has a skin patch removed from one area of the body and attached to another body area, where skin may be damaged or missing due to trauma of the tissue layers. A couple of days after the transplant, the grafted skin develops blood vessels, which allows the damaged skin to bond with the healthier skin. There are also non-permanent grafting methods with skin that belongs to an animal or person other than the patient. It is used when the client does not have any available healthy skin for transplantation. The skin from an animal (usually a pig) or a cadaver is used. Such grafts are removed after the healthy skin grows and the damaged tissue is healed. The procedure may be painful for the patient, so it is usually done under general anesthesia. However, smaller grafts may be done with a local anesthetic. There are three main categories of skin grafts that are characterized by the composition of the graft, including split-thickness skin grafts, full-thickness skin grafts, and composite skin grafts. The type of skin graft that a patient may require depends on the extent of tissue damage. Skin grafts are used for patients who have skin loss due to: burns, infection, skin cancer, pressure injuries, slow healing wounds. Each method has risks and benefits and they must be carefully weighed before deciding on a particular type of skin transplantation for each patient. An analysis will be conducted to identify which method leads to the best patient outcomes.

POSTER: NRS-03

The Pig with a Human Heart: Xenotransplantation

Amber L Boylan, Kayla Curcio, Fanny Liao
Faculty Mentor: Professor Regina Lama
Department of Nursing

Xenotransplantation is a highly anticipated medical advancement. It involves growing an antigen-free organ within a nonhuman animal for transplantation into a human host. The purpose of this presentation is to explore xenotransplantation as the future of organ donation and the implications of the procedure. We conducted a literary review to compile a holistic view of what xenotransplantation is. The topics that will be reviewed include: what xenotransplantation is, how it works, its current usage, its risks, its legal and ethical ramifications, its cultural considerations, and its potential future in medicine. The findings from the literature showed that in response to the organ shortage crisis, pigs are being genetically modified to develop safe transplantable organs. There are concerns over zoonotic infection but studies show that this is manageable through various interventions. Recent studies suggest these pig organs are viable for human transplants and that there is a promising future for xenotransplantation in medicine. Overlooking ethical, legal, and cultural concerns is essential for making this life-saving treatment accessible. The information presented by this presentation shows that xenotransplantation is a developing field of study that is focused on determining the safest and most effective way to save lives through transplantation. This presentation is an important and relevant critical care nursing topic because critical care patients in life-threatening conditions need an organ donation to survive, but with the ongoing organ shortage crisis, medicine may be turning to xenotransplantation as a consistent source for organ transplants.

POSTER: NRS-04

Pronation Therapy in COVID-19 Patients

Jennifer Yu, Vincent DePinto, Anna Plonka
Faculty Mentor: Professor Regina Lama
Department of Nursing

The COVID-19 pandemic has caused nearly 6 million deaths worldwide, and stressed healthcare facilities to their limits. As new information regarding COVID-19 is gained, healthcare professionals continue to implement new evidence-based techniques to improve morbidity and mortality of patients with severe disease. One such intervention this presentation will discuss is the use of pronation for COVID-19 patients who develop or are at risk for developing ARDS. Pronation is a therapeutic intervention where the patient is placed down onto their abdomen in a face down position. The prone position increases oxygenation by improving the ventilation/perfusion mismatch and more evenly distributing pressure on the lungs. This presentation will elaborate on what pronation therapy is and how it helps, how and when healthcare professionals implement pronation therapy, what the current literature says about the implementation and benefits of proning for COVID-19 patients, and the implications for future research.

POSTER: NRS-05

Impact of Virtual Crossmatch on Kidney Transplant

Shazia Sarwar, Sviatlana Fedarovich, Jonathan Rouach
Faculty Mentor: Professor Regina Lama
Department of Nursing

Current virtual crossmatch (VXM) technology has significantly impacted the field of kidney transplantation, involving either deceased or living donor organs. Research shows that VXM is safe, efficient, and much faster than a physical crossmatch for selecting kidney transplant recipients and is the current gold standard. VXM is used to identify pre-existing donor-specific human leukocyte antigen (HLA) antibodies in patients awaiting kidney transplantation, without a physical crossmatch. The presence of donor specific antibodies (DSA) in pre-transplant clients has positive correlation with post-transplant rejection. The Luminex Single-Antigen Beads (LSA) assay is a VXM method that allows for detection and characterization of preexisting DSA. Studies show that VXM is just as accurate and sensitive as a physical crossmatch and it has resulted in decreased wait time for kidney transplant recipients, improved organ allocation and reduced cold ischemia time, reducing the amount of time the kidneys are kept on ice before a prospective recipient match is found. According to research, patients transplanted with a negative VXM show good allograft survival rate and low rejection rates. VXM has resulted in advancing the clinical decision-making processes regarding desensitization, and implementation of paired donor kidney programs.

