source

SYMPOSIUM OF UNIVERSITY RESEARCH AND CREATIVE EXPRESSION

FRIDAY, APRIL 25, 2025: 9 AM - 3 PM
Harry Schure Hall, Old Westbury Campus

NEW YORK TECH

Dear NYIT Faculty, Staff, Students, and Friends,

Welcome to the Symposium of University Research and Creative Expression (SOURCE) 2025 on April 25 in the Harry Schure Hall of New York Tech on Long Island campus starting at 9:00 AM. We are so happy that you will be a part of the celebration of the event's 22nd anniversary!

Creative expression and participating in research with faculty members have become integral parts of a student's educational experience at New York Tech. SOURCE is intended to provide a unique opportunity for students to present their research and creative scholarly work in collaboration with faculty members and their mentors. SOURCE also provides a common ground for interdepartmental, interschool, and interdisciplinary communication. I am very excited to inform you that this year a total of about 150 abstracts were accepted for presentation involving over 320 undergraduate and graduate students of New York Tech. This significant set of abstracts represent all our campuses, schools, and colleges, and all disciplines. The depth and breadth of the projects are strong indicators of the quality of our teaching and learning at New York Tech.

I would like to take this opportunity to congratulate all the students for their academic excellence at NYIT. Many individuals in the NYIT community have worked on the event to make it a success. I would like to extend a very special thank you to all the students, faculty, administrators, and volunteers who assisted with the preparation, management, and operation of SOURCE 2025.

Sincerely,
Roger Yu, Ph.D.
Chair, SOURCE Committee

Symposium on University Research and Creative Expression (SOURCE) 2025 Program	
9:00 a.m.	**DOORS OPEN**
9:00 – 9:45 a.m.	**REGISTRATION and BREAKFAST** **POSTER PREPARATION/INSTALLATION** **Harry J. Schure Hall, Lobby**
9:45 – 10:00 a.m.	**OPENING REMARKS** **Harry J. Schure Hall, Room 130**
10:00 – 11:45 a.m.	**ORAL PRESENTATION I** **Harry J. Schure Hall, Rooms 105, 125, 130**
12:00 – 12:10 p.m.	**KEYNOTE ADDRESS:** **NEW YORK TECH ADMINISTRATION** **Harry J. Schure Hall, Room 130**
12:10 – 2:00 p.m.	**POSTER EXHIBITION** **Boxed lunches available** **Harry J. Schure Hall and Anna Rubin Hall**
2:00 – 3:30 p.m.	**ORAL PRESENTATION II** **Harry J. Schure Hall, Rooms 105, 125, 130**

Oral Presentations 10:00 – 11:45 a.m.	Harry J. Schure Hall Room 105 Moderator: Michael Hadjiargyrou	Harry J. Schure Hall Room 125 Moderator: Spencer Turkel	Harry J. Schure Hall Room 130 Moderator: Jennifer Griffiths
10:00 a.m.	**"Development of a 3-D Printed Model Website Demonstrating Different Non-canonical DNA molecules"**	**"Too Tired to Socialize, Too Burned Out to Learn: Investigating Social Burnout in College Students"**	**"Transformers for functional Near-Infrared Spectroscopy-based Brain-Computer Interfaces"**
	Sweta Kumararaja, Shrika Renganathan, Safa Chaudhri	Amy Ketankumar Patel, Josey M. Spiers	Neda Abdollahpour
10:15 a.m.	**"Dissection, Preparation, and Submission of Mammalian Eye Globes for Micro-CT Scanning"**	**"Assessing the Oculomotor Behaviors of Otolaryngologists"**	**"AISTETIC"**
	Ryan Xurei Wu, Zainab Yusaf, Saamia Gondal, Afiyat Khan, Sweta Kumararaja	Ayesha Mulla, Natalia-Adriana Androne, Maha Naveed, Ahaylee Rahman	Pranaav Venkatasubramanian, Guang Too
10:30 a.m.	**Beyond Research: Virtual Reality Puzzles Using CT Derived Data for Learning Anatomy**	**"Exploring Fixational Instability in Ophthalmic Conditions"**	**"Human Value"**
	Asweel KK. Mehaboob, Eashan Jindal, Brian Bagelman	Nancy O. Mahfouz, Simrat Renu, Doris Prela, Ayesha Mulla, Kathiana Jeanty	Syed Tehseen Abbas Rizvi
10:45 a.m.	**DNA And RNA Predictive Operating Software (DARPOS): Novel Bioinformatics Research Tool for Characterizing Noncanonical DNAs in Genes**	**"Are Perceptual Changes in Meditation Caused by Decreased Eye Movements?"**	**"Psychological Reactions to Video Stimuli: A Comparative Study of Horror and Non-Horror Videos"**
	Mary Stein, Aangi Shah, Annabella Elbaz, Zainab Ahmad	Amy Ketankumar Patel, Briana Alcindor, Yana Kostova, Annora Brown, Bekah Ruiz	Geraliz Mones, Stevie Ann Hill, Cortney Street
11:00 a.m.	**Bioinformatics to Study Genomic Instability in Genes Associated with Sickle Cell Anemia: Z-DNA; G4-Quadruplex DNA, & i-Motif Quadruplex DNA**		**"Personal Factors Contributing to Social Responsibility"**
	Aangi Shah, Annabella Elbaz, Mary Stein, Sweta Kumararaja, Adelaide Mensah		Ilana John, Evan Yang, Kripa Savani
11:15 a.m.			**"Motivational Typing Study"**
			Marckailla Marcellus, Penelope Fiero, Anyelica Ozuna
11:30 a.m.			**"AI Assisted Note-Taking Effects on Course Comprehension"**
			Doris Prela, Simrat Renu, Vontay Farmer

