



**Bmcc** Annual Research Symposium



# IBARS

**May 10th, 2023**





**Wednesday, May 10th, 2023**  
**PROGRAM**

TIME	EVENT	ROOM
9:00am–10:00am	<b>REGISTRATION &amp; BREAKFAST</b>	<b>Main Building ~ N453</b>
10:00am-10:15am	<b>OPENING REMARKS &amp; KEYNOTE SPEAKERS</b>  <b>Opening Remarks:</b> <ul style="list-style-type: none"> <li>• Anthony E. Munroe, Ed.D., President</li> <li>• Erwin Wong, Ph.D., Provost and Senior Vice President of Academic Affairs</li> <li>• Odaelys Pollard, Ph.D., Director of Research</li> </ul>	
10:15am-10:45am	<b>Keynote Speaker – Devon Collins, PhD</b>	
10:45am-11:30pm	<b>STUDENT ORAL PRESENTATIONS</b> <ul style="list-style-type: none"> <li>• Marshall Lee – Science</li> <li>• Paul Hedreen - Economics</li> <li>• Ragheeb Khan – Computer Information Systems</li> <li>• Kristine Acevedo – Social Sciences</li> </ul>	
11:30pm-12:30am	<b>FACULTY/STUDENT PANEL DISCUSSION</b> <b>"Research at BMCC: Navigating Research, Mentorship, and Teaching"</b> <ul style="list-style-type: none"> <li>• Prof. Roderick (Shane) Snipes – Assistant Professor – Business Management</li> <li>• Prof. David Caicedo – Associate Professor – Social Sciences, Human Services and Criminal Justice</li> <li>• Prof. Mohammad Azhar – Associate Professor – Computer Information Systems</li> <li>• Prof. Joanna Giza – Assistant Professor - Science</li> </ul>	
12:30am-1:30pm	<b>LUNCH BREAK</b>	
1:30pm - 4:30pm	<b>Poster Symposium</b>	<b>Richard Harris Terrace</b>
<b>POSTER SYMPOSIUM</b>		
1:00pm-1:15pm	<b>Registration opens, Doors Open (Presenters only)</b>	<b>Richard Harris Terrace</b>
1:15pm-2:15pm	<b>Registration for Judges, Doors Open (Judges only)</b>	
2:15pm-4:30pm	<b>Poster Session (Doors open for everyone)</b>	
4:30pm-4:45pm	<b>Mentor Recognition</b>	
4:45pm-4:55pm	<b>Awards and Presenter Recognition</b>	
4:55pm-5:00pm	<b>Closing Remarks</b>	
5:00pm-5:15pm	<b>Certificate Distribution and Poster Collection</b>	

## Message from the President

Dear Students:

I am thrilled to welcome the 2023 BMCC Annual Research Symposium back onsite for the first time since 2019 when the pandemic forced us to take our studies and our work online in 2020. This annual event highlights the remarkable work of you as student researchers and your projects, which will be a source of much pride I am certain, of your faculty mentors as well. It is an opportunity for us to highlight your hard work and dedication to your fields of study.



I want to personally congratulate each and every one of you who will be presenting at this year's symposium. Your research is a testament to your passion and commitment to academic pursuits. I am confident that your presentations will be insightful, thought-provoking, and inspiring.

I encourage all students to attend and support their peers. I also encourage faculty and staff to attend the oral and/or poster presentations and recognize the outstanding academic and research scholarship of our students. This is an opportunity for us to come together as a community and celebrate the incredible accomplishments at BMCC.

Sincerely,

A handwritten signature in blue ink, which appears to read "Anthony E. Munroe". The signature is fluid and cursive, with a long horizontal line extending to the right.

Anthony E. Munroe  
President

## Message from the Provost and Senior Vice President of Academic Affairs

Dear Students:

I am extremely pleased to attend the 2023 BMCC Annual Research Symposium. It provides an amazing venue for you to showcase the remarkable research that you have conducted under the guidance of some of the best faculty at BMCC. These poster sessions and projects reflect the hard work, dedication, time, and commitment that you have put in; they reflect the unique research experience that you have gained – that typically only graduate students experience. They reflect the success that you have achieved at BMCC. We are proud and in awe of what you have accomplished and are indebted also to all the faculty who have given their time and expertise to mentor you. We look forward to the years ahead as you continue to study, conduct research, and show the world how great BMCC students and graduates are. Congratulations to you and your faculty mentors for what you have and will accomplish.



Respectfully yours,

A handwritten signature in black ink, which appears to read "Erwin J. Wong". The signature is fluid and cursive, with a long, sweeping tail.

Erwin J. Wong  
Provost and Senior Vice President of Academic Affairs

## Message from the Director of Research

Dear Students, Faculty, & Staff:

To the students and faculty, I want to say thank for all the hard work and dedication that you have put into your projects and for making 2023 BARS a success! This year's BARS is a momentous occasion, it is the first time we're all gathering *in person* to celebrate all the scholarly work done throughout the year since the COVID-19 pandemic began. Your dedication to advance knowledge in your respective fields is apparent by the work seen in today's posters and oral presentations. This event is an exciting opportunity for the BMCC community to showcase the fruits of your labor and engage in thoughtful discussions with your peers. I encourage you all to approach this event with an open mind and a willingness to learn from one another, as the sharing of diverse perspectives and ideas is essential to the progress of scholarly inquiry. The work presented at BARS represents the culmination of countless hours of experimentation, analysis, and collaboration.



Our office would like to thank the Office of Academic Affairs for its support to put on this event. We would also like to thank the faculty and staff who volunteered their time today to participate as judges and our BARS volunteers for all the work they've done today and behind the scenes. To our small, but mighty team in the Office of Research – thank you for spearheading an amazing BARS 2023!

Wishing you all the best,

A handwritten signature in black ink, appearing to read 'Odaelys Pollard'.

Odaelys Pollard, PhD  
Director of Research

## **BARS 2023 Keynote Speaker**

Devon Collins, PhD (he/him) is a New York-based neuroscientist and educator who now focuses on science education, research training, and science communication. He has worked with science learners of all ages and backgrounds in the New York area for several years in the lab, through informal science education organizations, and in the NYC school system. He believes that science is for everyone, and that anyone can learn and appreciate science.



Originally from the Midwest, Devon completed his BA in biology and psychology at Ball State University in Indiana. There, his undergraduate research focused on exploring changes in synaptic connectivity in the peripheral nervous system in models of aging and amyotrophic lateral sclerosis. After Ball State, Devon continued his research training at the University of Chicago, where he studied neurodegeneration in rare spinocerebellar ataxias and myasthenias.

Devon completed his PhD and postdoctoral work in behavioral pharmacology at the Rockefeller University in Dr. Mary Jeanne Kreek's Laboratory of the Biology of Addictive Diseases. There, he explored how intrinsic organismal factors such as age, genetic variation, stress responsivity, and hormonal activity affect brain responses to opioids.

During graduate school, Devon became passionate about science education, research mentorship, and the public face of science. Since graduating, Devon has focused on education and research training for young scientists. He has served as biology faculty at Bard Early College - Manhattan, worked as a science educator and programmatic lead at BioBus, a mobile lab-based STEM education non-profit. Devon is currently the program manager for outreach and engagement with RockEDU Science Outreach at the Rockefeller University. His role centers on developing and managing public science outreach, education, and communication programs.



# POSTER SESSION: STUDENT PRESENTERS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

#	PRESENTER	DISCIPLINE	PROJECT TITLE	MENTOR	FUND
1	Sophia Pisarevskiy	Science	Absorption of Copper (II) Ions by Tea Leaves	Abel Navarro, Ph.D	BFF
2	Nathaly Ajila	Science	Absorption of Cobalt (II) Ions by Fruit Wastes	Abel Navarro, Ph.D	CRSP
3	Brandon Campos	Science	Absorption of Copper (II) Ions by Tea Leaves	Abel Navarro, Ph.D	BFF
4	Fatma Zehra Gulluce	Science	Absorptive Interactions between Marine Algae and Gold (III) Ions in Aqueous Solutions	Abel Navarro, Ph.D	CRSP
5	Sarina Velez	Science	Application Of Marine Algae For The Uptake Of Gold (III) Ions From Aqueous Solutions	Abel Navarro, Ph.D	CRSP
6	Alexandra Escobar	Linguistics	Police Interrogating Discourse: The State of Ohio v. Anthony Sowell	Prof. Shoba Bandi-Rao	Independent Study
7	Paul Hedreen*	Economics	Climate in the Cafeteria	Christine Farias, Ph.D	Independent Study
8	Daniella Yurich	Linguistics	Language As Obstetric Violence: Narratives from Care Providers and Birthing People	Christine Jacknick, Ph.D	CRSP
9	Abigail Meyer	Science	Potential antioxidant, cytotoxic, antiviral, and antibacterial activities of extracts from three species of <i>Piper</i> , a pepper	Christine Priano, Ph.D	NSF-REU
10	Dani Rojas	Mathematics	Using PINNs to solve complex differential equations	Christopher McCarthy, Ph.D	CRSP
11	Lucinda Fernandez	Mathematics	Physics Informed Neural Networks	Christopher McCarthy, Ph.D	CRSP
12	Christal Mapson	Social Sciences	Music and Academic Performance	David Caicedo, Ph.D	BFF



## POSTER SESSION: STUDENT PRESENTERS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

NO.	PRESENTER	DISCIPLINE	PROJECT TITLE	MENTOR	FUND
13	Kristine Acevedo*	Social Sciences	System Justification and Society	David Caicedo, Ph.D	BFF
14	Quame Verneuil	Social Sciences	Academic Discovery of the Unknown: Existential Anxiety and Academic Procrastination	David Caicedo, Ph.D	BFF
15	Giselle Vargas	Social Sciences	A Deeper Look Into Relationship TV Consumption Children's Social and Behavioral Patterns	David Caicedo, Ph.D	BFF
16	Laquanna Lynah	Mathematics	Color Analyzing Butterflies	Johannes FAMILTON, Ph.D	CRSP
17	Ragheeb Khan*	Computer Informations Systems	Leveraging AI and Gamification to Improve Distance Language Education	Hao Tang, Ph.D	CRSP
18	Jun ha (Gabe) Kim	Computer Informations Systems	Investigate Vibration and Audio Feedback of Various Cane Tips for Blind Pedestrians	Hao Tang, Ph.D	LSAMP
19	Jessie Lee	Computer Informations Systems	Improve Volunteer Participation and Engagement of a Crowdsourcing Web Application for Accessibility Data Collection	Hao Tang, Ph.D	BFF/LSAMP
20	Qingquan Li	Computer Informations Systems	Designing a Crowdsourced App for Enhancing Storefront Accessibility for Visually Impaired Individuals	Hao Tang, Ph.D	CRSP
21	Xhulio Docaj	Science	The effects of Growth Hormone-related peptides, Ipamorelin and CJC 1295, on SHSY5Y cells as an exemplary to Parkinson's Disease	Jane Tezapsidis, Ph.D	BFF
22	Zarin Maisha	Science	BDNF Met Prodomain Changes BDNF Signaling	Joanna I Giza, Ph.D	CRSP
23	Fadi Ahmed	Science	Drug Repurposing to Explore Novel HIV Protease Inhibitors	Jose A. Fernandez Romero, Ph.D	CRSP
24	Lilian Guzman	Science	Griffithsin to Prevent Human Immunodeficiency Virus Infections	Jose A. Fernandez Romero, Ph.D	CRSP

# POSTER SESSION: STUDENT PRESENTERS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

NO.	PRESENTER	DISCIPLINE	PROJECT TITLE	MENTOR	FUND
25	Marshall Lee*	Science	The Properties of Moringa that Promote Sea Urchin Egg Viability	Lalitha Jayant, Ph.D	CRSP
26	Lionel Cesaire	Science	The interplay between SIRT7 and p53 in tumorigenesis	Lourdes Serrano, Ph.D	CRSP
27	Mustafa Donmez	Computer Informations Systems	Designing Educational Robot Games about Daily Activity Living for Children with ASD	Mohammad Azhar, Ph.D	BFF
28	Abir Mahmood	Computer Informations Systems	Towards a Web-based Accessible Platform for Family Members of Patients with Dementia	Mohammad Azhar, Ph.D	LSAMP
29	Peter Vaiciulis	Computer Informations Systems	Towards an Accessible Web-Solution for Older Adults with Dementia, Their Caregivers, and Family Members	Mohammad Azhar, Ph.D	LSAMP
30	Yusuf Taha	Computer Informations Systems	Towards Robotic Game Therapeutic Intervention for Children with Autism	Mohammad Azhar, Ph.D	CRSP
31	Frances George	Media Arts and Technology	Doll House Central	Owen Roberts, Ph.D	Independent study
32	Wenjie Huang	Science	Properties of Coulomb interaction in exotic two body systems	Shalva Tsiklauri, Ph.D	BFF
33	Zion Blake	Science	Analyzing the electrical patterns of the heart and integrating motion detectors into PHY laboratory curriculum	Shalva Tsiklauri, Ph.D	CRSP
34	Rufaila Chakuru	Science	The Significance of Elementary Algebra Proficiency for Nursing Chemistry Success	Sumeyra Yumak, Ph.D	Independent Study
35	Ashley Wen	Science	Comparing and Contrasting the Heliocentric and Geocentric Models of the Solar System	Vasiliy S Znamenskiy, Ph.D	Honors Project
36	Angel Cortez	Science	Do Aliens Exist?	Vasiliy S Znamenskiy, Ph.D	Honors Project
37	Shalinda Spencer	Science	Is there other life in the universe?	Vasiliy S Znamenskiy, Ph.D	Honors Project
38	Remy Rodriguez	Science	Is there other life in the universe?	Vasiliy S Znamenskiy, Ph.D	Honors Project