POSTER: NRS-06

The Effects Precipitated By Alcohol Use Disorder

Fanny Liao
Faculty Mentor: Professor Barbara Schiano
Department of Nursing

When left untreated, alcohol use disorder (AUD) is a condition that has serious implications on individuals, children, families, and communities. The purpose of this project was to inform nursing students about the true impact of AUD and to integrate that information into a holistic view that will teach nursing students what they can do to help mitigate the effects from AUD in its many forms. Peer reviewed articles across various interdisciplinary journals were reviewed to find information on the secondhand effects of AUD on these groups. Other peer reviewed articles were analyzed for information to provide a holistic view on what AUD is, including its physiological and psychological effects, risk factors, its stigma, and other contributing factors that hinder the resolution of this condition. Since this project's goal is to provide a holistic understanding of AUD and its real-life effects for nursing students, relevant nursing considerations will be discussed. The information presented by this project shows how intertwined and relevant the effects of AUD are on our lives and how important it is for steps to be taken to address its effects.

PHILOSOPHY

POSTER: PHL-01

Can Computers Think and Understand?

Abdulaziz Mugren
Faculty Mentor: Professor Barbara Montero
Department of Philosophy

Multiple perspectives have indicated that the thinking capacity of a machine can be determined. In reference to the Computing Machinery and Intelligence, Alan Turing, a Computer Scientist of the 20th century, believed that a thought experiment (The Imitation Game) tests enough that could help in determining the ability of machine thinking. The Scientist initiated the idea of the Turing Test in his 1950's seminar paper to involve an interrogator, a human, and a computer. There was speculation that prior to 2000, computers could be capable of passing the Turing Test and thus be labeled as capable of thinking. In some cases, various kinds of bots have stretched towards that dream but not to the extent that the pioneer envisioned. Such bots just attained the power of getting clever ways in which they fooled the interrogators instead of acquiring humans' cognitive abilities. Many famous world thinkers have made big forecasts about humanity's future based on the metaphor's validity in determining the ability of machine thinking. This paper seeks to examine the concept of computational thinking and understanding of language through the Turing Test, assess how sufficiently the idea of passing the Turing test explores thoughts, and discusses the Mayan room argument. The Turing Test, which roughly corresponds with the Mayan room argument, is a concept of computer thinking and language understanding. The Turing Test is a strategy for determining whether computers are capable of thinking in the same way as humans using artificial intelligence (AI). Furthermore, a huge majority of scholars believe that a question about whether computers can pass the Turing Test is irrelevant. Rather than emphasizing how to persuade an individual, they are utilizing human discourse rather than a computer program. The most important and necessary focus should be on improving the efficiency and intuitiveness of human-machine interaction. Specifically, the Mayan/Chinese Room Argument aspires to disprove a particular hypothesis related to the role of computing light in human cognition. Conclusively, this paper shows how computers are capable of thinking but not understanding.

POSTER: PHL-02

The Inextricable Theoretical Dependency of Measurement: Why Epistemic Loops Lead to Coherentism

David Checchi
Faculty Mentor: Professor Barbara Montero
Department of Philosophy

Alistair Isaac (2019) argues that the iterative processes by which measurement practices are improved upon in the empirical sciences, though typically taken as evidence to support the view that empirical standards are fundamentally subjective, is consistent with the view that empirical knowledge can truthfully represent objective features of the world. Alistair proposes a condition that is both necessary and sufficient for the representation of objective features: the attainment of near identical results across experiments backed by multiple theoretical commitments (referred to as convergence) and a high repeatability of the empirical precision achieved by each individual experiment. These two conditions, he argues, are consistent with the iterative nature of measurement and with the idea that measurements are objective. I argue, however, that, because measurement depends on theory laden experiments, then any comparative relationship between such experiments would be founded on an interrelating theory. Furthermore, granting the proposed conditions for achieving successful measurement are correct, then it seems a result may only be considered objective when it is considered in relation to complementary results. In other words, a result can only be considered stable with respect to its coherence within the framework of a system.

POSTER: PHL-03

Alexander Hamilton's Legal Character in the Making: Rutgers v. Waddington & People v. Croswell

Maxwell Velikodny
Faculty Mentor: Professor Barbara Montero
Department of Philosophy

Although the origins of the American legal system have been primarily rooted in English common law, influential political thinkers within the thirteen colonies helped establish a new legal system by setting intellectual and legal precedents. Alexander Hamilton's 'legal character' embodies this narrative of change and development that ultimately progressed and expanded upon the American legal system. By consulting historiographical works and analyzing key cases handled by Hamilton during the tumultuous period of the Articles of Confederation, his legal character, federalist principles, and moral values become apparent, serving as case studies analogous to the development of the American legal system.

POSTER: PHL-04

Is the Gross Domestic Product the Best Measure of Flourishing?

Shmuel Helwa
Faculty Mentor: Professor Barbara Montero
Department of Philosophy

In "GDP: one of the great inventions of the 20th century," Paul A. Samuelson and William D. Nordhaus claim that "while the GDP and the rest of the national income accounts may seem to be arcane concepts, they are truly among the great inventions of the twentieth century." In other words, although they say GDP may come with many out-of-date concepts, they insist that GDP is an extremely valuable metric. Many people would agree with this claim, however this presentation illustrates some reasons to be less enthusiastic about using GDP as a measure of national well-being. GDP or gross domestic product is known to be the monetary value of all finished goods and services made within a country during a specific time period which would then estimate the size of an economy and its growth rate. I argue that although these are important means of measuring the well-being of a society, GDP is most definitely missing key concepts that would truly show how well a society is advancing; it does not take into account many other concepts that prove a society is moving in the correct direction. For example, GDP does include what is spent on environmental protection, healthcare and education. What the GDP is not showing, I argue, is the true level of health, learning standards and environmental cleanliness. I further argue that GDP also puts into perspective the cost of purchasing pollution-control mechanisms. What it isn't showing though is whether or not the air and water in which we take in daily is truly beneficial to our own well-being. I conclude that GDP fails to dig deep enough to be a good measure of society's advancement and well-being.