Oral Presentations 2:00 – 3:30 p.m.	Harry J. Schure Hall Room 105 Moderator: Nicole Calma-Roddin	Harry J. Schure Hall Room 125 Moderator: TBA	Harry J. Schure Hall Room 130 Moderator: TBA
2:00 p.m.	**"Does sound affect your engagement during a task? Task engagement when listening to lo-fi, pink noise, or silence"**	**"Designing for Inclusion: A Customizable Yoga Pose Library System for Users with Low Mobility and Physical Disabilities"**	**"An Investigation of Cry It Out in Adulthood"**
	Michael Cornacchia, Sebastian Antezana, Yasira Donoso	Woohee Byun	Doris Prela, Raul Castillo-Leon
2:15 p.m.	**"Enhancing Long-Term Memory Retention Through Interactive Narrative Games"**	**"NTM Comics Presenting ©Maverix"**	**"Assessing the Mental Health Impacts of Hookup Culture"**
	Gianna Salib	Noah T. Mactutus	Ayesha Mulla, Tristan Fikaris, Moussa Bah
2:30 p.m.	**"Professors Openness and Students Sense of Belonging"**	**"My Feedback Is Better than Yours: Are Narcissistic Consumers More Likely to Provide Survey Responses and Product Reviews?"**	**"Cross Cultural Perception in Non-Verbal Classroom Communication Abstract"**
	Kylee Crain, Fatima Shamsher, Amelia Rasheed, Labiba Fairuj	Berke Cinar	Annora Brown, Luning Chen, Samantha Richardson
2:45 p.m.	**"Relationship Between Empathy and Emojis"**		**"Implicit Foreign Accent Bias Effects on Student Competency Assessments in Higher Education"**
	Kaitlyn D. Kemraj, Zakir M. Mozuddin		Yana Kostova
3:00 p.m.	**"The N400 and Childhood Language Development"**		**"Implicit Homophobia in Religion"**
	Isha Joshi		Ola Abozid, Lily Barcohana, Arianna Reyes Castillo
3:15 p.m.	**"The Relationship Between Empathy and Life Stressors"**		**"Retail Therapy or Digital Distress? The Psychological Toll of TikTok Shop"**
	Jessica Kaur, Noyan Jawad		Josey M. Spiers, Amy Patel