## POSTER SESSION: STUDENT PRESENTERS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

NO.	PRESENTER	DISCIPLINE	PROJECT TITLE	MENTOR	FUND
39	Nija DeVries	Science	Mirror Dimension	Vasiliy S Znamenskiy, Ph.D	Honors Project
40	Abdul Walid	Science	Comparing and Contrasting the Heliocentric and Geocentric Models of the Solar System	Vasiliy S Znamenskiy, Ph.D	Honors Project
41	Barbara Abreu	Science	Northern light brain	Vasiliy S Znamenskiy, Ph.D	Honors Project
42	Ana Baez	Science	Exploring the Universe: A Focus on General Astronomy	Vasiliy S Znamenskiy, Ph.D	Honors Project
43	Maymuna Tamanna	Science	The study of chatGPT efficiency solving Rotational Motion and Gravitation problems	Vasiliy S Znamenskiy, Ph.D	Honors Project
44	Andrew Swift	Science	Role of AI in Education of General Physics	Vasiliy S Znamenskiy, Ph.D	Honors Project
45	David Mellado	Science	Do Aliens Exist	Vasiliy S Znamenskiy, Ph.D	Honors Project
46	Josh Oodit	Science	Do aliens exist?	Vasiliy S Znamenskiy, Ph.D	Honors Project
47	Arlet Lopez	Science	Do aliens Exist?	Vasiliy S Znamenskiy, Ph.D	Honors Project
48	Seth Sanchez	Science	What is the Behavior of an Exo Planet?	Vasiliy S Znamenskiy, Ph.D	Honors Project
49	Eric Gonzalez	Science	Challenges of Terraforming	Vasiliy S Znamenskiy, Ph.D	Honors Project
50	Amari Morris	Science	Into The Unknown	Vasiliy S Znamenskiy, Ph.D	Honors Project

## POSTER SESSION: STUDENT PRESENTERS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

NO.	PRESENTER	DISCIPLINE	PROJECT TITLE	MENTOR	FUND
51	Keanu Bushell	Science	Will artificial intelligence help us uncover the unknown?	Vasiliy S Znamenskiy, Ph.D	Honors Project
52	Abigail Ortiz	Science	Is there life in another universe?	Vasiliy S Znamenskiy, Ph.D	Honors Project
53	John Guzman	Science	Brief Introduction to the Heliocentric and Geocentric Models of the Solar System	Vasiliy S Znamenskiy, Ph.D	Honors Project
54	Samantha Guerrier	Science	Human vs Society	Vasiliy S Znamenskiy, Ph.D	Honors Project
55	Melody Hicks	Science	Is the Universe Infinite?	Vasiliy S Znamenskiy, Ph.D	Honors Project
56	Reginald Greene	Science	Black Holes and Evolution of Galaxies	Vasiliy S Znamenskiy, Ph.D	Honors Project
57	Ashley Armoogan	Science	Mystifying Black Holes	Vasiliy S Znamenskiy, Ph.D	Honors Project
58	Bryan Garcia	Science	The Physics of Black Holes and their Importance in Understanding the Universe	Vasiliy S Znamenskiy, Ph.D	Honors Project
59	Alassane Dieng	Science	Dark matter	Vasiliy S Znamenskiy, Ph.D	Honors Project
60	Jade Hall	Science	Exploring the Possibility of Extraterrestrial Life: The Existence of Aliens	Vasiliy S Znamenskiy, Ph.D	Honors Project
61	William Perlman	Science	Music in Space	Vasiliy S Znamenskiy, Ph.D	Honors Project
62	Roaa Shalabi	Science	Aliens	Vasiliy S Znamenskiy, Ph.D	Honors Project

## POSTER SESSION: STUDENT PRESENTERS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

NO.	PRESENTER	DISCIPLINE	PROJECT TITLE	MENTOR	FUND
63	Amber Urena	Science	What makes a galaxy?	Vasiliy S Znamenskiy, Ph.D	Honors Project
64	Yusuf Mohammed	Computer Informations Systems	Computer Vision	Younes Benkarroum, Ph.D	BFF
65	Jabari Wilson	Science	Wormholes and Time Travel Theories	Vasiliy S Znamenskiy, Ph.D	Honors Project
66	Severin Hougue	Science	The Effective of ChatGPT in Solving Physics Problems	Vasiliy S Znamenskiy, Ph.D	Honors Project
67	Carlene Hunte-Nelson	Business Management	Impact of Micromobility in Brooklyn	Prof. Roderick (Shane) Snipes	CEEP

\* Indicates students presenting nano talks

# POSTER SESSION

## STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>1</b>	Presenter:	<b>Sophia Pisarevskiy</b>
	Co-Author(s):	<b>Brandon Campos, Armin Osmanovic</b>
	Mentor:	<b>Abel E. Navarro</b>
	Discipline:	<b>Science Department</b>
	Title:	<b>Absorption of Copper (II) Ions by Tea Leaves</b>
	Funding:	<b>BMCC FOUNDATION FUND</b>
<p>Due to the extensive use of copper water pipes and dumping of industrial wastewater into streams and rivers, copper makes its way through drinking water sources. The contamination of copper in drinking water then creates the risk of developing deteriorating health issues. Therefore, easily available and cost-effective adsorbents that could remove these copper contaminants in drinking water are highly necessary. Adsorption is an effective method in the removal of organic and inorganic compounds due to its surface and textural properties. The purpose of this study was to observe the adsorption kinetics of Copper (II) ions by PepsiCo tea leaves. By measuring levels of uptake, we were able to determine tea biomass to be the most effective adsorbent at removing Copper (II) ions from a solution. The morphological and textural characteristics of the adsorbents were assessed by scanning electron microscopy (SEM) before and after adsorption. Increased porosity decreased the surface area and amount of adsorption. Batch experiments testing the pH, mass, particle size, salinity, heavy metal, crowding, dye, and time dependence effects were run to understand how each of the variables affected the uptake of copper. Maximum adsorption was reached with 100 mg of sample and a particle size of 75-106 micrometers at a pH of 6.5. Overall, this study shows high support towards tea leaves as a major contribution to a cost-effective solution for the removal of pollutants from wastewaters.</p>		

<b>2</b>	Presenter:	<b>Nathaly Ajila</b>
	Mentor:	<b>Abel Navarro</b>
	Discipline:	<b>Science</b>
	Title:	<b>Adsorption of Cobalt(II) Ions by Fruit Wastes</b>
	Funding:	<b>CUNY RESEARCH SCHOLARS PROGRAM</b>
<p>Cobalt is a chemical element found in small amounts combined with other elements on rocks and soil. It has magnetic properties similar to iron; it makes parts in aircraft engines, gas turbines, and corrosion-resistant alloys. Cobalt has beneficial and harmful effects on human health; it is a component of vitamin B12 that supports the production of red blood cells. It can also cause allergies and affect the heart, thyroid, and kidneys. To eliminate Cobalt present in the water, this study used the Adsorption method, which attracts cobalt ions onto the surface of a solid; in this case, the solid or adsorbent used are various dried fruit wastes like mango peels, avocado skin, papaya seeds, and orange peels which makes this process a low-cost, effective method. This project studied the time dependence of the adsorption of cobalt in batch systems using synthetic cobalt (II) solutions. Kinetics adsorption models were fitted to the adsorption curves. These models included first-, second-, Elovich, and Intraparticle diffusion models to explore the adsorption mechanism. Scanning electron microscopy indicated the potential of these fruit wastes as potential adsorbents of heavy metal ions, especially cobalt.</p>		

## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>3</b>	Presenter:	<b>Brandon Campos</b>
	Co-Author(s):	<b>Sophia Pisarevskiy, Armin Osmanovic</b>
	Mentor:	<b>Abel Navarro</b>
	Discipline:	<b>Chemistry</b>
	Title:	<b>Absorption of Copper (II) Ions by Tea Leaves</b>
	Funding:	<b>BMCC FOUNDATION FUND</b>

Due to the extensive use of copper water pipes and dumping of industrial wastewater into streams and rivers, copper makes its way through drinking water sources. The contamination of copper in drinking water then creates the risk of developing deteriorating health issues. Therefore, easily available and cost-effective adsorbents that could remove these copper contaminants in drinking water are highly necessary. Adsorption is an effective method in the removal of organic and inorganic compounds due to its surface and textural properties. The purpose of this study was to observe the adsorption kinetics of Copper (II) ions by PepsiCo tea leaves. By measuring levels of uptake, we were able to determine tea biomass to be the most effective adsorbent at removing Copper (II) ions from a solution. The morphological and textural characteristics of the adsorbents were assessed by scanning electron microscopy (SEM) before and after adsorption. Increased porosity decreased the surface area and amount of adsorption. Batch experiments testing the pH, mass, particle size, salinity, heavy metal, crowding, dye, and time dependence effects were run to understand how each of the variables affected the uptake of copper. Maximum adsorption was reached with 100 mg of sample and a particle size of 75-106 micrometers at a pH of 6.5. Overall, this study shows high support towards tea leaves as a major contribution to a cost-effective solution for the removal of pollutants from wastewaters.

<b>4</b>	Presenter:	<b>Fatma Zehra Gulluce</b>
	Co-Author(s):	<b>Sarina Velez</b>
	Mentor:	<b>Abel Navarro</b>
	Discipline:	<b>Science</b>
	Title:	<b>Absorptive Interactions between Marine Algae and Gold (III) Ions in Aqueous Solutions</b>
	Funding:	<b>CUNY RESEARCH SCHOLARS PROGRAM</b>

With increasing demands, the gold market continues to grow and the search for new mines, less expensive extractions, and purifying techniques are of top priority. As gold is a highly desirable metal with unique properties, it is suitable for many applications and industries. Today, toxic extractions involving cyanide are still being used, causing severe consequences for ecosystems and human health. This issue further highlights the need to develop newer and safer techniques for the recovery and capture of gold in aqueous systems. In this project, the use of marine algae *Lessonia nigrescens* Bory (L13) and *Macrocystis integrifolia* Bory (S12) were closely examined for the uptake of gold (III) ions in aqueous solutions. Batch equilibrium studies were conducted at room temperature to evaluate the role of initial solution pH, adsorbent dose, and salinity on the adsorption of Au<sup>+3</sup> ions. Adsorption isotherms models were fitted to the data, reporting maximum Langmuir adsorption capacities. Gold (III) adsorption was maximized at an initial solution pH between 4 and 5 and slightly favored with sodium nitrate. Scanning electron microscopy also indicates that L13 and S12 pose favorable morphological and textural properties for the uptake of metal ions. Overall, this study showcases the potential of inexpensive marine algae as eco-friendly materials for the removal of precious metals from aqueous solutions.

## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>5</b>	Presenter:	<b>Sarina Velez</b>
	Co-Author(s):	<b>Fatma Zehra Gulluce</b>
	Mentor:	<b>Abel Navarro</b>
	Discipline:	<b>Science Department</b>
	Title:	<b>Application Of Marine Algae For The Uptake Of Gold (III) Ions From Aqueous Solutions</b>
	Funding:	<b>CUNY RESEARCH SCHOLARS PROGRAM</b>

With increasing demands, the gold market continues to grow and the search for new mines, less expensive extractions, and purifying techniques are of top priority. As gold is a highly desirable metal with unique properties, it is suitable for many applications and industries. Today, toxic extractions involving cyanide are still being used, causing severe consequences for ecosystems and human health. This issue further highlights the need to develop newer and safer techniques for the recovery and capture of gold in aqueous systems. In this project, the use of marine algae *Lessonia nigrescens* Bory (L13) and *Macrocystis integrifolia* Bory (S12) were closely examined for the uptake of gold (III) ions in aqueous solutions. Batch equilibrium studies were conducted at room temperature to evaluate the role of initial solution pH, adsorbent dose, and salinity on the adsorption of Au<sup>+3</sup> ions. Adsorption isotherms models were fitted to the data, reporting maximum Langmuir adsorption capacities. Gold (III) adsorption was maximized at an initial solution pH between 4 and 5 and slightly favored with sodium nitrate. Scanning electron microscopy also indicates that L13 and S12 pose favorable morphological and textural properties for the uptake of metal ions. Overall, this study showcases the potential of inexpensive marine algae as eco-friendly materials for the removal of precious metals from aqueous solutions.