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PHYSICS AND ASTRONOMY

POSTER: PHY/AST-01

Development of Virtual Reality Mapping for E+A Candidates in the Coma Cluster

Sam Pakravan
Faculty Mentor: Professor Charles Liu
Department of Physics and Astronomy

By improving upon virtual reality mapping for galaxies we can better understand their aging process including galaxies like our own Milky Way galaxy. E+A galaxies are known for having spectra of an early-type ("E") galaxy, typically many billions of years old, together with strong hydrogen Balmer absorption lines that are produced in the photospheres of stars that are only about 1 billion years old (type "A"). That means E+A galaxies are a special type of "post-starburst" galaxies, in which star formation had been going at a high rate but then shut down approximately 1 billion years ago.When a galaxy enters a post-starburst phase, O and B type stars (which are the brightest and most short-lived) die off, and about a billion years later leave A type stars to be the brightest in the galaxy. In our previous work we managed to identify 101 E+A candidates within the cluster of galaxies known as Coma Berenices. Using the Unity game engine we are able to create a 3-dimensional environment to visualize and improve on the virtual reality program. Improving the VR-mapping we can create a system with a simpler menu and detailed visuals allowing for a more interactive and immersive experience. By the end of this project the improved VR-mapping will help us better analyze E+A galaxies and the evolution of the Coma cluster within the past few billion years.

POLITICAL SCIENCE AND GLOBAL AFFAIRS

POSTER: PSGA-01

Peace in the Middle East? The Role of Israeli-Palestinian Peace Plans in the Ongoing Conflict

Sandra Abdellal
Faculty Mentor: Professor Peter Kabachnik
Department of Political Science and Global Affairs

My project dives into the question, "What role have peace plans played in keeping the Palestinian/Israeli conflict alive?" The objective of this paper is to analyze how the peace plans were not actively advocating for peace by exploring the different treaties and plans for peace, as well as the outcomes to them and reactions from the Palestinians, Israelis, and the international community. Counterintuitively, I want to better understand what role the various peace initiatives have had, not in solving the conflict, but in perpetuating it. By examining the main peace plans and analyzing why they have not worked until now, I can identify what has been the main obstacles to achieving a viable solution. I will be working with a collection of books, memoirs, academic articles, policy documents, and documentaries as research material for my paper. The central focus will be an in-depth analysis of the various peace plans proposed over the years, including relying on first hand accounts, general analysis, and primary and secondary accounts.

POSTER: PSGA-02

Mapping the COVID-19 Pandemic in Staten Island

Vincenzo G Mezzio
Faculty Mentor: Professor Nerve Macaspac
Department of Political Science and Global Affairs

COVID-19 has had diverging effects in New York City. Out of the five boroughs, Staten Island has one of the largest percentages of COVID-19 cases relative to population. This research examines key social and spatial factors that contribute to the increase in COVID-19 cases in Staten Island. It asks: Which parts of Staten Island have higher rates of transmission of COVID-19? Which parts of the borough have a higher population that is more vulnerable to COVID-19? What is the relationship between the location of vaccination centers with the rates of COVID-19 cases? Using Geographic Information Systems (GIS), this research examines the spatial relationships and patterns of COVID-19 cases, deaths, hospitalizations, vaccinations, and key indicators of high-risk transmission or vulnerability such as population density or access to vaccination centers. For instance, this research suggests that there is a direct relationship between zip codes with a higher density of individuals and more COVID-19 cases. Another finding is that zip codes with at least four vaccination centers have lower COVID-19 cases. This research contributes to our understanding of the uneven geographies of the global COVID-19 pandemic in New York City and informs borough-specific policies in preventing further transmissions.

POSTER: PSGA-03

The Effect of 9/11 on Airport Security: the Creation of TSA and Implementation of Current Policies

Iman Bedrolli, Ariana Gaytan, Valentina Schembri, Amanda Cronin
Faculty Mentor: Professor Jane Marcus-Delgado
Department of Political Science and Global Affairs

On September 11th, 2001, the US suffered one of the biggest blows to its national security in the wake of al Qaeda orchestrated plane hijackings, one of which hit the Pentagon, a second which landed in a field in Shanksville, Pennsylvania, and two of which unleashed the most devastation upon hitting the twin towers of New York's World Trade Center. Afterwards, the US government took several actions in order to assure American citizens that national security was not at risk. One of the many areas of concern was flight and surveillance surrounding it specifically due to the involvement of unsupervised aircraft on US soil. As a result, one of the new laws created was the Aviation and Transportation Security Act, which was signed into existence on November 19, 2001, officially establishing the TSA in airports across the nation. By creating a timeline and reviewing policies implemented at the time with those which have been put in place recently, we will be able to study what led up to the exact creation of the TSA as well as its influence on modern day airport security and policies. In this way we will investigate the many aspects of the US in a post-9/11 era.