Poster Presentation Session 12:10 – 2:00 p.m. Harry J. Schure Hall and Anna Rubin Hall	
A case report: Rare case of chyle leak status post robotic assisted cholecystectomy in setting of diabetic ketoacidosis	Alvin Stanley, Saba Iqbal, Muzammil Siddiqui, Janak Sharma
A Comprehensive Review of Health Inequities on the Fort Peck Indian Reservation	Aminah Sarowar, Molly Helie
A genome-wide association study for prostate cancer risk in men of African ancestry in the All of Us Research Program	Daniel Galvin Gusmano, David Mushiyev
A Manual Approach to De Quervain's Tenosynovitis Utilizing Osteopathic Manipulative Medicine	Anndrika Bhatia, Amina Sheikh
A Novel Cooling Vest to Prevent Heat-Induced Thermoregulatory Dysfunction in Persons with Spinal Cord Injury	Howard Chung, Jonathan DeSilvestri
A Preliminary Mouse Genetics Study of the Effect of Alkaline Phosphatase Activity on Lipid Metabolism.	Tzipora Levitt, Aron Yunatanov, Tiffany K. Tran, Neil Kaungumpillil, Mugdha Padalkar
A Rare Case of Ventricular Septal Rupture and Left Ventricular Aneurysm Following Delayed Presentation of Inferior STEMI	Riddhi Modi
A Rare Cause of Bowel Obstruction: Transformed Intestinal Follicular Lymphoma	Anushka Bhatt, Alina Abraham
Accessible Guide to New York City	Ashley Faverey
Activity Based Intervention for Adolescence Experiencing Parental or Sibling Bereavement	Emily Olsen
Addressing Emotional Impact of School Performance and Participation through Occupational Therapy Intervention	Alicia Terry Jones
Advocacy for Accessible Public Spaces for Children with Intellectual and Physical Disabilities: A Multifaceted Approach	Alexander Velez
Agriscapes: Revitalizing the Red Hook Waterfront	Leah-Sarah Clayton
AI in Radiological Fracture Screening: A Comparative Analysis	Daniel Nasef, Jonathan Mayer, Joseph Tawfellos, Sanjay Jacob
Airway Management and Anesthetic Challenges in Tracheoesophageal Fistula: A Case Report on Complications Following McKeown Esophagectomy	Suraj Jain, Fawaz Syed, Victor Masi, Maria Chimarios, Nicholas Bulba
Antimicrobial Efficacy of Formaldehyde-Phenol Preservation in Cadavers	Sanjana Guruswamy, Jamie Heichelbech
Aortic Arch Calcification in a mouse model of Chronic Kidney Disease: A Multifactorial Process	Matthew D. Cirrone, Saud A. Nasruddin, Jaden S. Alexander, Mugdha V. Padalkar
Architecture and Immigration: Mexican Gateway Hub	Heriberto Cruz Cruz
Atypical Presentation of STEMI with Normal Initial Cardiac Workup: The Importance of Clinical Suspicion	Supriya Baskaran

Beyond Classrooms: Schools of Tomorrow	Ethan Steinberg
Beyond the Swipe – How Dating Apps Affect Student Safety and Mental Health	Keerthi Kapavarapu, Shivani Jaishankar
Cannabidiol (CBD) as a Promising Anti-Cancer Drug	Ariel Shaddaie
Characterizing Sox9 Lineage Cell Populations within Achilles Tendon Repair using Single-cell RNA Sequencing and Transgenic Fate Mapping	Hannah Gaddam, Christopher Janton, Gianna Salib, Chahat Arora
Chemistry in 3D: Mastering Chirality in a Virtual Reality Environment	Rahul Kapur, Reia Thomas, Joana Thomson, Amna Syeda
Choroid Plexus Organoids: A gateway to study Choroid Plexus differentiation and multiciliogenesis	Miriam Farah
Cluster AS3 phages Babushka and DanHam62 isolated from soil in Long Island NY	Hameeda Fatima Rasheed, Daniela Jazmin Jara, Leah Joby, Ramanpreet Kaur, Kristy Larsen
Cluster FD Phage Swim Has a Linear Genome and No Integrase But Still Forms Lysogens	Aminah Sarowar, Stanley Pierre Louis, Sumreet Baidwan
Cognitive Healing – Beyond the Treatment	Gena Gurman
Competence Begins With Knowledge: How To Safely and Effectively Transport Students With Disabilities On A School Bus	Kiran A.S. Persad
Comprehensive Pipeline for Infectious Diseases Genetic Connectivity Inference	Levi Dong, Sarah Ranginwala
Consequences of not using Incentive Spirometry	Kayinat Sundas
Cytokinesis failure and multinucleate neurons in a rat model of human primary microcephaly	Justin Popp
Dangers of the Gambling industry	Michael Fahey
Developing Educational Tools to Help Collegiate Student-Athletes Manage and Prevent Occupational Imbalance, Anxiety, and Depression	Taylor D'Alessandro
Differential gene expression and RNA-Seq analysis identify key genetic variants in chromosome 13 linked to prostate cancer	Meet Boghani, Ashwin Nori
Discovery and Characterization of 8 Novel Bacteriophages Against Staphylococcus pseudintermedius	Nithin Reji, Victoria Kuo, Brandon Gaffoor, Joel Joseph
Diving Deep: Analyzing Human Performance Under Stress with Wearable Technology	Mihir Paragkumar Brahmbhatt, Levi Dong, Zainab Faisal
Do reusables pose greater infectious risks than disposables for consumer goods? A systematic literature review	Sanjidah Ira
Domestic Violence: A Closer Look at the Hidden Epidemic	Dama Ordoñez
Drug Mechanism of "Drug C" on Cell Growth	Jaden Fu, Eugene Atiase
Earlier Intervention: Educating Teachers and Staff of the Role of Occupational Therapy in a Montessori School Setting	Tina-Marie Bonsangue