<b>6</b>	Presenter:	<b>Alexandra Escobar</b>
	Co-Author(s):	<b>Dani Rojas, Marie-Helene Medjo</b>
	Mentor:	<b>Shoba Bandi-Rao</b>
	Discipline:	<b>Academic Literacy and Linguistics</b>
	Title:	<b>Police Interviews and Interrogation: The State of Ohio v. Anthony Sowell</b>
	Funding:	<b>Independent Study</b>

We combed through the interrogating discourse used in the 134-page transcript of the State of Ohio v. Anthony Sowell case to examine whether Sowell's signs of insanity expressed in his confessions were ignored by the detectives. Sowell presents two very different sides of himself during the interrogation. At times, Sowell talks about his good behavior, expresses that he is being victimized, etc. Other times, Sowell exhibits a different personality when he expresses hearing voices in his head telling him to do "hateful" things, but unable to recall the horrific acts. Research shows that mentally ill suspects are more vulnerable during police interrogations that use the Reid technique. For instance, an officer tells Sowell, "We know you did it" and offers a theory with vivid details that Sowell could have unconsciously absorbed and regurgitated during the interrogation. Based on our research, we conclude that a mental health expert should have been present with Sowell during the interrogation, regardless of the fact that Sowell did commit the heinous crimes.



## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>7</b>	Presenter:	<b>Paul Hedreen</b>
	Co-Author(s):	<b>Tenzin Sinon</b>
	Mentor:	<b>Christine Farias</b>
	Discipline:	<b>Economics</b>
	Title:	<b>Climate in the Cafeteria</b>
	Funding:	<b>Independent Study</b>
<p>The global climate crisis is a problem that will affect all aspects of human life, and thus solutions need to be implemented in all human settings. BMCC is not excluded, and thus it is our goal to find a way to start to mitigate BMCC’s climate impact, and begin a project towards that end. Thus is the question guiding my research: What can the BMCC community practically do to reduce their climate impact effectively? When beginning a project such as this, it is important to find a goal that is worthwhile, but also not unrealistic. It is easy to implement measures that do very little, and very difficult to take on entire crises. We believe that limiting food waste at BMCC is attainable, and will actually make a difference. We will design and implement a project that will have a lasting effect on BMCC’s food waste levels, and by extension its climate impact. Of course, this project alone will not alleviate the BMCC community’s responsibility in the climate crisis, but it will serve as a demonstration to students, staff and faculty members that climate solutions can be practical, homegrown, and lasting. It will show BMCC community members that change is possible, and may inspire people to take up projects of their own, at BMCC or beyond.</p>		

<b>8</b>	Presenter:	<b>Daniella Yurich</b>
	Mentor:	<b>Christine Jacknick</b>
	Discipline:	<b>Linguistics</b>
	Title:	<b>Language As Obstetric Violence: Narratives from Care Providers and Birthing People</b>
	Funding:	<b>CUNY RESEARCH SCHOLARS PROGRAM</b>
<p>Research on health communications is relatively abundant and vast, however there are few studies on the interactions between birthing people and their reproductive care providers. To get a closer and more personal look at these experiences, we are interviewing obstetric/gynecological providers and birthing people to record their narratives. We take a particular interest in how interviewees talk about their experiences and the influence that language has on their interactions with care providers. This includes instances of “reported speech” (Holt &amp; Clift 2006) where interviewees recount what was said in the past by them or to them. By utilizing stance analysis and conversation analysis, we show how the ways that participants speak of their healthcare interactions can influence the overall perceptions of their care. Maternal mortality rates in this country (and NYS and NYC particularly) and high incidence of obstetric violence are public health crises, and not ones that can necessarily be solved by an individual research project. However, this research shines a light on a particular form of this violence against birthing people that is not often recognized: the language and interactions they experienced. Looking closely at participant narratives and analyzing their reported speech shows how language is attributed to obstetric violence.</p>		

**POSTER SESSION**  
**STUDENT PRESENTER ABSTRACTS**  
 RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>9</b>	<b>Presenter:</b>	<b>Abigail Meyer</b>
	<b>Co-Author(s):</b>	<b>Salmah Akbar, Drusilla Sheridan, Haley Cogburn, José A. Fernández Romero, Brian Rafferty, Adolfin Koroch, and Christine Priano</b>
	<b>Mentor:</b>	<b>Christine Priano</b>
	<b>Discipline:</b>	<b>Biology</b>
	<b>Title:</b>	<b>Potential antioxidant, cytotoxic, antiviral, and antibacterial activities of extracts from three species of <i>Piper</i>, a pepper</b>
	<b>Funding:</b>	<b>Summer NSF-REU</b>
<p>Peppers of the genus <i>Piper</i> are commonly used as spices and traditional medicines. The aim of this study was to identify total phenolic content and antioxidant, cytotoxic, antiviral, and antibacterial activities of extracts from seven commercial sources of <i>P. nigrum</i>, <i>P. guineense</i>, and <i>P. borbonense</i>. Crude extracts were prepared in different solvents from dried crushed seeds for each sample. Total phenolic compounds and antioxidant capacities were determined using the Folin-Ciocalteu assay and the 2,2'-azino-bis -ABTS assay. The cytotoxicity in different cell lines and viral entry inhibition by aqueous extracts were explored using the XTT colorimetric assay and the SARS-CoV-2 Delta variant pseudoviral model. Antibacterial activity was determined by growing <i>Escherichia coli</i> and <i>Bacillus subtilis</i> in microplate cultures in the presence or absence of each aqueous extract and monitoring growth by spectrophotometry. Variations in total phenolic content and antioxidant capacity between samples and extraction solvents were observed. Samples with high total phenolics exhibited the highest antioxidant capacity. The SARS-CoV-2 Delta variant pseudoviral model in HeLa ACE-2 cells showed half-maximal effective concentrations (EC 50 values) between 0.7 and 3.7 mg/mL. The half-maximal cytotoxic concentration and EC 50 ratio (selective index) showed promising viral entry inhibition in four of seven extracts with selective indexes between 8.2 and 14.9. Aqueous extracts from <i>P. borbonense</i> showed the best antiviral selectivity. The cytotoxicity in Caco-2 cells showed that most of the aqueous extracts did not decrease cell viability, with no dose-response observed. Whereas <i>P. guineense</i> and <i>P. borbonense</i> extracts inhibited growth of <i>B. subtilis</i>, there was no activity observed against <i>E. coli</i>. Differential results are possibly due to differences in bacterial cell wall structure. Samples of <i>P. borbonense</i> that exhibited the highest suppression of <i>B. subtilis</i> growth had relatively high phenolic content and antiviral activity. The data collectively support a scientific basis for traditional health benefits of <i>Piper</i> extracts and warrant further investigation into the actions of specific phenolic compounds present in these extracts and their potential biological activities.</p>		

## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>10</b>	Presenter:	Dani Rojas
	Mentor:	Christopher McCarthy
	Discipline:	Math department
	Title:	Using PINNs To Solve Complex Differential Equations
	Funding:	CUNY RESEARCH SCHOLARS PROGRAM
<p>The ability to accurately solve differential equations is essential for many engineering fields, such as electricity and mechanical. Nevertheless, solving these equations can get very complicated. In many occasions, a numerical method is needed to get an approximation to the real solutions. However, most numerical methods that exist consume a lot of computer power, or the solution they offer are not very accurate. To address these problems, my classmate, my professor, and I are working in a machine learning program called PINNs which is able to analytically solve differential equations or reduce the amount of computer power produced by numerical methods. Once we finish setting up the computational program, we will test it on different configurations of the Heat-differential equation to make sure it works. The initial expectations for this program are that: it can solve basic differential equations, it has the capability of learning how to solve new differential equations without any human intervention, and it will be able to master Fourier series and Laplace transformations. To conclude, this program could have a major impact on the ability of engineers to solve complex physics problems expressed in differential equations in a more pragmatic and efficient manner.</p>		

<b>11</b>	Presenter:	Lucinda Fernandez
	Co-Author(s):	Professor Dr. Christopher McCarthy
	Mentor:	Christopher McCarthy
	Discipline:	Mathematics
	Title:	Physics Informed Neural Networks (PINNs) for heat equation
	Funding:	CUNY RESEARCH SCHOLARS PROGRAM
<p>Our research focuses on developing Physics Informed Neural Networks (PINNs) coded in Python and TensorFlow to solve differential equations like the one-dimensional heat equation. The heat equation, also known as the diffusion equation, is a partial differential equation (PDE). PDE's are differential equations that have more than one independent variable. The one-dimensional heat equation predicts the temperature in a heated bar. We are comparing the solutions we get using PINNs to solutions obtained using other methods, like the Fourier Series method. We are trying to understand how changing the topology of the neural network affects the solution generated by the PINN.</p>		

**POSTER SESSION**  
**STUDENT PRESENTER ABSTRACTS**  
 Gymnasium – 1<sup>st</sup> Floor Northside, 1:00pm – 5:00pm

<b>12</b>	Presenter:	<b>Christal Mapson</b>
	Mentor:	<b>David Caicedo</b>
	Discipline:	<b>Social Sciences</b>
	Title:	<b>Music and Academic performance</b>
	Funding:	<b>BMCC FOUNDATION FUND</b>
<p>Much research had been done on the relationship between musical ability and academic performance. Playing a musical instrument increases cognitive ability. However, there is a lack of research evidence on the relationship between students who actively play a musical instrument but do not take a music course, and their academic performance. The aim of this study was to find out what is the relationship between students who actively play 1 or more musical instrument and their GPAs. We analyzed the data from 500 self-reported online questionnaires completed by BMCC non-music majors who play one or more musical instruments. The Pearson correlation analysis showed that students who actively play one or more musical instruments have a GPA of 3.4 or higher. This confirmed the hypothesis that there is a positive correlation between students who play one or more musical instrument and their GPAs. This can extend the knowledge of previous research done on this topic by suggesting that the musical abilities of students relate positively to how they perform academically.</p>		

<b>13</b>	Presenter:	<b>Kristine Acevedo*</b>
	Mentor:	<b>David Caicedo</b>
	Discipline:	<b>Social Sciences</b>
	Title:	<b>System Justification and Society</b>
	Funding:	<b>BMCC FOUNDATION FUND</b>
<p>Following the theory that political conservatism is a form of system justification, it occurs in two ways: a) when a system is under attack (e.g., demographic shifts) or b) when the system’s shortcomings are exposed (e.g., political, socio-economic inequality amongst social groups). The author wants to know if racial minorities move towards conservative ideology when primed with Latino demographic changes in the United States compared to a control message. It is predicted that Black and Latino men, aged 18-35, will indicate a moderate-to-conservative political shift compared to the same demographic in the controlled group, and Black and Hispanic women under 35 in the experimental and control group. The author applied a quantitative approach and recruited individuals from Borough of Manhattan Community College (BMCC). Participants were then invited to take an in-person “Belief and Social Issues” survey at the Social Services Research Lab (SSRL). This research would be critical to understanding how minority in-groups utilize political policy to protect their status. Moreover, political strategists could use the information to understand the effect demographic shifts would have on future policy and younger racial minority voting blocs.</p>		

**POSTER SESSION**  
**STUDENT PRESENTER ABSTRACTS**  
 RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>14</b>	Presenter:	<b>Quame Verneuil</b>
	Mentor:	<b>David Caicedo</b>
	Discipline:	<b>Social Sciences</b>
	Title:	<b>Academic Discovery of the Unknown: Existential Anxiety and Academic Procrastination</b>
	Funding:	<b>BMCC FOUNDATION FUND</b>
<p>Procrastination is a phenomenon that plagues almost everyone. In university, the spontaneous freedom one gains, coupled with the demand for higher-quality work stunts the ability to juggle assignments while prioritising due dates. Students are plagued with existential anxiety and an aversion to failure so they rely on procrastination for self-gratification to mask the doubt they have in their abilities. This study examines the relationship between academic procrastination and existential anxiety, and the role of self-esteem as an anxiety buffer in coping with the stress of being a student. The study would be conducted on undergraduate students from a diverse population. Students completed the General Procrastination Scale, Beck Depression Inventory, Existential Concerns Questionnaire, Frost Multidimensional Perfectionism Scale-Brief, and Rosenberg’s Self-Esteem Scale. It is expected that there would be a positive relation between procrastination, existential anxiety and perfectionism, but a negative relation between procrastination and self-esteem. The results of this study will serve as a reference for future endeavours in analysing the causes and effects of procrastination and determining what factors have strong relationships proportional to its effects. In the field of psychology, the use of TMT and understanding anxiety buffers may provide insight into the fields of anxiety, phobia, and compulsions; and further develops methods in helping individuals with these disorders. Further reaches into TMT may highlight how useful fear is as a motivator and catalyst for much of human behaviour and improve methods in analysing the relationship between perfectionism, self-esteem, existential anxiety, and procrastination.</p>		