POSTER: PSGA-04

Chinese Immigration: New York in Comparison to Other Cities

Kenny Feng, Frank Feng, Jenalyse Alarcon, Michael Kehoe
Faculty Mentor: Professor Jane Marcus-Delgado
Department of Political Science and Global Affairs

New York established an extensive past of immigration. Chinese immigrants advanced into one of the largest groups in New York City. This highlights the interest of this paper to determine the reasons why the Chinese population is much larger compared to other states in the US. Chinese communities have demonstrated the acceptance of New York to new cultures with Chinatown. We are utilizing data analysis, anecdotal evidence, and articles to explore the connection between Chinese immigrants and New York. The importance of this research is to recognize why New York is so popular when it comes to immigration from China and maybe being able to expand these resources and opportunities to other states, making it more accessible for other states to thrive with the support of immigrants rather than keeping the anti-Chinese sentiment which is true for certain cities.

POSTER: PSGA-05

The Rise of Anti-Immigration Sentiments During Coronavirus and Other Infectious Diseases: A Comparative Study

Hannah Varughese, Shannon Farnum, Lizbet Rodriguez, Jordan Swanson, Anthony Attenborough
Faculty Mentor: Professor Jane Marcus-Delgado
Department of Political Science and Global Affairs

Since its founding, New York City has been an ideal destination for various groups of immigrants. Along with the hopes and dreams of these immigrants, diseases arrived from all corners of the world. Soon enough immigrants were viewed as viral and bacterial hosts for epidemics such as that of the Spanish flu and the most current, Coronavirus. Through comparative research, it was found that during these two epidemics, the largest scapegoats of the transmission of disease were the Jewish migrants during the Spanish-Flu and the Chinese during the Coronavirus epidemic. The basis of our research will be done by looking at previous studies that demonstrate a rise in xenophobia and antisemitism during the Covid and Flu epidemic. Our primary sources may include diaries and interviews that describe personal experiences of discrimination. As we continue to experience the effects of the ongoing coronavirus pandemic, this comparative study intends to portray the parallels in the rise of anti-immigration sentiments during health crises in NYC.

POSTER: PSGA-06

The Roots of First Amendment Values in Colonial New York

Colin P Alarcon, Philip Nicotra, Nikolas-Kaan Yilmaz, Brian Kerliu
Faculty Mentor: Professor Jane Marcus-Delgado
Department of Political Science and Global Affairs

The roots of First Amendment values grew to a boiling point in Colonial America prior to the inception of the Revolutionary War. Common knowledge of the revolution often paints New York as a largely loyalist colony. However, historians often overlook the fact that the revolutionary zeitgeist of the era spanned many colonies. We use historical accounts, major events, court cases, and historian commentary to explore how New Yorkers embody the early spirit of what will eventually become the foundational American value of free speech. Much of our research points to a growing trend of free speech values in colonial New York, and their embrace of values often associated with enlightenment liberalism.

POSTER: PSGA-07

The Other Victims: Ethic and Racial Backlash after a Terrorist Attack

Karen Correa
Faculty Mentor: Professor Anat NivSolom
Department of Political Science and Global Affairs

Terrorism affects communities all around the world. Most of the time, our focus is on the direct victims of such attacks. Still, another group of victims is essential to pay attention to. On September 11, 2001, a group of Islamic terrorists belonging to the al-Qaeda terrorist group attacked the USA killing close to 3,000 people, injuring many more, and creating unbelievable damage to property. These attacks seemed to bring the world together in sorrow and compassion, but it also tore groups of people apart. We know that, in part, society started alienating Muslims, creating a hostile environment at work, school, and everyday life for them. Many Muslim Americans have described their experience as a nightmare when investigating first-hand accounts. Just because Muslims in the USA or people of Middle Eastern background shared some similar traits of the attackers, they were immediately seen as supporters of the attacks and enemies of the USA. The attacks and the aftermath coverage in the media created an ethnic and racial backlash against Muslims. This paper and poster presentation will focus on these unintended victims of terror attacks.

PSYCHOLOGY

POSTER: PSY-01

Sit Still and Pay Attention! The Impact of Postural Control on Focused Attention

Haley Essig, Olivia Abdelshahid
Faculty Mentor: Professor Sarah Berger
Department of Psychology

As infants improve their capacity to focus attention, they simultaneously master new motor skills. Focused attention (FA) is the increased effort necessary to process information (Lawson & Ruff, 2001).Traditionally, FA has been studied with infants sitting on a parent's lap or in a highchair (e.g., Lawson & Ruff, 2001, Lawson & Ruff, 2004, Ruff, 1986, Ruff et al., 1996), allowing children to devote all attentional resources to toy exploration. However, maintaining control in balance-dependent postures taxes attention (Berger et al., 2017 Berger et al., 2019). In this study, we asked whether learning to sit affected infants' FA. Participants were 72 healthy, full-term, 6- to 8-month-old infants who could sit independently but could not yet crawl. We hypothesized that FA scores will be higher when infants are in a supported sitting position than when they are not supported. Infants explored three toys for 90 seconds at a time (FA task) while in two conditions: 1) supported in a highchair and 2) sitting independently on the floor. To measure sitting skill, parents held infants in a sitting position on the floor and removed their hands allowing angular measurements to be taken of the head, trunk, and extremities. Preliminary analyses show that the global FA score (numerical score based on level of attention) in the supported condition (M=7.80, SD=3.10) was significantly higher than the global FA score in the unsupported condition (M=7.21, SD=2.80). Future research will ask whether an independent measure of sitting skill is related to FA.