Educating Parents on how to Promote Growth and Development for Children Diagnosed with Developmental Delays	Kathleen Reed
Education to College Faculty and Students in Return to Learn Guidelines for Students Post Concussion	Mya-Ann Tschopp
Effect of Gold Nanoparticle Conjugation on Glucose Oxidase Activity	Gregory Lipkovich, Abdur-Rehman Hussain, Muntaha Ahmad, Aakash Soni, Raquel Mulakandov
Effects of Cardiopulmonary Stress from Cancer and Associated Treatment on Cardiovascular Risk Score in Cardiac Patients: A Pilot Study	Bilal Niazi
Elevate: Rethinking Urban Mobility Infrastructure	Luke John Stefanchik
Empowering Engagement: Advocating for Occupational Therapy in Supporting Transitioning Adolescents and Young Adults with Autism Spectrum Disorder	Sierra Kaitlin Basso
Evaluating Standardized Patient and Simulation Lab Training for Clinical Readiness	Mansi Patel, Yura Kim, Sweta Patel, Paula Ryo, Maria Pino
Evaluation of carotid artery intima-media thickness by micro-CT	Harshul Singh
Fetching Phage: Efforts to Isolate, Identify, and Characterize S. pseudointermedius bacteriophages and isolate S. pseudointermedius strains from canines	Mary Stein
Fixational Eye Movements in Neurological Disorders: A Review	Audrie Saad, Eteri Kulieva, Talia Lilikakis, Zainab Faisal, Sanika Kumar
From Rags to Riches? Examining Income Gaps Worldwide	Ifeanyichukwu Agoha
Genomic Impact of the Smallest Subunit of DNA Polymerase δ: a Mutation and Structural Variant Analysis	Rishika Thayavally, Heer Bhuva
Ground Zero NYC Trauma Center Impact of COVID-19 Pandemic on Mechanism of Orthopedic Injury	Roma Tarar
Gut Dysfunction and Enteric Neuroinflammation in a 5xFAD Mouse Model of Alzheimer's Disease	Alexander Kaminer
Gut Epithelial Functions in Mouse models of Autism Spectrum Disorder	Christina Wilson
Importance of genetic testing for early intervention in Lynch Syndrome	Kavya Srinivasan, Riana Khan, Alisha Tiwari, Supriya Basakaran
Increased Vascular Stiffness in a Mouse Model of Genetic Risk for Late-Onset Alzheimer's Disease	Isha Joshi, Kelly A. Borges, Saud Nasruddin, Isabelle Lombardi, Roxane Ghadami
Individual Differentiation by Surface Metrology of Fingerprints at Multiple Scales	Shani Kahan

Infectious Disease Random Walk Model	Gamana Gogineni
Integrating Nuclear Texture and Size Analysis For Automated PAP Smear-based Cervical Cancer Detection	Andrew Attia, Yamini Patel, Ashika Sinha, Vishva Ravani, Heer Bhuva
Interactions Among Enteric Glia and Eosinophils in Mouse Colitis Model	Jake Borenkoff, Szymon Samborski
Investigation of Bacterial Drug Resistance Mechanisms in Response to Drug B	Lina Mohamed, Sonam Lama
Leading Causes of Death Among Native Hawaiians and Pacific Islanders	Manogna Rachapudi
Lifes Cycle	Jade Forrester
Mechanism of Drug D	Samee Khaled
Metabolic Health & Cardiovascular Risk in Taxi Drivers	Nour Rezk
Modeling Qubit-Environment Dynamics: Comparing the Master Equation and Monte Carlo Wave Function Approaches	Hansen Torres, Faraz Khan
Modeling Tumor and Viral Evolution Through Generational Hitchhiker Mutations	Kyle Stephens
Modular, Scalable, Low-Energy Reverse Osmosis Water Desalination System: A Self-Assembled Solution for Residential and Small Scale Use	T'ron Strapp, D'ron Strapp, Dani Gulino, Shan Caballes
Molecular and Cell Biology Mechanisms of Drug A	Isha Joshi, Thomas Waller
Molecular Characterization of Restriction Enzyme Resistance in Citrobacter freundii Bacteriophage Feind	Andrew Sean Lee
Morphometric Approach to Estimate Variation in Cochlear Canal Shape in the Basal Mammaliaform Morganucodon	Mansi Patel, Ramza Shahid, Simone Hoffman
Neural Gaze: Analyzing Fan and Non-Fan Viewing Behavior Through Deep Learning	Chakradhar Sai Valluru, Stevie Ann Hill, Ayesha Mulla, Edrich Silva, Aziza Swift
Nonverbal Communication in Cross-Cultural Teaching	Annora Brown, Luning Chen, Samantha Richardson
Occupational Empowerment: Building Self-Esteem, Healthy Relationships, and Resilience for Parenting Young Mothers in Homelessness	Katelyn T. Latchman
Optimized Large-Scale Production and Formulation of Bacteriophage for Therapeutic Applications	Nigel Oommen, Andrew Attia, Yamini Patel
Original Research: The Impact of Obesity on Orthopedic Injuries and Fracture Patterns in Motor Vehicle Accidents at Level 1 Trauma Center	Philip Zitser
Out With the New, In with the Old	Michelle Villacis Uribe
Phylodynamic Insights and Genetic Connectivity of SARS-CoV-2 and Influenza A	Sarah Ranginwala, Levi Dong