**POSTER SESSION**  
**STUDENT PRESENTER ABSTRACTS**  
 RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>15</b>	Presenter:	<b>Giselle Vargas</b>
	Mentor:	<b>David Caicedo</b>
	Discipline:	<b>Associate Professor Social Sciences, Human Services and Criminal Justice</b>
	Title:	<b>A Deeper Look Into Relationship TV Consumption Children’s Social and Behavioral Patterns</b>
	Funding:	<b>BMCC FOUNDATION FUND</b>
<p>The correlation between watching television and children's social and behavioral performance is a widely discussed and studied topic. In recent years, children have started watching TV at younger ages than before. More concerning, the time they spend watching TV has also increased. Due to these significant changes, this study aims to reevaluate the relationship by looking at children two to five years old and how the time spent watching TV correlates to their social and behavioral patterns. Participants’ data were collected using a self-report online survey 35% were males, 65% were females, and a mean age of 3.9 years. Television exposure was categorized using the recommended screen time for two to five-year-olds: "low" &lt; 1 hour, "mid" 2-3 hours, and "high" &gt; 3 hours. A modified version of the Child Behavioral Checklist for one-half to five years old was given to parents of children two to five years old. The survey aimed to assess the TV viewing habits of the child, social problems, aggressive behavior, and disinterest in social activities. Results showed a negative relationship between time spent watching TV and social problems, aggressive behavior, and disinterest in social activities. The results imply that a bidirectional relationship exists, and further research is required to establish a causal relationship between the variables.</p>		

<b>16</b>	Presenter:	<b>Laquanna Lynah</b>
	Mentor:	<b>Johannes Familton</b>
	Discipline:	<b>Math</b>
	Title:	<b>Color Analyzing Butterflies</b>
	Funding:	<b>CUNY RESEARCH SCHOLARS PROGRAM</b>
<p>The Monarch migration is endangered. We need to know as much as possible about them. Finding that there is a difference between Male and female orange/Black color ratio is part of the problem. The more we know the differences between the male and females there is a higher chance for us to increase the population. The colors are very similar, and the differences are subtle that only the trained eye could tell the difference between male and female. The approach I took to solve this problem is to photoshop butterfly pictures that Dr. Familton took of the butterflies he raised so that they can be analyzed by a color extractor. When the butterflies are uploaded to this program it breaks down each color by percentages for you to analyze. This process is not straight forward. You must compare the color percentages to the actual colors you see on the wings of the butterfly. The color percentages and the color you see on the wings may not always match therefore you must use your best judgement to determine the actual color of the wing. Once this is done you add all the color percentages to get the total sum. The expected results would be that the males have more orange and less black. And the females have less orange and black compared to male. The implication of my answers is that we will be able to tell male and female monarchs by only knowing their orange to black color ratios.</p>		

## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>17</b>	Presenter:	<b>Ragheeb Khan*</b>
	Mentor:	<b>Hao Tang</b>
	Discipline:	<b>Computer Information Systems</b>
	Title:	<b>Leveraging AI and Gamification to Improve Distance Language Education</b>
	Funding:	<b>CUNY RESEARCH SCHOLARS PROGRAM</b>
<p>Learning foreign languages through distance education can be challenging, as students often require personalized attention and in-person interaction to fully grasp the language. To address this issue, we investigated the effectiveness of AI tools, including ChatGPT and Google Cloud Services, in assisting language learners. Our approach involved developing a video game that utilized these tools to generate dynamic language learning content, allowing students to practice as frequently as needed. We plan to assess the impact of this approach on student performance through before-and-after testing. We expect that students who use this app will gain a more thorough understanding of the language they are studying, leading to improved test scores and overall academic performance. By demonstrating the potential of artificial intelligence in language learning, our study highlights the importance of using innovative technology to enhance education.</p>		

<b>18</b>	Presenter:	<b>Jun ha (Gabe) Kim</b>
	Mentor:	<b>Hao Tang</b>
	Discipline:	<b>Computer science</b>
	Title:	<b>Analyzing Multimodal Sensor Feedback of White Canes to Classify Surface Materials</b>
	Funding:	<b>Louis Stokes Alliance for Minority Participation</b>
<p>Map applications on the market today do not offer any easy way for users to access data pertaining to accessibility features or quality of a given sidewalk. This prevents disabled individuals from enjoying unfettered access throughout a given city; the simple omission of a street ramp, for instance, prevents those with ambulatory disabilities from crossing a street. To help disabled individuals move around an urban environment, a white cane has been outfitted with a "metal glide cane tip" at its tail end (i.e. where the cane meets the ground). This was chosen because it provides satisfactory tactile and auditory feedback to both visually impaired users and the purposes of our research project, which classify sidewalk surface materials based on tactile and auditory feedback using a multimodal machine learning approach. However, the metal tip is prone to sticking to imperfections in sidewalks, resulting in non-seamless data collection. Further research has revealed that a multitude of alternative candidates exist including: pencil, roller, marshmallow and hockey tips. The objective is thus to determine if such alternatives are better suited for data collection, and whether the collected multimodal data contains sufficient features for a machine learning approach to understand surface materials. To determine which tip is superior, this study will analyze the audio and vibration feedback on a variety of street surfaces (sidewalks, subway grates, etc.) in New York. The cane tip that is able to capture data seamlessly, without loss of key data (audio and movement feedback), shall ultimately be chosen.</p>		

**POSTER SESSION**  
**STUDENT PRESENTER ABSTRACTS**  
 RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>19</b>	Presenter:	Jessie Lee
	Mentor:	Hao Tang
	Discipline:	Computer Information Systems
	Title:	Improve Volunteer Participation and Engagement of a Crowdsourcing Web Application for Accessibility Data Collection
	Funding:	BMCC FOUNDATION FUND, Louis Stokes Alliance for Minority Participation
<p>Accessibility resources for independent travel for the blind are underdeveloped. According to a 2018 report by the NYC mayor's office for people with disabilities, approximately 9.7 million visitors in the year of 2018 were individuals with a disability. While almost 1 million New Yorkers have disclosed living with a disability. In order to provide better accessibility resources for independent travel, the completion of crowdsourcing for the web application Doorfront.org is vital to taking a step to designing more accessible resources for blind individuals in New York City. The focus of this project will be to increase the rate of data collection. In order to do this, we aim to collect data to improve user experience by tracking various methods to measure user engagement from 10-20 users. This project will focus on developing a study to determine what is the best way to maximize engagement to expedite the completion of crowdsourcing effectively by asking users for feedback before creating prototypes of different interface designs for crowdsourcing engagement.</p>		

<b>20</b>	Presenter:	Qingquan Li
	Mentor:	Hao Tang
	Discipline:	Computer Information Systems
	Title:	Designing a Crowdsourced App for Enhancing Storefront Accessibility for Visually Impaired Individuals
	Funding:	CUNY RESEARCH SCHOLARS PROGRAM
<p>The increasing urbanization of modern cities presents unique challenges to people who are blind and have low vision (BLV), particularly in terms of independent travel and navigation. One critical issue faced by the BLV community is locating entrances to various locales such as stores, restaurants, and buildings. Our research team aims to address this issue by developing an open-source map of New York City storefronts that is accessible to BLV individuals, using machine learning and crowdsourcing approaches. However, we have encountered several limitations with Google Street View's data, such as outdated images and obstructions. To overcome these limitations, we have been designing and implementing a crowdsourcing app to gather more precise storefront accessibility information. Through the app, users can capture photos of storefronts, identify and label their accessibility features such as door types, doorknobs, ramps and stairs, and record the precise location of the entrances, with the aim of building an open-source, accessible map of storefronts. By combining technology, community engagement, and a commitment to inclusivity, our research project seeks to enhance the urban experience for BLV individuals and promote a more accessible cityscape.</p>		



## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>21</b>	Presenter:	<b>Xhulio Docaj</b>
	Mentor:	<b>Jane Tezapsidis</b>
	Discipline:	<b>Biology</b>
	Title:	<b>The effects of GH- related peptides (Ipamorelin &amp; CJC1295) on SH-SY5Y cells as a model for Parkinson's Disease</b>
	Funding:	<b>BMCC FOUNDATION FUND</b>
<p>Parkinson's Disease (PD) is a progressive neurodegenerative disease characterized by muscle stiffness, balance impairment, and tremors. Pathology of PD brains reveals a reduced number of dopaminergic neurons and the accumulation of misfolded alpha-synuclein (AS) protein. This protein forms intraneuronal inclusions, or Lewy Bodies (LB), in the majority of cases. Unfortunately, there is no cure for PD, however, there are available treatments that are used to relieve some of the symptoms early in the course of the disease. Because new therapies continue to be needed, we will explore the benefits of growth hormone – related peptide (Ipamorelin and CJC1295) treatment on AS expression. Our findings will have important implications for modifying pathological mechanisms that lead to PD.</p>		

<b>22</b>	Presenter:	<b>Zarin Maisha</b>
	Mentor:	<b>Joanna I Giza</b>
	Discipline:	<b>Science</b>
	Title:	<b>BDNF Met Prodomain Changes BDNF Signaling</b>
	Funding:	<b>CUNY RESEARCH SCHOLARS PROGRAM</b>
<p>Our memories are stored in spines which are small protrusions located on the dendritic branches of the neuronal cells. As we learn, these spines become enlarged as the neurons create more efficient synaptic connections. One of the molecules regulating this process is Brain Derived Neurotrophic Factor (BDNF). BDNF induces spine expansion through binding and subsequent internalization of its receptor tropomyosin receptor kinase B (TrkB). BDNF is synthesized in an immature form called Pro-BDNF composed of mature BDNF and a prodomain. After the prodomain is cleaved off, functional BDNF and an independent prodomain are released. Giza et al. (Neuron, 2018) found that the prodomain with human polymorphism with Valine (Val) at position 66 substituted with Methionine (Met) can shrink spines and eliminate synapses in neurons, an effect opposite to that of BDNF. However, Met prodomain is also found in complexes with BDNF. Previously, we showed that the BDNF in complex with Met prodomain loses its ability to enlarge the spine and instead causes spine shrinkage. We are currently examining the mechanism underlying this switch. Here, we show that the presence of the Met prodomain in complex with BDNF prevents its receptor internalization, necessary for spine enlargement. We are proposing a hypothesis that the BDNF-Met complex retains TrkB on the surface and might instead recruit another co-receptor, which redirects TrkB signaling</p>		

## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>23</b>	Presenter:	<b>Fadi Ahmed</b>
	Mentor:	<b>Jose A. Fernandez Romero</b>
	Discipline:	<b>Science</b>
	Title:	<b>Drug Repurposing to Explore Novel HIV Protease Inhibitors</b>
	Funding:	<b>CUNY RESEARCH SCHOLARS PROGRAM</b>
<p>HIV-1 protease inhibitors are widely used in the treatment of HIV infections. Although effective at inhibiting virus replication, their use can result in side effects. There is an urgent need to discover more potent and less toxic protease inhibitors, and drug repurposing may help identify protease inhibitors with a better safety profile. This study screened investigational drugs from DrugBank approved by the FDA. Molecular docking studies and cell-based assays (anti-HIV in vitro assays and XTT cell viability) were used to identify potential HIV-1 protease inhibitors. CBR003PS and CBR013PS demonstrated a high binding affinity to the HIV-1 protease with half maximal effective concentrations (EC50) of 0.5nM and 2.0nM, respectively. The cell-based assays showed that those two compounds are the most promising, with therapeutic indexes above 32. As a result, CBR003PS and CBR013PS, an antibiotic in clinical use and an investigational drug for treating endometriosis and uterine fibroids, have the potential to be repurposed as HIV-1 protease inhibitors. However, considering the potentially detrimental effects of the antibiotic on the normal microbiome and possible resistance development, CBR013PS becomes the lead candidate to explore further.</p>		

<b>24</b>	Presenter:	<b>Lilian Guzman</b>
	Mentor:	<b>Jose Fernandez Romero</b>
	Discipline:	<b>Science</b>
	Title:	<b>Griffithsin to Prevent Human Immunodeficiency Virus Infections</b>
	Funding:	<b>None</b>
<p>The human immunodeficiency virus (HIV) pandemic continues to be a significant and ongoing worldwide problem for public health systems. Scientists are looking for alternative methods to prevent HIV infections, and topical formulations with potent antiviral molecules can be a solution. Griffithsin (GRFT), a protein isolated from the red algae Griffithsia sp., is known to be highly effective against HIV and is being evaluated as a potential anti-HIV agent to use in topical formulations. We evaluated the anti-HIV activity of cervicovaginal lavages (CVLs) collected from macaques (<i>Macaca mulatta</i>) after the vaginal application of a GRFT-containing fast-dissolving insert (FDI). We evaluated the cytotoxicity and antiviral activity of macaque CVLs using the XTT colorimetric assay and the TZM-bl MAGI assay. We correlated the CVL's antiviral activity with GRFT's concentrations in these samples. Our results showed a significant correlation (<math>p &lt; 0.0001</math>) between CVL's antiviral activity and the concentration of GRFT in CVLs. These results also indicate that GRFT remains active in the macaque biological fluids after the FDI releases GRFT in the macaque's vaginal lumen. This promising result warrants the further development of the GRFT FDI formulation to explore its safety and efficacy in other models.</p>		

## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>25</b>	Presenter:	<b>Marshall Lee</b>
	Co-Author(s):	<b>Chenyang Wu</b>
	Mentor:	<b>Lalitha Jayant</b>
	Discipline:	<b>Biology</b>
	Title:	<b>The Properties of Moringa that Promote Sea Urchin Egg Viability</b>
	Funding:	<b>CUNY RESEARCH SCHOLARS PROGRAM</b>
	<p>Sea urchins, like humans, are deuterostomes, organisms whose anus forms first relative to their mouth during embryological development. Sea urchin embryos could provide valuable insight into embryological development of humans and other deuterostomes. However, when left by themselves, the eggs of sea urchins disintegrate and die within 24 hours. This study aims to expand upon a previous study, which found that the aqueous extract of <i>Moringa oleifera</i>, a tree found in the Indian subcontinent, was able to preserve the viability of eggs obtained from the sea urchin species <i>Lytechinus variegatus</i> for up to seven days. To identify the properties of moringa that allowed it to preserve sea urchin eggs, aqueous moringa leaf extracts, obtained by subjecting moringa leaves in water to different temperatures, were tested for their antibacterial, anti protist, antiviral and anti-oxidant properties using standard methods. Results indicate that most of the aqueous extracts did not show any major antibacterial property. However, the extracts were able to hinder the growth of protists that co-isolate as cysts with the urchin eggs. The extracts especially the ones extracted at 90°C and 100°C showed a Total Antioxidant Capacity (TAC) of 3.5 +/- 0.5 mmol Trolox equivalent TR/g. To further ascertain the role of aqueous moringa leaf extracts on the viability of sea urchin eggs effect of various flavonoids present in moringa leaf extracts that contribute to TAC have to be tested individually.</p>	
<b>26</b>	Presenter:	<b>Lionel Cesaire</b>
	Co-authors:	<b>Berta Vazquez , Yurdiana Fernandez , Alejandro Vaquero , Jay Tischfield</b>
	Mentor:	<b>Lourdes Serrano</b>
	Discipline:	<b>Science</b>
	Title:	<b>The interplay between SIRT7 and p53 in tumorigenesis</b>
	Funding:	<b>CUNY RESEARCH SCHOLARS PROGRAM</b>
	<p>Mammalian SIRT7 is a nuclear sirtuin involved in genome integrity maintenance, including its critical role in DNA double-strand breaks (DSBs) repair. Sirt7 deficiency in mice results in a premature aging syndrome affecting both somatic and reproductive tissues. SIRT7, like other sirtuins, is also central in the pathogenesis of cancer, acting as an oncogene or tumor suppressor in a context-specific manner. SIRT7 dynamically regulates p53 function, a hallmark tumor suppressor protein, through direct and indirect mechanisms. Although SIRT7<sup>-/-</sup> mice do not develop tumors, surprisingly, SIRT7 depletion increases tumorigenesis in the Tp53 knockout mice. Using normalized expression data from cancer patients, we also found that in the context of P53 depletion, Sirt7 levels predicted patient outcomes in certain cancers and affected expression of genes involving extracellular matrix (ECM) maintenance. To further corroborate our findings, we generated knockouts of NIH-3T3 cells fitting the genotypes, and analyzed the expression of the genes for extracellular matrix maintenance. The given results present a possibility that concomitant loss of Both sirt7 and p53 in both murine and human models results in the higher expression of ECM maintenance genes. Overall our results indicate a differential genetic interaction between SIRT7 and p53 in metastatic cancers and tumor progression.</p>	

**POSTER SESSION**  
**STUDENT PRESENTER ABSTRACTS**  
 Gymnasium – 1<sup>st</sup> Floor Northside, 1:00pm – 5:00pm

<b>27</b>	Presenter:	<b>Mustafa Donmez</b>
	Mentor:	<b>Mohammad Azhar</b>
	Discipline:	<b>Computer Information Systems</b>
	Title:	<b>Designing Educational Robot Games about Daily Activity Living for Children with ASD</b>
	Funding:	<b>BMCC FOUNDATION FUND</b>
<p>Autism spectrum disorder (ASD) is a developmental disability caused by neural differences in the brain. According to 2020 CDC data, approximately 1 in 36 children in the USA is diagnosed with ASD. Unfortunately, there are many children on the ASD spectrum who don't have adequate caregivers. The children with ASD struggle with learning daily activity skills, such as hygiene, time management and meal prep. Furthermore, according to the CDC about 1 in 6 (17%) children aged 3–17 years are diagnosed with a developmental disability. Research suggests that “caring for the children on the ASD spectrum is challenging and affects the life of the caregivers and caregivers commonly face psychological distress, depression, anxiety, and other mental or physical health problems while caring for the children on the spectrum”. For example, the children with ASD would require many repetitions for communication that can lead to psychological distress for the caregivers. Previous studies suggest that robots have been successfully utilized for ASD children. In this project, we will explore designing educational games prototypes using robots to teach children of ASD about daily activities of living with minimal support from the caregiver. The overall goal of the project is to identify and design solutions using robots that may lower the burden on the caregiver of children with ASD.</p>		

**POSTER SESSION**  
**STUDENT PRESENTER ABSTRACTS**  
 Gymnasium – 1<sup>st</sup> Floor Northside, 1:00pm – 5:00pm

<b>28</b>	Presenter:	<b>Abir Mahmood</b>
	Mentor:	<b>Mohammed Azhar</b>
	Discipline:	<b>Computer Information Systems</b>
	Title:	<b>Towards Web-based Accessible Platform for Family Members of Patients with Dementia</b>
	Funding:	<b>Louis Stokes Alliance for Minority Participation</b>
<p>According to the 2023 World Health Organization data, more than 55 million people are diagnosed with dementia. Dementia patients tend to have memory loss, difficulty with daily tasks, and communication. problems. Dementia can bring challenges to the family members of the patient which will require time and resources for them to overcome. A few factors of how dementia can affect family members are - emotional distress, social isolation, and physical/mental exhaustion. Recently, researchers surveyed family members on AI/technology solutions for assistance, and early recognition/treatment of these conditions and concluded these technologies could lead to significant improvements. Music therapy can have a positive impact and the VR experience can have a positive impact on the Dementia patient. However, more than 60% of Dementia patients and their families live in middle low-income countries making it difficult to access cutting-edge technologies. My focus is to create a chatbot designed for dementia and ensure that the responses are thoughtful, informative, and empathetic. Phase 1 of this research project involves surveying existing research literature to gather ideas and gain knowledge on dementia patients, their family from low-income countries and their surroundings. In phase 2, we plan to complete the design of a prototype of the accessible mobile app/website that will support family members of Dementia patients from low-income countries. The overall goal of our research aims to bridge the gap between family members of dementia patients and how they can better assist/care for patients as well as their own betterment.</p>		

<b>29</b>	Presenter:	<b>Peter Vaiciulis</b>
	Mentor:	<b>Mohammed Azhar</b>
	Discipline:	<b>Computer Information Systems</b>
	Title:	<b>Towards an Accessible Web-Solution for Older Adults with Dementia, Their Caregivers, and Family Members</b>
	Funding:	<b>Louis Stokes Alliance for Minority Participation</b>
<p>According to the World Health Organization (WHO), 55 million people were affected by dementia in 2020, though by 2050 that number could reach 139 million. Those living with dementia face a unique set of challenges affecting their quality of life including vision and hearing loss, motor impairment, and problems with memory and cognition. Furthermore, over 60% of patients live in low-middle income countries, where quality care is more difficult to attain. Researchers have already explored the use of applications on devices such as iPads and tablets to recognize and improve cognitive functioning, and found promising results. However, research is still in its infancy with regard to accessible web-based applications, attempting to correlate cognition with patient care, and adjusting accessible-design guidelines to meet the specific needs of those living with dementia. In this research we explore designing an accessible web platform to connect caregivers, patients, and family members, while implementing useful tools for all involved. In phase 1 of our research, we will develop the online accessible platform for patients. In phase 2, we will expand the platform to support caregivers and family-members, and connect data sources to a cloud database. In phase 3, we analyze patient web-activity data from our web-platform’s games and utilities to correlate with patients’ mental condition utilizing advances in AI/Machine learning to improve patient outcomes. The overarching goal of the project is to devise an affordable, effective, scalable and accessible web solution for people with dementia living in all parts of the world.</p>		

**POSTER SESSION**  
**STUDENT PRESENTER ABSTRACTS**  
 RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>30</b>	Presenter:	<b>Yusuf Taha</b>
	Mentor:	<b>Mohammed Azhar</b>
	Discipline:	<b>Computer Information Systems</b>
	Title:	<b>Towards Robotic Game Therapeutic Intervention for Children with Autism</b>
	Funding:	<b>CUNY RESEARCH SCHOLARS PROGRAM</b>
<p>Children with Autism Spectrum Disorder (ASD) often have difficulties with theory of mind, which refers to the ability to understand and infer the mental states of others, such as beliefs, desires, intentions, and emotions. Current research suggests that the use of technology, specifically a humanoid robot, can provide a unique opportunity to develop a therapeutic intervention for children with ASD. In this research, we hypothesize that utilizing a humanoid robot that collects and analyzes data on the child's behavior and adapts the therapeutic program to the child's mood and interests will lead to greater improvements in communication and socialization skills compared to traditional therapy methods. During phase 1 of the research, we will explore how to employ a humanoid robot to engage with the child and gather mood data (e.g., anger, anxiety) that can be utilized to trigger intentional therapeutic game programs to address their difficulties with theory of mind. During phase 2 of the research, we will implement robot game prototypes to gather mood data for children with ASD. In phase 3, we will further develop therapeutic games that will be triggered based on the child's mood to address difficulties with theory of mind. The overall goal of this project is to develop an effective robot therapeutic games solution that can improve the lives of children with autism and their families by providing an interactive, customized and engaging learning experience.</p>		

<b>31</b>	Presenter:	<b>Frances George</b>
	Mentor:	<b>Owen Roberts</b>
	Discipline:	<b>Media Arts and Technology</b>
	Title:	<b>Doll House Central</b>
	Funding:	<b>Independent Study</b>
<p>Doll House Central is a social networking website based around user created fictional characters. Users design characters and dialog trees associated with those characters using a custom interface with the ability to write statements, questions and create branches with choices that the user can respond to. Users manage their fictional characters and available dialog trees. Users can also converse with characters created by other users once they have been published publicly. Doll House Central is built with web technologies including HTML5, CSS, and JavaScript for the front-end, with the backend built on NodeJS, Firebase and ExpressJS. Frameworks like SASS and Handlebars are used for development. The site also uses the web media API for voice recordings that are optionally available with dialog trees. The site includes an interface for designing dialog trees, recording sound and saving the dialog to the database without the need of other software. By creating fictional characters, the social network enables real time interactions for users to perform and practice social interaction without the social risks often associated with online interactions. Once Doll House Central's primary functionality is completed it will be released as a website for user testing.</p>		

## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>32</b>	Presenter:	<b>Wenjie Huang</b>
	Mentor:	<b>Shalva Tsiklauri</b>
	Discipline:	<b>Science</b>
	Title:	<b>Properties of Coulomb interaction in exotic two body systems</b>
	Funding:	<b>BMCC FOUNDATION FUND</b>
<p>Quantum dots have the remarkable properties - they can generate multiple electron- hole systems using one absorption photon and the varying size of the quantum dots we can use the Sun's radiation from visible to infrared wavelength. Very important point of view of the efficiency used atomically two-dimensional (2D) thin quantum dot materials such as graphene and transition metal dichalcogenides (TMDs). For the 2D monolayer TMDs, there is an enhancement of the Coulomb interaction. This causes the formation of bound electron-hole pairs and we can manipulate the optical and charge- transport property and can facilitate the application of these as a solar cell. In this project, we will theoretically investigate the ground and excited state properties of excitons in 2D monolayer TMD. And we will find the solution of the 2D Schrödinger equation for different screening Coulomb potentials by using software's Mathematica or MATLAB.</p>		

<b>33</b>	Presenter:	<b>Zion Blake</b>
	Mentor:	<b>Shalva Tsiklauri</b>
	Discipline:	<b>Science</b>
	Title:	<b>Analyzing the electrical patterns of the heart and integrating motion detectors into PHY laboratory curriculum</b>
	Funding:	<b>CUNY RESEARCH SCHOLARS PROGRAM</b>
<p>In the Physics 210 &amp; 215 (college and university physics) course, students will undergo the spring harmonic motion and Atwood machine labs. Both labs require students to use a stopwatch to record time values for the experiment, which rely heavily on timing. Small differences in time can greatly affect the results. The problem arises when miscalculations occur due to human error. Previous records show that students would often have a percent error of 30% and over during this experiment. Both labs are also dependent on instantaneous position. While students are presented with a graphical example of oscillating motion in the lecture prior, it creates a disconnect from the lab since the rapid changes in the instantaneous position makes it hard for the students to be able to graph the data themselves. By using the motion detectors in the labs, the students will no longer need to rely on their own timing, meaning their data will no longer be susceptible to human error. Graphing the instantaneous position will also be possible thanks to the motion detector's graphing function.</p>		

## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>34</b>	Presenter:	<b>Rufaila Chakuru</b>
	Mentor:	<b>Sumeyra Yumak</b>
	Discipline:	<b>Science</b>
	Title:	<b>The Significance of Elementary Algebra Proficiency for Nursing Chemistry Success</b>
	Funding:	<b>Independent Study</b>
<p>This study aims to investigate the direct relationship between elementary algebra proficiency and success in nursing chemistry (CHE121) at a community college level that does not require the SAT for admission. The study is based on the hypothesis that students who have a strong foundation in elementary algebra are more likely to perform well in CHE121, which requires a solid understanding of mathematical concepts such as stoichiometry calculations, Avogadro's number, metric conversion, gas formulas, balancing chemical equations, and formula conversions. The study involved collecting data from a sample of students enrolled in CHE121 at a community college. The data were analyzed using descriptive statistics and linear regression analysis. The results showed a significant positive correlation between elementary algebra proficiency and success in CHE121, supporting the hypothesis. These findings have important implications for educators and students, as they highlight the critical role of mathematics in the nursing chemistry curriculum and the importance of early preparation in basic mathematical skills for success in the field of nursing.</p>		

<b>35</b>	Presenter:	<b>Ashley Wen</b>
	Co-Author(s):	<b>Anthony Gonzalez, Abdul Walid, John Guzman</b>
	Mentor:	<b>Vasiley Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>Comparing and Contrasting the Heliocentric and Geocentric Models of the Solar System</b>
	Funding:	<b>Honors Project</b>
<p>The heliocentric and geocentric models of the solar system can be compared to show how they represent two very different views of the cosmos. Due to its accuracy and clarity, the heliocentric model has replaced the geocentric model as the dominant theory. It can more accurately describe the observable motion of the planets without the need for intricate systems like the geocentric model. Even so, a lot of observed events could be explained by the geocentric model in a way that made sense in terms of the worldview of the day. The heliocentric model has influenced modern astronomy and our knowledge of the cosmos, and this study has looked at the historical and scientific significance of both ideas. We can now anticipate the positions of planets and spacecraft thanks to the heliocentric model, which has also advanced our understanding of the cosmos as a large, interconnected system. Future studies on the heliocentric and geocentric models might explore how they affected scientific and philosophical thought as well as how they are still relevant to discussions about cosmology and the nature of the universe today.</p>		



## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>36</b>	Presenter:	<b>Angel Cortez</b>
	Mentor:	<b>Vasiley Znamenskiy</b>
	Discipline:	<b>Astronomy</b>
	Title:	<b>Do alien Exist</b>
	Funding:	<b>Honors Project</b>
<p>The question of whether or not aliens exist is a topic of great debate and speculation. While there is currently no definitive proof that aliens exist, there is also no evidence that definitively rules out the possibility of their existence. The vastness of the universe and the sheer number of potentially habitable planets suggest that it is statistically probable that there is another intelligent life out there. However, until concrete evidence is discovered, the existence of aliens remains a matter of scientific inquiry and speculation. The question of whether aliens exist is a fascinating and thought-provoking topic that has captivated the minds of people for centuries. While many skeptics argue that there is no concrete evidence to support the existence of extraterrestrial life, there are also many who believe that the vastness of the universe and the sheer number of potentially habitable planets make it highly probable that intelligent life exists elsewhere. The possibility of discovering alien life raises important questions about the nature of our universe and our place within it. The search for extraterrestrial life has been the focus of numerous scientific endeavors, including the search for habitable planets, the study of astrobiology, and the exploration of the cosmos using various technologies. Despite our best efforts, we have yet to discover definitive evidence of alien life. However, the search for extraterrestrial life continues to inspire scientific curiosity and imagination, and it is likely that future discoveries will shed more light on this fascinating topic.</p>		
<b>37</b>	Presenter:	<b>Shalinda Spencer</b>
	Mentor:	<b>Vasiley Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>Is there other life in the universe?</b>
	Funding:	<b>Honors Project</b>
<p>Astronomers and scientists continue to search for life in the solar system and the universe at large. The direct exploration of planets within our solar system, especially Mars and some of the outer solar system. Second is the difficult task of searching for evidence of life a biomarker on planets circling other stars. The examination of SETI approaches taken are different, even though the goal of each is the same: determining if life on Earth is unique in the universe. Determination is beyond evidence for water and confirmed the existence of habitable environments, not only that liquid water was present, but that life's requirements for energy and elemental raw materials could also have been met. The massive gas and ice giant planets of the outer solar system Jupiter, Saturn, Uranus, and Neptune are almost certainly not habitable for life as we know it, but some of their moons might be. One of the most exciting developments in astronomy during the last two decades is the ability to detect exoplanets planets orbiting other stars. There have been thousands of confirmed detections, and many more candidates that are not yet confirmed. These include several dozen possibly habitable exoplanets. Such numbers finally allow us to make some predictions about exoplanets and their life-hosting potential. Most stars with mass similar to the Sun appear to host at least one planet, with multi-planet systems like our own not unusual. How many of these planets might be habitable, and how could we search for life there?</p>		

## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>38</b>	Presenter:	<b>Remy Rodriguez</b>
	Co-Author(s):	<b>Shalinda Spencer, Abigail Ortiz</b>
	Mentor:	<b>Vasiley Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>Is there other life in the universe?</b>
	Funding:	<b>Honors Project</b>
<p>“Is there other life in the universe?” is the question that has been pondered on for decades ever since we launched the first space probe. It is possible for that question to be answered but for now we are limited with what we have and the possibility of there being life on other planets or solar systems should be true based on our findings of other planets categorized as exo-planets. However what could be considered as finding life should not be based on plants but if there are animals living on the planet, of course it should be based on if there are mammals, reptiles or insects living on the planet. So far we have found MANY kinds of Exo-Planets in other solar systems that are on the same, if not, similar to our planet Earth but have yet to even examine if these planets hold life such like ours. Of course based on how evolution works and how life was created it should be highly likely that there are planets like ours that hold different kinds of creatures and different kinds of plants that help in showing proof that there is life.</p>		

<b>39</b>	Presenter:	<b>Nija DeVries</b>
	Mentor:	<b>Vasiliy S Znamenskiy</b>
	Discipline:	<b>Astronomy</b>
	Title:	<b>Mirror Dimension</b>
	Funding:	<b>Honors Project</b>
<p>The Mirror Dimension is my artistic vision of the idea of parallel non-interacting universes. Each universe exists as individually colored lines parallel, varying in size and curvature. By connecting these lines with a silver lining provides an interesting pattern of parallelograms, triangles, and other shapes. The whole reveals an optical illusion of numerous rooms descending or an oddly cut diamond. Affectionately named Mirror dimension, the lines in the drawing are imperfect to purposely reflect the nature of our universe to me. Kepler discovered planets move in ellipses instead of perfectly circular orbits, so no particular attention was made to straightening each line.</p> <p>This artwork represents my idea of a universe that you can see but not knowingly interact with, like your reflection. This optical illusion looks like a tunnel of mirrors and gives me the surreal effect of a fun house, which may look different to others. My artistic style is abstract and just as much an adventure for me as the picture slowly reveals itself. For my materials, I used a Blick Studio Drawing Pencil, a Blick Studio Drawing Pad 11x14, various colored markers, and a light blue Sharpie. I emphasized the parallel lines and placed each color in spectrum order. I hope my viewers can come to their own conclusions about what these patterns and shapes remind them of.</p>		

**POSTER SESSION**  
**STUDENT PRESENTER ABSTRACTS**  
 RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>40</b>	Presenter:	<b>Abdul Walid</b>
	Co-Author(s):	<b>Ashley Wen, Anthony Gonzalez, John Guzman</b>
	Mentor:	<b>Vasiley Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>Comparing and Contrasting the Heliocentric and Geocentric Models of the Solar System</b>
	Funding:	<b>Honors Project</b>
<p>The heliocentric and geocentric models of the solar system represent two fundamentally different ways of understanding the cosmos. The heliocentric model is more accurate and simpler than the geocentric model, as it is able to explain the observed motion of the planets with greater precision and does not require the complex system of circles and epicycles necessary in the geocentric model. However, the geocentric model was able to explain many observed phenomena in a way that was consistent with the prevailing worldview of the time. This project has explored these two models, their historical and scientific significance, and how the heliocentric model has impacted modern astronomy and our understanding of the universe. The heliocentric model is used in predicting the positions of planets and spacecraft, and has contributed to our understanding of the cosmos as a vast, complex system of interrelated bodies. Further research on the heliocentric and geocentric models could investigate their impact on the development of scientific and philosophical thought, as well as their continued relevance in contemporary discussions of cosmology and the nature of the universe.</p>		

<b>41</b>	Presenter:	<b>Barbara Abreu</b>
	Mentor:	<b>Vasiley Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>Northern light brain</b>
	Funding:	<b>Honors Project</b>
<p>This work aims to create awareness that just as the universe constantly expands, our consciousness can also broaden every day. The expansion of consciousness and the expansion of the universe are two very different concepts, but some similarities can be found in terms of how they expand and how they change over time.</p>		

## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>42</b>	Presenter:	<b>Ana Baez</b>
	Mentor:	<b>Vasiliy Znamenskiy</b>
	Discipline:	<b>Astronomy</b>
	Title:	<b>Exploring the Universe: A Focus on General Astronomy</b>
	Funding:	<b>Honors Project</b>

Astronomy is a science that has fascinated mankind since ancient times. The study of the universe has enabled humans to better understand the world around them. This research project aims to explore general astronomy, including key concepts such as the Big Bang theory, star and planet formation, galaxy evolution, astrobiology, and the search for extraterrestrial life. The research project will include a comprehensive literature review of major topics in general astronomy, as well as an analysis of current data and observations in the field. In addition, interviews will be conducted with experts in astronomy and astrobiology to obtain first-hand information on the most recent developments in astronomical research. The project will also include a section discussing the philosophical and cultural implications of astronomy, including how astronomical knowledge has influenced the way humans view themselves and their place in the universe.

<b>43</b>	Presenter:	<b>Maymuna Tamanna</b>
	Co-Author(s):	<b>Severin Houngue</b>
	Mentor:	<b>Vasiliy Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>The study of chatGPT efficiency solving Rotational Motion and Gravitation problems</b>
	Funding:	<b>Honors Project</b>

This research aims to investigate using ChatGPT, a large language model developed by Open AI, for educational purposes, specifically in the context of Algebra-Based General Physics. The study is divided into two parts: the first focuses on finding a method to prevent cheating during exams using ChatGPT. In contrast, the second part aims to identify effective methods of integrating ChatGPT into the educational process. Through a thorough review of relevant literature, the study examines previous research on ChatGPT and education, as well as previous studies on ChatGPT and cheating in exams. The methodology section outlines the research design, sampling technique, data collection methods, and data analysis techniques to be used. Ethical considerations are also addressed, such as informed consent and data protection. The study's results provide insights into effective methods of preventing cheating using ChatGPT during exams and identify ways ChatGPT can be integrated into the educational process to enhance student learning. The research implications for educators and students are discussed, and potential future research directions are identified. Overall, this study contributes to the ongoing discourse on the ethical and pedagogical implications of using AI technology in education. This project mainly focuses on an analytical comparison between the results found in solving Chapter 7, Rotational Motion and Gravitation problems, unit 7.1 Whirlybirds, 7.2 A Rotating Wheel, and 7.3 Compact Discs, and the actual results from the textbook. When chatGPT solves the problem, it can do the step correctly, but it can't solve the exact math problem.

## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>44</b>	Presenter:	<b>Andrew Swift</b>
	Co-Author(s):	<b>Jorge E. Espinosa</b>
	Mentor:	<b>Vasiliy Znamenskiy</b>
	Discipline:	<b>Physics</b>
	Title:	<b>Role of AI in Education of General Physics</b>
	Funding:	<b>Honors Project</b>

Since the recent breakthroughs of Artificial Intelligence, interest has been taken with ChatGPT, and its ability to be utilized for complex tasks<sup>1,2</sup>. A question of viability arises for its use in physics to solve problems, without compromising the integrity of the learning process. The goal is to devise a mitigation strategy for cheating, and a pathway for supplemental learning through ChatGPT. Four text and illustration problems in “College Physics”, were sent to ChatGPT to find a solution. The four results were expected to provide clear explanation of its solution. The first problem was text-based, with three parts to the solution, requiring algebraic manipulation in chapter 4. Parts a and b were solved correctly, with clear explanation, with part C’s answer differing slightly. Question two provided a correct solution within three significant figures. Question three’s result was correct in part a, but part b’s formula was incorrect. The final question and solution were both incorrect. ChatGPT’s problem solving ability was successful, with minor miscalculations. Algebraic formulas were correctly explained, mirroring the textbook. ChatGPT was unable to interpret and translate images into correct solutions, needing supplementary information to output answers correctly, with version 3.5 not supporting image reading. Further limitations disallow the program to not perform mathematical calculations, but only predicting future text<sup>4</sup>. Proposedly, image-based problems can be used for physics exams and graded assignments, ensuring cheating will not result in the correct answer. Alternatively, text-based problems can help explain step-by-step solutions. Because ChatGPT is a predicting model, it lacks calculating credibility.