POSTER: PSY-02

Metalinguistic Awareness of Turkish Grammar Among College Students at Early Stages of Language Learning

Angela Cortez
Faculty Mentors: Professor Patricia J Brooks, and Maya Rose
Department of Psychology

Adults exhibit remarkable individual differences in language learning aptitude (Grigorenko et al., 2000). Schmidt (1990) proposed that success in L2 learning requires noticing features of the new language. However, others suggest that adults can learn grammatical regularities without developing explicit awareness (Grey et al., 2014; Reber, 1967). The current study used a computer-assisted language learning (CALL) protocol to explore individual differences in learning Turkish as a new language. We assessed aptitude using an adapted Culture Fair test (Cattell & Cattell, 1973) and metalinguistic awareness via an exit questionnaire. We expected participants to develop metalinguistic awareness as they learned to comprehend the Turkish question-answer dialogues. Based on prior research (Brooks & Kempe, 2013), we hypothesized that the effect of Culture Fair would be indirect and mediated by awareness, i.e., higher aptitude would increase the likelihood of noticing patterns. Undergraduates (N = 157) completed the CALL protocol via Zoom. The Turkish dialogues featured 36 nouns inflected for number (singular/plural) and case (ablative/dative). Comprehension increased from pretest (M = 56.8%) to posttest (M = 80.8%). In keeping with Schmidt's (1990) noticing hypothesis, most participants with above-chance comprehension expressed some awareness of Turkish grammatical features, whereas most performing at-chance showed no awareness. However, roughly 20% of participants exhibited above-chance comprehension on case or number trials without expressing awareness, suggesting it was possible to learn implicitly. Mediation models examined the effect of aptitude (Culture Fair) on awareness and comprehension of case and number marking. Models showed indirect effects of Culture Fair mediated by awareness, confirming the hypothesis that higher aptitude is associated with noticing, which in turn promotes accurate comprehension. An unexpected finding was that participants performed better on case than number marking. We attribute this to the position of the case markers at the ends of words vs. the plural marker in the middle, aligning with the serial position effect in memory (Murdock, 1962).

POSTER: PSY-03

How Does Working While in College Affect Students' Mental Well-being?

Herman Low
Faculty Mentor: Professor Florette Cohen
Department of Psychology

Working while attending college can be difficult. Three out of every four students work, 20% of them work a full-time job (Tylor, Snyder & Lin). Researchers have identified the main factor that moderates the relationship between work and students' mental well-being to be an inter-role conflict termed work-school conflict (WSC; Butler,2008; Cinamon,2018; Oviatt, Baumann, Bennett & Garza,2017; Park & Sprung, 2013). Students who experience WSC feel that working interferes with their ability to fulfill their role as a student. Although not much research has been conducted on WSC, previous works have built upon WSC with a more understood inter-role conflict, work-family conflict as the theoretical framework (Butler,2008; Cinamon,2018; Oviatt, Baumann, Bennett & Garza,2017; Park & Sprung, 2013). Studies have found that long work hours, low social support, and low job control are positively correlated with WSC (Butler,2008; Cinamon,2018; Oviatt, Baumann, Bennett & Garza,2017; Park & Sprung, 2013). Of the many effects that WSC has on college students, such as poorer academic performance and physical health, this research focuses on the impact of WSC on students' mental well-being. Several studies have found a direct negative effect of WSC on mental health, notably depressive symptoms (Cinamon,2018; Oviatt, Baumann, Bennett & Garza,2017; Park & Sprung, 2013). Findings suggest that students who experience high WSC also experience symptoms of depression such as restless sleep, feelings of sadness, incompetence, and loss of appetite (Oviatt, Baumann, Bennett & Garza,2017).

POSTER: PSY-04

Evaluating Autism Stigma within a Cross-Cultural Context: A Quantitative and Qualitative Analysis of University Students' Perspectives on Autism Stigma in Canada and Hong Kong

Deondre D Williams
Faculty Mentor: Professor Kristen Gillespie-Lynch
Department of Psychology

This study examines university students' autism knowledge and stigma in Hong Kong and Canada before and after receiving an autism training. Differences between the two countries were examined since limited research has been done on autism stigma in Hong Kong, especially within a cross-cultural context. Hong Kong and western countries like Canada also differ in access to resources such as autism support services/training (Wong et al. 2015). Consistent with our hypotheses, we found that pre-test stigma (assessed by a social distance scale) was higher in Hong Kong than in Canada ($p < .001$) and autism knowledge was greater in Canada than in Hong Kong ($p < .001$). Also consistent with our hypotheses, knowledge improved with training in both countries ($p < .001$) and there was a lack of interaction between country and knowledge change ($p=.27$). Higher pre-test knowledge was associated with less stigma ($r = -.722$) in both countries. We hypothesized that the degree of decline in autism stigma would be lower in Hong Kong than in Canada. Stigma declined overall ($p<.001$). A trend toward an interaction between country and change in stigma was observed ($p=.092$). However, stigma declined more in Hong Kong than Canada. These findings suggest that our ASD training was effective across cultures in improving autism understanding and stigma among educators in training. To continue this study, we are planning to utilize qualitative content analysis on two questions that the university students were surveyed on: "How do people in your community/ies treat autistic people?", and "How do people in your community/ies treat family members of autistic people?" We will be developing a coding scheme and finding patterns in the responses for each of these questions. Future work should examine cultural factors that may influence the effectiveness of autism trainings in different cultural contexts. There should also be future examinations of the influence of religions and more diverse ethnic groups on autism stigma.