Pitt Hopkins Syndrome Unveiled: Breaking Through the Block with Osteopathic Care	Vaibhav Duggal
Precedent Performance Project	Matan Lobel, Rayhaan Albaquerque
Predicting Factors That Contributed to Longer Emergency Medical Services (EMS) Transport Times to an Inner-City Hospital During COVID-19	Benjamin Galinson, Sean Decker, Matthew J. Cannata, Kelsey N. Mendell
Preferential Matching into Primary Care Residencies: The Impact of Global Health Education	Austin Irwin
Race and Reality: A Visual Journey Through Racial Inequality in America	Leonine Murray
Rare idiosyncratic reaction of acute drug induced hepatotoxicity in the setting of long term Metronidazole, Aztreonam, and Vancomycin use	Saba Iqbal
Recommending Better: A UX Research Approach to Visibility and Accuracy in E-commerce	Renjia Chen
Restoring Rest: A Sleep Management Guide to Support Mental Health and Well-being in Individuals with Spinal Cord Injury (SCI)	Alessia DiBucci
SaME Lab: BPS Platform Comparison	Kyra Duke
Secondary Hypogonadism in a Young Male with Leptomeningeal Neurosarcoidosis: A Case Report of Fertility-Preserving HCG Therapy	Anushka Bhatt, Sonika Rathi
Short-term humanities interventions help medical students understand the patient's perspective	Adil Ansari
Simulating Blood Flow in the Left Anterior Descending Artery Using Smooth Particle Hemodynamics	Gazi Husain
Simulating Open Quantum System Dynamics Using Quantum Circuits	Faraz Khan, David Rogola, Abel Mekuria
SPF for the Mind: Integrating Dermatologic Awareness to Strengthen STEM Engagement for Underrepresented Students	Kelsey Liu
Synthesis and characterization of selective pyruvate carboxylase (PC) inhibitors for studying cancer cell metabolism	Vishva Hareshbhai Ravani, Diyaben Kanpariya
Synthesis of a Benzoimidazole-containing compound as a potential PDE5 inhibitor	Reshmi K John, Diego Landaverde
Systematic Review of OMT in Ehler's Danlos Syndrome	Erin Clifford, Stefanie Blejec
The correlation of recurring COVID-19 illnesses and its potential impact of organ damage across a continuum.	Kaylie Lamar, Nada Abdallah, Stacey Alverado, Madelyn Diaz-Portillo
The Effects of Precise Cues in Radiologic Search	Ola Abozid, Raul Castillo-Leon, Layla El-Rowmeim, Maryan J. Botlero
The Impact of Nursing Burnout on Patient Outcomes	Amandaly Maria Diaz, Isabella Persaud, Raymond Paolillo

The Role of Osteopathic Manipulation in Acute Infection Care: A Health Policy Research Brief	Nneka Mezu
The Role of Select Nutraceuticals in the Management of Hidradenitis Suppurativa: A Scoping Review	Sanjidah Ira
The Timing of Re-Entry in Reward-Based Crowdfunding: How Funding Outcomes Shape Creator Return and Future Success	Christopher Torres
Thriving Beyond Cancer: Enhancing Cognitive & Daily Functioning for Young Adult Survivors Through an Occupational Therapy Approach	Sharon John
Tidal Reclaim	Kelvin Rodriguez Cabrera,
Two Systems, One Problem: The Value of a Cross-Cultural Approach to Maternal Health	Philesha Teape, Brianna Cummings, Hira Iftikhar, Mackenzie Sivilli
Two's a Party, Three's a Cure: Phage-Phage and Phage-Antibiotic Synergy	Yamini Patel, Andrew Attia, Nigel Oommen
Typing Notes vs Handwritten Notes and the Correlation to Memory and Grades	Jordan Vargas, Melissa Molina, Miranda Onsrud
Understanding Myself; Empowering children with medical complexities to participate in their health management	Chaya P. Konig
Understanding Postpartum Depression in Rural Women: The Importance of Early Detection and Intervention	Hannah Saji, Lauren Choi, Jennifer Kemp, Dominique Decosta
Unscathed Bone Microarchitecture in Setting of Warfarin Exposure	Ben Caruso, Jaden Alexander, Julie Ochs, Saud Nasruddin
Until All The Pieces Fit	Yoselin Benitez
Walking Works	Elizabeth Ward
Womanhood Blues	Zahra Shafiq
Workplace Violence in Nursing: The Critical Role of Leadership in Prevention and Advocacy	Mark Odato, Elizabeth James, Alby Joy, Mark Odato, Miriam Ibrahim
ZARA - Leading in Style BUT Lagging in Digital Experience !!!	Vaishnavi Newaskar