<b>45</b>	Presenter:	<b>David Mellado</b>
	Mentor:	<b>Vasiliy Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>Do Aliens Exist</b>
	Funding:	<b>Honors Project</b>

If aliens exist, it would have profound implications for our understanding of the universe and our place within it. The possibility of extraterrestrial life has long been a topic of scientific inquiry and speculation, and recent advances in technology have increased our ability to search for signs of life beyond Earth.

If aliens do exist, they could take many different forms and have a range of characteristics, from microbial organisms to highly advanced civilizations. The discovery of extraterrestrial life would have implications for a wide range of scientific fields, including biology, astronomy, and physics, as well as for our understanding of the origins and evolution of life in the universe. The potential discovery of alien life could also have profound philosophical and cultural implications, challenging our assumptions about the uniqueness and significance of human life, and prompting new questions about the nature of consciousness, intelligence, and the meaning of existence. While the search for extraterrestrial life remains ongoing, the potential discovery of aliens would undoubtedly be one of the most significant scientific discoveries in human history.

## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>46</b>	Presenter:	<b>Josh Oodit</b>
	Mentor:	<b>Vasiliy Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>Do aliens exist?</b>
	Funding:	<b>Honors Project</b>
<p>Do aliens exist? This is a really interesting question and one that NASA has been trying to understand, explore, and figure out for a long time. We have not yet discovered life on any other planet, and we have not seen any scientifically supported evidence for extraterrestrial life. But if we think about life on this planet, beyond the big things — the elephants, the whales, redwoods trees — and focus on the tiny things, nearly everywhere on Earth that we've looked, we've found microbial life. Our definition of habitable environments continues to expand. Off the Earth we've only begun to look. NASA has sent five rovers and four landers to the surface of Mars. Additionally, orbiters have been outfitted with some amazing cameras to take pictures of the whole surface of the Red Planet. But we've only explored a tiny fraction of Mars. And that's only one of the promising bodies to look for life in our solar system. There are icy moons in the outer solar system like Saturn's moon Enceladus and Jupiter's moon Europa that look like they may have subsurface oceans that could be habitable. And that's just what's in our solar system. The more exoplanets we find around other stars, the more we learn about how many different environments could exist for life. We can't yet say for sure whether or not aliens exist. To quote Carl Sagan: "The universe is a pretty big place. If it's just us, it seems like an awful waste of space." So, NASA will keep looking.</p>		

<b>47</b>	Presenter:	<b>Arlet Lopez</b>
	Mentor:	<b>Vasiliy Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>Do aliens Exist?</b>
	Funding:	<b>Honors Project</b>
<p>As an AI language model, I don't have access to any definitive proof of the existence of extraterrestrial life, and there is currently no conclusive evidence that definitively proves the existence of intelligent life beyond Earth. However, given the vastness of the universe and the number of potentially habitable planets, many scientists believe that it is highly probable that life exists elsewhere in the universe, and some even believe that there may be intelligent civilizations out there. But until we have definitive evidence, the question of whether aliens exist remains a topic of debate and speculation.</p>		

**POSTER SESSION**  
**STUDENT PRESENTER ABSTRACTS**  
 RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>48</b>	Presenter:	<b>Seth Sanchez</b>
	Mentor:	<b>Vasiliy Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>What is the behavior of an Exo Planet?</b>
	Funding:	<b>Honors Project</b>
<p>One possible abstract project involving astronomy could be to investigate the properties and behavior of exoplanets, which are planets that orbit stars outside of our solar system. You could start by analyzing data from space-based telescopes such as the Kepler or TESS missions, which have discovered thousands of exoplanets to date. You could investigate the properties of these planets, such as their size, mass, and distance from their host star, and look for patterns or trends in the data. You could also investigate the conditions necessary for life to exist on exoplanets. This could involve looking for planets that are located in the habitable zone of their star, where temperatures are just right for liquid water to exist on the surface, which is believed to be a key ingredient for life as we know it. Another possibility would be to investigate the properties and behavior of black holes, which are extremely dense objects formed from the collapse of massive stars. You could study the way in which black holes interact with their environment, such as the way in which they accrete matter from nearby stars, or the way in which they emit radiation as a result of their intense gravity. Overall, there are many exciting and cutting-edge topics to explore when it comes to astronomy, and these are just a few ideas to get you started</p>		

<b>49</b>	Presenter:	<b>Eric Gonzalez</b>
	Mentor:	<b>Vasiliy Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>Challenges of Terraforming</b>
	Funding:	<b>Honors Project</b>
<p>Terraforming other planets, particularly Mars, has long been a subject of scientific and speculative interest. The possibility of creating habitable environments on these planets could potentially solve issues of overpopulation and resource depletion on Earth. However, the process of terraforming presents many significant challenges. The first challenge is the lack of an atmosphere, which is necessary for supporting life. Mars has a thin atmosphere that is mostly carbon dioxide, which is unsuitable for humans. Terraforming would require the creation of an atmosphere with a breathable composition. This could be achieved through a process of heating the planet's surface and releasing gases that could create a greenhouse effect. Another challenge is the lack of water. Mars has limited amounts of water, mostly in the form of ice. The process of terraforming would require the creation of large bodies of water, such as oceans and rivers. This could be achieved through a process of melting the planet's ice caps and releasing underground water. Terraforming also presents ethical challenges, such as the question of whether it is appropriate to change the natural environment of another planet. The process of terraforming could also potentially have unintended consequences, such as introducing invasive species or disrupting the planet's ecosystem. Overall, terraforming presents both possibilities and challenges for human habitation on other planets. While the technology to terraform a planet is currently beyond our reach, continued research and innovation could make this a reality in the future. However, ethical considerations and the potential for unintended consequences must be carefully weighed before embarking on such a massive endeavor.</p>		

## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>50</b>	Presenter:	<b>Amari Morris</b>
	Mentor:	<b>Vasily Znamenskiy</b>
	Discipline:	<b>SCIENCE</b>
	Title:	<b>Into The Unknown</b>
	Funding:	<b>Honors Project</b>
<p>The difference between science and religion is that one is based on facts and the other one is based on faith. Scientifically speaking, there have been multiple sightings of UFOs and signs of extraterrestrial intelligence. Now the people who witness this amazing proof of life outside of Earth tend to get so excited and so shocked that they must share it with the world. The problem lies with the fact that some people won't believe anything you say about UFOs unless they see it for themselves. So what do these people do? They create movies to show the world, so that they can bring acknowledgement to what's occurred in their world. Make instagram posts about it. The movie, "Nope" was so detailed and realistic. The people who live in the suburbs, might've actually experienced an alien ship and have been silenced by them. The foreign spaceship has a built-in EMP that turns off all technology within the area so that no one is able to prove their existence. This was proved in the middle of the movie, this is the director's testimony of what actually happened to them. When I mentioned that people use different ways to tell the world that they've witnessed aliens, instagram is a logical way. What faster way to tell the world than by making a simple post?</p> <p>"<a href="https://www.instagram.com/p/CqeKEB3p3SF/">https://www.instagram.com/p/CqeKEB3p3SF/</a>" The known musician Lizzo, has shared her testimony with the world with proof, and yet people still don't believe her. Lizzo said, "Normally I don't post things like this— but I saw something strange in the sky and I need a certified astronomer to tell me what this was THIS LIKE SOME REAL LIFE "NOPE" SH** 🤔😬 it was a light that broke off into separate lights once I started filming it! Then it turned into the clouds 🤖🤖"</p>		



## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>51</b>	Presenter:	<b>Keanu Bushell</b>
	Mentor:	<b>Vasiliy Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>Will artificial intelligence help us uncover the unknown?</b>
	Funding:	<b>Honors Project</b>
<p>The term "alien" generally refers to an extraterrestrial being, which is a hypothetical life form that originates from outside of the Earth's biosphere. Although there is no conclusive evidence of the existence of extraterrestrial life, scientists continue to search for signs of it, both within our own solar system and beyond. There are a variety of theories about what extraterrestrial life might look like, ranging from single-celled organisms to highly intelligent beings capable of advanced technology. Artificial intelligence (AI) has the potential to help us uncover the unknown by analyzing vast amounts of data and identifying patterns that humans may miss. AI can also simulate complex systems and provide insights into how they work, allowing us to better understand phenomena that were previously difficult to study. For example, AI is already being used in fields such as astrophysics and biology to analyze large datasets and make discoveries. In astrophysics, AI has been used to analyze signals from gravitational waves and identify the sources of these waves. In biology, AI is being used to analyze genomic data and identify patterns that could lead to new medical treatments. Overall, AI has the potential to be a powerful tool for uncovering the unknown, but it's important to approach its use with caution and recognize its limitations.</p>		

<b>52</b>	Presenter:	<b>Abigail Ortiz</b>
	Mentor:	<b>Vasiliy Znamenskiy</b>
	Discipline:	<b>Science Professor</b>
	Title:	<b>Is there life in another universe?</b>
	Funding:	<b>Honors Project</b>
<p>It is currently unknown whether there is life in another universe, as we have not yet been able to observe or explore beyond our universe. However, given the vastness of the universe, it is considered highly likely that there may be other forms of life in the universe. If Earth has all the right properties for a planet to maintain life, not questioning what could be found in the outer space we live in would be nonsensical. Many factors may influence the existence of life, such as the presence of water, a stable atmosphere, and the right conditions for organic chemistry. But by observing that we can exist, we can speculate that life in another form can exist in outer space. Scientists continue to study and explore the universe to gain a better understanding of the potential for life beyond our planet.</p>		

## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>53</b>	Presenter:	<b>John Guzman</b>
	Mentor:	<b>Vasiliy Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>Brief Introduction to the Heliocentric and Geocentric Models of the Solar System</b>
	Funding:	<b>Honors Project</b>
<p>The heliocentric and geocentric models of the solar system represent two fundamentally different ways of understanding the cosmos. It's believed that the heliocentric model is more accurate and simpler than the geocentric model, as it is able to explain the observed motion of the planets with greater precision and does not require the complex system of circles and epicycles necessary in the geocentric model. However, the geocentric model was able to explain many observed phenomena in a way that was consistent with the prevailing worldview of the time. The idea was to explore these two models, their historical and scientific significance, and how the heliocentric model has impacted modern astronomy and our understanding of the universe. The heliocentric model is used in predicting the positions of planets and spacecraft, and has contributed to our understanding of the cosmos as a vast, complex system of interrelated bodies. Further research on the heliocentric and geocentric models could investigate their impact on the development of scientific and philosophical thought, as well as their continued relevance in contemporary discussions of cosmology and the nature of the universe.</p>		

<b>54</b>	Presenter:	<b>Samantha Guerrier</b>
	Co-Author(s):	<b>Keshan Latchman</b>
	Mentor:	<b>Vasiliy Znamenskiy</b>
	Discipline:	<b>Astronomy</b>
	Title:	<b>Human vs Society</b>
	Funding:	<b>Honors Project</b>
<p>What if there was a planet similar, if not the same as earth made of different elements but contained the same properties to replicate the life we have now. Similar to a parallel universe but they have more technological advancements . Like a clone, an exact replica of Earth, the same atmosphere, the same air and oxygen . If this society made it to the point where money and cost are not a problem and there are little limitations, what then? Now imagine if the society that was born there figured their way out into the cosmos and through time, such as space travel ,what would they look like and what pros and cons would they have had to manifest into this plane of existence? If this society left the greed for money and the hunger for power behind them and all collectively focused on the survival of the species? Now imagine if our society at this very moment obtained this way of life and evolution, how corrupt can we get? These questions cannot be clearly answered, but can be debated on how likely it can happen. Provided are AI generated images showing what these ideologies not only would look like, but at the same time how an AI engine can put these ideas together in one image. We will be focusing on both Humans and This potential society. (keeping in mind that this cannot be considered fact or fiction, as we cant say for now what can exist billions of years away from us, however research will still be applied)</p>		

## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>55</b>	Presenter:	<b>Melody Hicks</b>
	Co-Author(s):	<b>Evelyn Cazales &amp; Amber Urena</b>
	Mentor:	<b>Vasiliy Znamenskiy</b>
	Discipline:	<b>Science Department</b>
	Title:	<b>Is the Universe Infinite?</b>
	Funding:	<b>Honors Project</b>
<p>There are many ways to see the universe The universe encompasses everything in existence. Many theories on the universe are yet to be proven and are still being tested today. The question of whether the universe is infinite or not is a large scientific debate and investigation. Current evidence suggests that the observable universe is finite. This means that there is a limit to how far we can see in any direction. However, beyond the observable universe, it is currently not known whether the universe is infinite or not. The Cosmic Inflation theory suggests the universe may be infinite. This theory presents the idea that the universe had an exponential expansion of space in the early universe following the Big Bang. This theory suggests that the universe may be much larger than what we can currently observe, and may extend infinitely beyond the observable universe. The Finite Universe theory suggest that the universe may be finite in size but still lack a boundary. The idea of a “closed” universe, in which space is finite but curves back on itself in a way that allows for infinite extension, is a possibility. The No Boundary Proposal is a way of tracing the origins of the universe in reverse. The universe is constantly expanding, but by following this process in reverse, you would see the universe get smaller and smaller until it was at a subatomic level. In summary, while the question of whether the universe is infinite or not is still an open scientific question, current evidence suggests that the observable universe is finite, while others theories suggest that the universe as a whole may be infinite in size.</p>		