POSTER: PSY-05

Predictors of Autism Understanding in Autistic Teenagers

Kyle J Gravitch
Faculty Mentor: Professor Kristen Gillespie-Lynch
Department of Psychology

This study examines predictors of autism understanding in autistic teenagers. There is no research, to my knowledge, on whether individual differences (e.g., cognitive skills and executive functioning) affect an autistic teenager's understanding of what autism is. Previous research has shown that parental disclosure can affect a teen's autistic identity (Riccio et al., 2020), but there is limited information on the relationship between a teen's understanding of autism and their cognitive skills. In the current study, I will be examining how parental discussions about autism, self-determination, and individual differences in cognitive skills (executive functioning and reasoning) affect autistic youths' understanding of autism. I believe the following individual differences will be positively and negatively associated with heightened autism understanding: inductive logic skills, detail orientation, grammatical reasoning, self-determination and age. This study will investigate the relationship between autism understanding and individual differences.

My study will be using student interviews and parent surveys from an informal educational program in New York City, called Tech Kids Unlimited (TKU). I will be developing a qualitative coding scheme and finding patterns in the responses. Interview questions I will be coding include, "What is autism?" and "What does autism mean to you?". Parent survey questions I will be coding include, "What have you told your child about their diagnosis/diagnoses?" Additionally, I will measure how the teens perform on several measures of the Cambridge Brain Sciences battery of tasks, which include fluid reasoning and executive functioning.

Finally, this study will be examining self-determination and its connection to autism understanding using Shogren's (2018) Self-Determination Inventory.

Future research should incorporate a more diverse sample, not just teens from TKU, as well as include information about how neurotypical peers and the school setting affect an autistic teen's understanding of autism.

POSTER: PSY-06

Trans Biases in Education

Annet Sokol
Faculty Mentor: Professor Darryl Hill
Department of Psychology

Throughout the years, the psychological community has seen much change concerning trans representation with an attempt to tackle anti-trans prejudice. This study examines these changes and their effects through the scope of trans inclusivity in education. In order to do so, an archive of eighty introductory psychology textbooks (1981-2019), compiled utilizing professor libraries, The City University of New York library system, and digital sources Google Books, were analyzed. Results indicated an increase in positive portrayals of trans people, particularly following the 2008 APA Resolution on Gender Identity, no difference in the number of transwomen portrayed in photographs, and a significant reduction in the number of trans men portrayed. Additionally, we determined an overall reduction in negative comments, transphobia, disease and deviance characterizations, as well as no significant change in racial or cultural diversity. Ultimately, while trans representation has improved there is still a great amount of anti-trans bias present in education and beyond. Trans inclusive education is an essential step towards a reduction in these harmful stereotypes and biases as this education is the core of knowledge and thus, diversity.

POSTER: PSY-07

Too Much of a Good Thing: A Sociocultural Analysis of Hypersexual Disorder

Andrew J DeMeo
Faculty Mentor: Professor Darryl Hill
Department of Psychology

This presentation describes the history of a condition variously called sexual addiction or hypersexuality from its conception in the 1970s into today, tracing theories about its origins and treatments. A review of the literature, Reddit online communities, and case studies, explores the gradual acceptance of hypersexuality into psychology, the role of high-speed internet pornography, and current conceptions of causes and treatment.

POSTER: PSY-08

How Do Our Brains Use Our Experiences to Evolve/Create Information?

Jonathan R Falcone
Faculty Mentor: Professor Dan McCloskey
Department of Psychology

Memory is an important aspect of everyday life which involves the coordination of multiple brain areas. This presentation will provide a summary of the types of memory and the brain areas that are involved in them. Amongst these memories are sensory memory, short-term memory, working memory, and long-term memory, which will be discussed in detail. Each memory serves a different role, and functions for different periods of time.

POSTER: PSY-09

The Effects of Language Dominance on Working Memory

Victoria F Nicoletta
Faculty Mentor: Professor Irina A Sekerina
Department of Psychology

Previous research has suggested a difference in cognitive functioning of monolinguals and bilinguals in respect to working memory. These studies have concluded that bilinguals as a homogenous group tend to perform better on specific types of memory tasks than their monolingual peers, yet they perform worse on others. In my previous research, I further examined this phenomenon by splitting the participant groups to include: monolinguals, Heritage Bilinguals (HSs) - those who learn their home (heritage) language and the societal language, English, simultaneously, but have a stronger grasp of the English language - and Second Language Learners (L2) who learned English as their second language. The findings of this study displayed a significant difference between the success of L2 and both HSs and monolinguals, but no difference between HSs and monolinguals. I have expanded upon my previous findings in specifically studying the effects of language dominance on working memory in bilinguals. Now focusing specifically on Spanish-English Bilinguals, I have recruited participants from the College of Staten Island's PSY 100 SONA pool to participate in a two-part study. The first of the two parts consists of a demographics survey, a Reading Working Memory task, a Spanish Proficiency test, and a Month Ordering task - all in Spanish. The second part repeats the demographics survey, Reading Working Memory task, and Month Ordering task in English. The results of both parts have been used to analyze language dominance in the participant pool and its effects on the working memory of these respective subgroups of bilinguals.