A case report: Rare case of chyle leak status post robotic assisted cholecystectomy in setting of diabetic ketoacidosis

Student Presenters: Alvin Stanley, Saba Iqbal, Muzammil Siddiqui, Janak Sharma
Faculty Mentor: Omar Wain
School/College: Osteopathic Medicine

A robotic-assisted cholecystectomy (RAC) is a minimally invasive procedure for removal of the gallbladder. One rare postoperative complication of cholecystectomy is a chyle leak. With there being no current cases in literature, this report presents possibly the first RAC-associated chyle leak and discusses its associated history, findings, and treatment. A 65-year-old male presents to the emergency department roughly six days after an RAC with severe abdominal pain, nausea, and vomiting post-op. The patient was admitted to the hospital and was found to be in diabetic ketoacidosis associated with his history of Type 2 Diabetes Mellitus, requiring intensive care unit management. The patient underwent computerized tomography of abdomen and pelvis (CTAP), which illustrated large complex fluid collection in the gallbladder fossa despite the presence of a drain, raising concern for bile leak or abscess. Triglyceride content in drain was found to be 127 mg/dL confirming suspicion for a chyle leak, an exceptionally rare complication of laparoscopic cholecystectomy and even more so for RAC. The therapeutic goals outlined in current literature aligned with our treatment plan, with a focus on limiting lymphatic flow and replenishing lost nutrients, primarily through dietary adjustments (total parenteral nutrition (TPN) and a low-fat, high-protein diet) and pharmacological treatments. In summary, studying chyle leak is essential for preventing complications and ensuring proper recovery.

A Comprehensive Review of Health Inequities on the Fort Peck Indian Reservation

Student Presenters: Aminah Sarowar, Molly Helie
Faculty Mentor: Joerg Leheste
School/College: Arts & Sciences

Located in North Eastern Montana, the Fort Peck Indian Reservation is home to Assinibione and Sioux Tribes. On the Fort Peck Indian Reservation there is a higher burden of chronic, communicable, and mental health disease compounded by limited access to physicians, treatment facilities, and resources. This increased burden of disease has resulted in a life expectancy of 52 years old in Fort Peck– approximately 20 years younger than the non-Native Montana average. Our project aims to clearly describe the health disparities documented in Fort Peck compared to state and national data. Further, we seek to gain an understanding into the unique historic, cultural, and political contexts in which these inequities have come to exist and to develop a shared strategy for addressing this public health crisis. Through the insights gleaned from an in-depth literature review and investigation into health policy development and implementation, we seek to unearth the fault lines existing in the current healthcare infrastructure that give rise to and propagate the severe health inequities with attention to current changes in health policy. We will also investigate and identify successful strategies that have been documented in the literature to make positive change while preserving the identities, values, and heritage of the Fort Peck Tribes.

A genome-wide association study for prostate cancer risk in men of African ancestry in the All of Us Research Program

Student Presenters: Daniel Galvin Gusmano, David Mushiyev
Faculty Mentor: William Letsou
School/College: Arts & Sciences

Men of African ancestry are known to be at increased risk for prostate cancer compared to men of European descent. As some of this disparity is due to genetics, it is imperative to find alleles that predispose to disease risk. To this end, we conducted a genome-wide association study of prostate cancer risk in subjects from the All of Us Research Program, a prospective study aiming to enroll one million subjects from the US, including underrepresented groups. We identified 8,957 men (age ≥ 50 years) with African genetic ancestry through genotype principal components (AFR), and 30,509 men of European origin (EUR). Prostate cancer was identified from Standard Nomenclature of Medicine codes in the electronic health records of 578 AFR and 3,263 EUR men. Using Hail v. 0.2, we tested 5,856,945 and 4,203,617 common variants (minor allele fraction (MAF) ≥ 0.05) in AFR and EUR separately for prostate cancer association by logistic regression, adjusted for age and sixteen genotype principal components. Our goal was to harmonize variants, so that SNPs and indels rare in AFR but common in EUR (and vice versa) were included in both analyses. Working in the interest region chr13:22,252,936–24,040,259, we found 6,096 variants that were common in at least one of the groups (AFR: 5,107 common, 989 rare; EUR: 4,471 common, 1,625 rare). The analysis revealed suggestive associations that may explain some genetic basis for prostate cancer risk disparity.