<b>56</b>	Presenter:	<b>Reginald Greene</b>
	Mentor:	<b>Vasiliy Znamenskiy</b>
	Discipline:	<b>Astronomy</b>
	Title:	<b>“The Abstract Evolution Of Saturn And It’s Creative Looks”</b>
	Funding:	<b>Honors Project</b>
<p>The concept of aliens is unique because it involves the idea of intelligent life existing outside of our own planet. It is a concept that has fascinated humans for centuries and has been the subject of much speculation and imagination. The possibility of extraterrestrial life has captured the imagination of people from all walks of life, including scientists, science fiction writers, and the general public. The idea that there may be other intelligent beings in the universe raises many questions about the nature of life, the origins of the universe, and our place in it. The discovery of life on other planets would suggest that life is not unique to Earth and that it may be more common throughout the universe than previously thought. This would give us a better understanding of the conditions necessary for life to exist and how it may have originated.. The search for extraterrestrial life has become a serious scientific pursuit in recent decades, with many researchers devoting their careers to exploring the cosmos for signs of life beyond our planet. Despite the lack of concrete evidence so far, the possibility of discovering alien life is a tantalizing prospect that continues to inspire curiosity and wonder in people around the world. The idea of aliens has encouraged scientists to think more broadly and creatively about the possibilities of life in the universe. It has inspired new scientific discoveries and technologies, and has helped to shape our understanding of the cosmos. Extraterrestrial life may be a concept that will forever intrigue human beings.</p>		

## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>57</b>	Presenter:	<b>Ashley Armoogan</b>
	Mentor:	<b>Vasiliy Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>Mystifying Black Holes</b>
	Funding:	<b>Honors Project</b>
<p>My poem explores the puzzling nature of black holes, where gravity reigns supreme and even light cannot escape. I talk about what lies beyond the event horizon, where space and time merge in a singularity where all laws are overthrown. Despite their ominous nature, my poem finds beauty in the vastness of the universe and reminds us to appreciate the wonders of love, which can be just as strong as the force of black holes. The poem concludes by suggesting that both the universe and love remind us that we are all interconnected, made of stardust, and bound together in a cosmic web.</p>		

<b>58</b>	Presenter:	<b>Bryan Garcia</b>
	Mentor:	<b>Vasiliy Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>The Physics of Black Holes and their Importance in Understanding the Universe</b>
	Funding:	<b>Honors Project</b>
<p>This student research project in General Astronomy focuses on exploring the physics of black holes and their importance in understanding the universe. Black holes are important in understanding the universe because they are some of the most extreme objects in the cosmos and they play a key role in shaping the structure and evolution of galaxies. This project aims to dive into the black hole's purpose in the universe and its importance. The report intends to explore the physics and facts about a black hole. Even though not many images have been taken of black holes, scientists have gathered a lot of information on them and they have been able to test the laws of physics with black holes. This research aims to demonstrate why black holes are important, why scientists use black holes as laboratories for testing fundamental theories that explain how the universe works on the largest and the smallest scales. In conclusion, the project offers a unique insight on how black holes test the laws of physics and how they play a role in shaping the structure and evolution of the galaxies.</p>		

## POSTER SESSION

### STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>59</b>	Presenter:	<b>Alassane Dieng</b>
	Mentor:	<b>Vasily Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>Dark matter</b>
	Funding:	<b>Course project</b>
<p>One abstract idea involving astronomy could be the concept of dark matter. Dark matter is a hypothetical form of matter that is thought to make up approximately 85% of the matter in the universe, but is invisible to telescopes and other instruments that detect light. The existence of dark matter is inferred from its gravitational effects on visible matter, such as the rotation of galaxies and the behavior of galaxy clusters. Despite extensive efforts to directly detect or identify dark matter, its exact nature and properties remain a mystery, leading to ongoing research and debate within the scientific community. The concept of dark matter challenges our understanding of the universe and raises questions about the nature of matter and the fundamental forces of the universe. Understanding the properties of dark matter could also have implications for our understanding of the formation and evolution of galaxies, as well as the ultimate fate of the universe itself.</p>		

<b>60</b>	Presenter:	<b>Jade Hall</b>
	Mentor:	<b>Vasily Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>Exploring the Possibility of Extraterrestrial Life: The Existence of Aliens</b>
	Funding:	<b>Honors Project</b>
<p>The existence of extraterrestrial life, or aliens, has been a topic of fascination and speculation for centuries. With the advancement of science and technology, we have gained a better understanding of the universe and the possibility of life beyond our planet. This paper explores the possibility of the existence of aliens by examining the factors that contribute to the creation and sustainability of life. The search for extraterrestrial life has been ongoing for several decades, and although we have yet to discover any conclusive evidence of its existence, the possibility of life beyond Earth cannot be ruled out. We explore the various scientific methods used to search for extraterrestrial life, including the use of telescopes, probes, and the search for biosignatures in the atmosphere of other planets. The paper also examines the various theories on the origin of life, including the panspermia hypothesis, which suggests that life on Earth may have originated from other planets or celestial bodies. We also consider the factors necessary for the creation and sustainability of life, such as the presence of water, organic molecules, and a stable environment. The existence of aliens remains a subject of debate, and while we may never have conclusive proof of their existence, the search for extraterrestrial life continues to be an important field of study. The possibility of life beyond Earth has significant implications for our understanding of the universe and our place in it, and it is a topic that continues to captivate and inspire us.</p>		

# POSTER SESSION

## STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>61</b>	Presenter:	<b>William Perlman</b>
	Mentor:	<b>Vasily Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>Music in Space</b>
	Funding:	<b>Course Project in Astronomy Class</b>
<p>This research project aims to investigate the auditory perception of space and its relationship to human cognition through music. Specifically, the project seeks to create an original song with astronomy-relevant lyrics and a sound design inspired by space, exploring the sonic qualities that humans associate with outer space. Through the manipulation of reverberation lengths and the incorporation of musical works dedicated to space, the project seeks to investigate the musical tones and textures that contribute to our idea of "spacey" sounds. The project will utilize both subjective and objective measures to evaluate the perception of spacey sounds, including surveys, psychoacoustic testing, and acoustic analysis. By examining the cognitive and sensory factors that contribute to our auditory perception of space, this project aims to provide insights into the intersection of sound, cognition, and imagination. The final output of the project is an original song that reflects the findings of the investigation, contributing to the growing field of research on the perception of sound in space.</p>		

<b>62</b>	Presenter:	<b>Roaa Shalabi</b>
	Mentor:	<b>Vasily Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>Aliens</b>
	Funding:	<b>Honors Project</b>
<p>The question of whether or not aliens exist has long fascinated scientists and the general public alike. While there is currently no definitive evidence to prove the existence of extraterrestrial life, many scientists believe it is likely that life exists elsewhere in the universe given the vastness of space and the number of potentially habitable planets. Recent discoveries of exoplanets, which are planets outside our solar system, have only fueled the debate further. Some argue that the lack of direct evidence for alien life means that we should remain skeptical until further proof is obtained, while others contend that the absence of evidence is not evidence of absence and that we should continue to explore the cosmos in search of signs of life. Ultimately, the question of whether or not aliens exist remains an open one that continues to captivate our imagination and drive scientific discovery.</p>		

<b>63</b>	Presenter:	<b>Amber Urena</b>
	Co-Author(s):	<b>Melody Hicks, Evelyn Cazales</b>
	Mentor:	<b>Vasily Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>What makes a galaxy?</b>
	Funding:	<b>Honors Project</b>
<p>In my project I want to show what is in galaxies, what makes them and how they look. The beauty of them shows the stars and the infinite of it. From the pinwheel to the andromeda galaxy they all have their unique ways of looking and all the colors within it. Showcasing it in art I want to present the abstract colors of the galaxy and everything that goes into it to create them.</p>		

# POSTER SESSION

## STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>64</b>	Presenter:	<b>Yusuf Mohammed</b>
	Mentor:	<b>Younes Benkarroum</b>
	Discipline:	<b>CIS</b>
	Title:	<b>Harmful Objects Detector for NYPD</b>
	Funding:	<b>BMCC FOUNDATION FUND</b>
<p>Recent statistics from the New York Police Department show a steady increase in crime rates in New York State, with a 27% rise in reported crimes in May 2022 compared to May 2021. To combat this issue, this study proposes using computer vision technology to detect harmful objects, specifically by evaluating the effectiveness of the "Single Shot Detector" algorithm and training a machine learning model with Google TensorFlow. The goal is to create a system that connects to public cameras and analyzes real-time footage to notify the police department of suspicious activities, ultimately reducing crime rates and promoting a safer environment.</p>		

<b>65</b>	Presenter:	<b>Jabari Wilson</b>
	Mentor:	<b>Vasiliy Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>Wormholes and Time Travel Theories</b>
	Funding:	<b>Honors Project</b>
<p>Wormholes are significant because they have the ability to fundamentally alter how we perceive the cosmos. They could provide a way to travel faster than light, enabling humans to visit far-off regions of the galaxy and perhaps even other universes. Wormholes could also be able to provide some light on the riddles surrounding black holes and the universe's beginnings. Wormholes have broad and far-reaching effects. They may result in the creation of novel technologies that would revolutionize communication and transportation, such as teleportation and time travel. Wormhole research may also provide answers to important puzzles regarding the nature of space-time and the underlying dynamics of the cosmos. The methodology behind the study of wormholes involves theoretical physics and mathematical models. Scientists use Einstein's theory of general relativity to describe the behavior of space-time and the effects of gravity on it. They also use quantum mechanics to understand the behavior of subatomic particles and the fundamental forces of the universe. Wormholes may have a significant impact on people's lives if they were confirmed to exist. They might revolutionize space travel, enabling speedy and effective transport to distant locations. They may also result in improvements in communication and medicine, enabling us to teleport things or even people over great distances. In addition, the finding of wormholes would usher in a new period of scientific research that would enable humanity to explore the universe's furthest regions and solve its many riddles.</p>		

# POSTER SESSION

## STUDENT PRESENTER ABSTRACTS

RICHARD HARRIS TERRACE, 1:30pm – 5:00pm

<b>66</b>	Presenter:	<b>Severin Houngue</b>
	Co-author:	<b>Maymuna Tamana</b>
	Mentor:	<b>Vasiliy Znamenskiy</b>
	Discipline:	<b>Science</b>
	Title:	<b>The Effectiveness of ChatGPT in Solving Physics Problems</b>
	Funding:	<b>Honors Project</b>
<p>This research work aims at studying ChatGPT in search of its weak features where improvement may be needed. To do that, this analytical research work will consist of choosing one problem per chapter from Chapter 1 through Chapter 10 with the correct result from the textbook: Raymond A. Serway, Chris Vuille - College Physics-Brooks Cole (2017). Those problems will be introduced into ChatGPT for resolution. The results found from ChatGPT will be comparatively analyzed to study the effectiveness of ChatGPT. In case the artificial intelligence solves all problems correctly without any faulty result, it would be concluded that the ChatGPT is efficient and effective in solving modern physics problems at 100%. In case this comparative analysis reveals fault results from ChatGPT, those results would be used to make suggestions on the features to be improved for its effectiveness in solving modern physics problems. Comparative analysis and statistical methods are the two research methods used to conduct this research work. Results from the textbook and ChatGPT will be compared, and a statistic of correct and incorrect answers will be offered. After both types of results are compared, a discussion will be offered summarizing how efficient ChatGPT is in solving physics problems and suggestions will be offered on what is needed to be improved. Before concluding this research, limits and implication section will discuss the limits of this work and their importance for future research work.</p>		

<b>67</b>	Presenter:	<b>Carlene Nelson-Hunte</b>
	Mentor:	<b>Roderick (Shane) Snipes</b>
	Discipline:	<b>Business Management</b>
	Title:	<b>Impact Of Micromobility Usage In Brooklyn</b>
	Funding:	<b>CEEP</b>
<p>The rise of sharing and gig economies has increased the prevalence and demand for micro mobile, or &amp; “micromobility” devices within cities. Micromobility typically includes rental and user-owned bikes, e-bikes, and e-scooters. However, riders of these devices must share city streets, and often sidewalks, with traditional users of urban spaces, such as motor vehicles and pedestrians. This report investigates the opinions and experiences of this intersection among a small sample of micromobility device retailers and predominantly African American residents in the Ocean Hill community of Brooklyn. The study utilizes interviews, a survey, and naturalistic observations. Both quantitative and qualitative findings reveal a need for engaged stakeholders to promote safety education and legal device usage, as there is currently no ownership of safety education in the community. These findings also suggest that this community may be disproportionately affected by any escalation in enforcement activities related to safety or legal device usage without proper support.</p>		