POSTER: PSY-10

Language Development of Bilingual Children Fluent in the Russian Language using the KORABLIK Test

Michael Feldman
Faculty Mentor: Professor Irina A Sekerina
Department of Psychology

With the end of the Cold War and the opening of the Iron Curtain, the United States has seen a massive influx of Russian Speaking families since the early 1990s from the former republics of the Soviet Union. Over 30 years later, the number of bilingual citizens who speak both the Russian and English languages has increased closer to over one million. As a result, assessing the development of language in bilingual Russian speaking children in elementary schools has not given an accurate measurement of their competence in language. This has resulted in some bilingual children being deemed as having underdeveloped language for their respective age groups. In addition, there is no normative data to suggest a particular baseline for language competence in bilingual children who speak both the English and Russian Languages. Language Development has been measured in English Speaking children with a variety of notable tests, and there is normative data to suggest whether a child is qualified for additional services beyond regular classroom instruction. However, there are not any known tests that examine the development of the Russian language in children who are bilingual. Participants completed 11 subtests of the language development test, KORABLIK, created to examine different aspects of linguistics such as morphology, vocabulary, and syntax of the Russian language in bilingual and monolingual children. We predict that bilingual children will score lower than monolingual children on the KORABLIK tests. In addition, we will investigate a number of factors that affect the performances of bilingual children compared to monolingual children such as age of introduction to English, exposure to both languages at home, the age of arrival to the United States, or whether the child was born in the United States.

POSTER: PSY-11

Dopamine Neuron Axons in the Corpus Callosum: Potential Role in Experience-Dependent Myelination

Zahid Hassan
Faculty Mentor: Professor Leora Yetnikoff
Department of Psychology

Neuroplasticity is a remarkable phenomenon where the brain reorganizes and modifies its connections in response to behavioral experiences. For a long time, it was thought that neuroplasticity occurred mainly at the level of the synapse – that is, between neurons. However, we now know that neurons also communicate with oligodendrocytes (OLs) (a subtype of glial cells in the central nervous system) to regulate myelination, a phenomenon termed 'experience-dependent myelination.' Myelin is a fatty membranous sheath that insulates axons to conserve the conduction velocity of neurons' action potentials. Emerging evidence indicates that experience-dependent myelination is crucial for social behaviors, as well as fear, spatial and motor learning. While there is little knowledge about the types of neurons involved in experience-dependent myelination, it is known that dysregulation of myelin in the corpus callosum (CC), the largest white matter tract in the brain, is associated with dopamine-related neuropsychiatric diseases, such as addiction and schizophrenia. The purpose of this study was to begin to investigate the possible role of midbrain dopamine neurons in experience-dependent myelination of the CC. We used adult male DAT-cre mice that express cre under the control of the DAT promoter and targeted the midbrain with a cre dependent eYFP virus. Using this approach, we found dopamine neuron axons in the CC, although with a lower density than that seen in the neighboring medial prefrontal cortex and striatum. Future work will examine how dopamine axon architecture in the CC changes after repeated amphetamine treatment. Understanding the role of midbrain dopamine neurons in experience- dependent myelination may potentially contribute to the treatment of dopamine-related neuropsychiatric diseases.

SOCIAL WORK

POSTER: SWK-01

Mental Health Awareness in College Campuses

Alexandra R Agosta
Faculty Mentor: Professor Esther Son
Department of Social Work

This research study conducted a qualitative study on current undergraduate part-time or full-time students on why there is a need of an improvement in the counseling services provided by college campuses. The research question was "What are the perspectives of college students on their own mental health as well as awareness on college campuses and the services provided? What ways can college counseling services improve for the well-being of their students?" The purpose of the research study was to explore the students' perspective of their mental health and how they treat it during challenging times. And to explore the different ways a college campus may improve their counseling services and make them known to the students that they are openly available to all. One-on-one interviews with 7 current undergraduate students were conducted. The interviews consisted of 10 open-ended questions that require in-depth responses. The results found that many students are unaware of the counseling services provided to them on campus, and the barriers to college counseling services are lack of awareness and limited services/programs available. There is a need for advocacy for better services/programs offered, as well as a need for better advertisement to the counseling centers. The study holds significance to the social work profession by promoting mental health services provided on campuses to ensure the well-being of college students. The implications of the results allowed an understanding of college students' perspectives on mental health issues, which may lead to further research on how to achieve methods to improve the mental health services provided by campus counseling centers.

WORLD LANGUAGES AND LITERATURES

POSTER: WL&L-01

How Do Men and Women Live under a Patriarchal System in China?

Stephanie Lui
Faculty Mentor: Professor Jean Tsui
Department of World Languages and Literatures

This project explores the patriarchal system in China during the late 19th to early 20th century to gain a better understanding of the impact it had on men and women. As China held onto many old traditions and values at the time, it soon began to fall apart in 1907 when the play, *A Doll's House* by Henrik Ibsen first arrived in China. When this play was exposed to women, it sparked interest and curiosity in them because it educated them in understanding equal gender roles in society. It gave many women the willingness to fight for their rights and to go against the norms of society.