A Manual Approach to De Quervain's Tenosynovitis Utilizing Osteopathic Manipulative Medicine

Student Presenters: Anndrika Bhatia, Amina Sheikh
Faculty Mentor: John Capobianco
School/College: Osteopathic Medicine

De Quervain's tenosynovitis is a common condition characterized by inflammation of the tendons on the radial (thumb) side of the wrist. While various treatment modalities exist, exploring novel manual approaches, particularly within the realm of osteopathic manipulative medicine (OMM), presents opportunities for effective management. We present the case of a 27-year-old female diagnosed with De Quervain's tenosynovitis, who underwent treatment utilizing OMM including a novel counterstrain technique. Our approach emphasized identifying and addressing a counterstrain tender point, alongside employing reciprocal inhibition to induce relaxation of antagonist muscles, thus restoring balance to the affected limb. The utilization of OMM in the management of De Quervain's tenosynovitis represents a promising adjunct to conventional treatments. By targeting specific tender points, employing reciprocal inhibition, and improving lymphatic flow, our approach aims to address underlying neuromusculoskeletal imbalances contributing to the condition. Our findings highlight the potential efficacy of a manual medicine within the realm of osteopathic medicine for managing De Quervain's tenosynovitis. Incorporating such techniques aligns with the holistic principles of osteopathy and underscores the importance of considering multiple models of osteopathic medicine in the treatment of neuromusculoskeletal disorders.

A Novel Cooling Vest to Prevent Heat-Induced Thermoregulatory Dysfunction in Persons with Spinal Cord Injury

Student Presenters: Howard Chung, Jonathan DeSilvestri
Faculty Mentor: John Handrakis
School/College: Health Professions

Background: Spinal cord injury (SCI) interrupts motor, sensory, and autonomic pathways, impairing homeostasis including thermoregulation, which maintains core body temperature (Tcore) at ~37±0.6°C, despite ambient temperature challenges. Limited vasodilation, sweating, and mobility after higher-level SCI (Hi-SCI: >T6) results in Tcore rising during heat exposure and hot temperatures becoming a barrier to participation.

Objective: To determine if a novel cooling vest (CV) can limit the expected rise in Tcore by at least 50% (≤0.3°C) and minimize feeling hot during heat exposure.

Design: Repeated measures design

Methods: Our novel CV for persons with SCI circulates cool water to dissipate body heat. Ten persons with Hi-SCI (NLI: C7-T4; AIS A-B) participated in 2 sessions of a 15-minute thermoneutral baseline (27°C) followed by a 2-hour heat challenge (35°C). During the 2 heat-challenge sessions, all participants wore either the CV or no CV (NCV). Primary Outcomes: Tcore, 9-point thermal sensation scale (TS). Secondary: trunk skin temperature (Tsk), sweat rate (QSweat).

Results: Change in outcomes (Baseline-Heat challenge) in the CV vs. the NCV condition: Tcore (-0.1 ±0.4°C vs. 0.8±0.4°C, respectively; p=0.007), TS (0.5 ±1.2 vs. 2.6 ±1.3, respectively; p=0.02, represents neutral vs. warm, respectively), Tsk (-6.9 ±2.7°C vs. 2.1 ±1.1°C, respectively; p=0.002).

Conclusion: During 2 hours of heat exposure, the CV maintained Tcore and minimized feeling hot in persons with Hi-SCI.

A Preliminary Mouse Genetics Study of the Effect of Alkaline Phosphatase Activity on Lipid Metabolism.