By closely analyzing texts and famous poets such as Qiu Jin and Lu Xun during this time, we are able to understand how women were shaped by these influences. It also depicts how the women were treated and why it led up to the New Cultural Movement in China. It may seem like the patriarchy system only affects women, but it is a repressive force to both men and women.

Poster Presentations - Student Scholars

STUDENT	FACULTY MENTOR	DEPARTMENT	PRESENTATION ID
Sandra Abdellal	Peter Kabachnik	Political Science and Global Affairs	PSGA-01
Ahmed Abdellatif	Alfred Levine	Engineering and Environmental Science	EES-12
Olivia Abdelshahid	Sarah Berger	Psychology	PSY-01
Ahmed Aboudewan	Xin Jiang	Engineering and Environmental Science	EES-06
Amaury Acevedo	Samantha Tramontano	Engineering and Environmental Science	EES-18
Alexandra R Agosta	Esther Son	Social Work	SWK-01
Momtahina Akter	Alejandra Alonso	Biology	BIO-02
Jenalyse Alarcon	Jane Marcus-Delgado	Political Science and Global Affairs	PSGA-04
Colin P Alarcon	Jane Marcus-Delgado	Political Science and Global Affairs	PSGA-06
Aya Ashour	Alan Lyons	Chemistry	CHM-02
Anthony Attenborough	Jane Marcus-Delgado	Political Science and Global Affairs	PSGA-05
Aaron Aviles	Alfred Levine	Engineering and Environmental Science	EES-15
Monique Ayala	Alfred Levine	Engineering and Environmental Science	EES-09
Cassandra Ayoub	Michelle Esposito	Biology	BIO-04
Javonni E Banks	Jane Alexander	Engineering and Environmental Science	EES-03
Laila Basyouni	Xin Jiang	Engineering and Environmental Science	EES-07
Iman Bedrolli	Jane Marcus-Delgado	Political Science and Global Affairs	PSGA-03
Diana Bilous	Alfred Levine	Engineering and Environmental Science	EES-09
Amber L Boylan	Regina Lama	Nursing	NRS-03
Sebastian Broncano	Alfred Levine	Engineering and Environmental Science	EES-14
Madison M Burgos	Jane Alexander	Engineering and Environmental Science	EES-04
John A Buscini	Patricia Galletta	Accounting and Finance	ACC/FNC-01
Michael Caligara	Deborah De Simone	Curriculum and Instruction	C&I-02
Victoria Cannava	Deborah De Simone	Curriculum and Instruction	C&I-05
David Checchi	Barbara Montero	Philosophy	PHL-02
Karen Cherkas	Regina Lama	Nursing	NRS-02
Sheryar N Choudhry	Andrew Poje	Mathematics	MTH-01
Lara A Colombo	Nancy Liu-Sullivan	Biology	BIO-07
Jenna Como	Deborah De Simone	Curriculum and Instruction	C&I-04
Karen Correa	Anat NivSolom	Political Science and Global Affairs	PSGA-07
Angela Cortez	Patricia J Brooks, Maya Rose	Psychology	PSY-02
Michael A Crescente	Thomas Tellefsen	Marketing	MKT-02
Amanda Cronin	Jane Marcus-Delgado	Political Science and Global Affairs	PSGA-03
Kayla Curcio	Regina Lama	Nursing	NRS-03
Charles Cusumano	Deborah De Simone	Curriculum and Instruction	C&I-03
Nikolozi Davlianidze	Alan Zimmerman	Marketing	MKT-03
Joseph DeMario	Tatiana Anderson	Computer Science	CSC-01
Andrew J DeMeo	Darryl Hill	Psychology	PSY-07
Vincent DePinto	Barbara DiCicco-Bloom	Nursing	NRS-01
	Regina Lama	Nursing	NRS-04
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Poster Presentations - Student Scholars

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Shannon Farnum	Jane Marcus-Delgado	Political Science and Global Affairs	PSGA-05
Anila Fecanji	Leah Cohen	Chemistry	CHM-01
Sviatlana Fedarovich	Regina Lama	Nursing	NRS-05
Michael Feldman	Irina A Sekerina	Psychology	PSY-10
Kenny Feng	Jane Marcus-Delgado	Political Science and Global Affairs	PSGA-04
Frank Feng	Jane Marcus-Delgado	Political Science and Global Affairs	PSGA-04
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Maximilian Golubowski	Xin Jiang	Engineering and Environmental Science	EES-05
Kyle J Gravitch	Kristen Gillespie-Lynch	Psychology	PSY-05
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Jaclyn A Kateridge	Christina Hagedorn	English/Linguistics	ENG/LING-03
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Kaitlyn Kundmueller	Yumei Huo	Computer Science	CSC-02
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Jacob Lebedinsky	Deborah De Simone	Curriculum and Instruction	C&I-03
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	Barbara Schiano	Nursing	NRS-06
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Heather Mancino	Timothy Gray	English	ENG-01
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Poster Presentations - Student Scholars

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Savannah Patsakos	Michelle Esposito	Biology	BIO-03
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