Student Presenters: Tzipora Levitt, Aron Yunatanov, Tiffany K. Tran, Neil Kaungumpillil, Mugdha Padalkar
Faculty Mentor: Olga Savinova
School/College: Osteopathic Medicine

Cardiovascular disease (CVD) is the leading cause of death in the US, with a cost of care of about $363.4 billion. One risk factor of CVD is vascular calcification, a currently non-modifiable factor that can lead to arterial stiffness, calcific aortic valve stenosis, and heart failure. Tissue-nonspecific alkaline phosphatase (TNAP) enzymes, related to calcification, are growing targets associated with vascular calcification. Previous studies showed that TNAP enzymes in plasma are directly related to an increased calcium score. We hypothesize that the genetic overexpression of TNAP in hepatocytes will increase vascular calcification. To test this, we developed a mouse model of hepatocyte-specific TNAP overexpression on the background of LDL receptor mutants. The hepatocyte TNAP overexpressor (hTNAPOE) in both sexes and their wildtype littermates (n=10-12 per group) were fed a western diet. At 42 weeks, plasma was collected by cardiac puncture, and livers and hearts were dissected for histological evaluation. Plasma was analyzed to compare the groups' alkaline phosphatase (ALP) levels, cholesterol, and triglycerides. Our results showed that plasma ALP levels in hTNAPOE mice were significantly higher than in control mice in both sexes. Since TNAP is expressed in the liver, the effect of overexpression on the liver will be histologically analyzed. Future studies will explore alanine transaminase and aspartate aminotransferase levels in plasma as an indicator of liver health.

A Rare Case of Ventricular Septal Rupture and Left Ventricular Aneurysm Following Delayed Presentation of Inferior STEMI

Student Presenter: Riddhi Modi
Faculty Mentor: Dina Rahman
School/College: Osteopathic Medicine

Ventricular septal rupture (VSR) is a rare but life-threatening mechanical complication of myocardial infarction, primarily due to delayed revascularization. We present a case of a 78-year-old female with a history of rheumatoid arthritis on Tocilizumab, hypertension, hyperlipidemia, and hypothyroidism, who developed a large left ventricular aneurysm (LVA) and VSR following an inferior myocardial infarction (MI). Initially presenting with generalized weakness, nausea, and anorexia, her symptoms worsened after a Tocilizumab infusion. She was diagnosed with NSTEMI, treated with heparin, and found to have Roseomonas mucosa bacteremia. Coronary angiography revealed 100% mid-right coronary artery (RCA) occlusion and 80% proximal circumflex occlusion, leading to percutaneous coronary intervention. Transthoracic and transesophageal echocardiograms identified a 2.1 × 1.8 cm VSD and a 3.7 × 3.7 cm LVA. The patient underwent percutaneous VSD closure with an Amplatzer occluder. Post-procedure, she developed right ventricular dysfunction, hypovolemic shock from access-site bleeding, and acute renal failure requiring CVVHD. Given the poor prognosis, the patient was transitioned to comfort care. This case highlights the importance of early revascularization in preventing mechanical complications and the role of multimodal imaging in diagnosing and managing post-infarction VSR and LVA.

A Rare Cause of Bowel Obstruction: Transformed Intestinal Follicular Lymphoma

Student Presenters: Anushka Bhatt, Alina Abraham
Faculty Mentor: Pawandeep Hunjan
School/College: Osteopathic Medicine

The gastrointestinal tract is the most common site involved in extranodular non-Hodgkin's lymphoma. Among the various subtypes, mucosal-associated lymphoid tissue (MALT) lymphoma or diffuse large B-cell lymphoma (DLBCL) are most frequently encountered, whereas follicular lymphoma (FL) of the GI tract is relatively rare. We report an unusual case of intestinal FL transformed into DLBCL, presenting as a small bowel obstruction.

A 71-year-old Caucasian female with a known history of FL involving the small bowel presented to the emergency department with severe abdominal pain and bloating. CT imaging revealed small bowel obstruction with a transition point in the right hemipelvis. The patient was stabilized on IV fluids, kept NPO, and consented to an exploratory laparotomy. Intraoperatively, a hard nodular mass was identified in the proximal ileum causing obstruction, with involvement of the entire bowel wall and the right fallopian tube. Surgical intervention included segmental small bowel resection with enteroenterostomy and a partial resection of the right fallopian tube.

Histopathological examination of the resected segments revealed transformation from FL to DLBCL. This case highlights the importance of close monitoring and maintaining a high index of suspicion for transformation in patients with diagnosed FL who develop new or worsening GI symptoms. Furthermore, our case emphasizes the importance of surgical intervention for therapeutic and diagnostic management.

Accessible Guide to New York City

Student Presenter: Ashley Faverey
Faculty Mentor: Jacqueline Kendona
School/College: Health Professions

Participation in the occupation of travel allows individuals to engage in gratifying and meaningful experiences which enhance quality of life. The literature shows that there are many physical and social barriers that prevent individuals with disabilities from participating in travel. The purpose of this project is to assess and determine accessibility as well as advocate for more accessible conditions at various hotels, museums, restaurants, and other popular destinations in New York City. Doing so would allow individuals of all abilities to be active participants during their visit to the city while encountering the least amount of barriers possible. The engaging and educational videos posted to Instagram which describe features of accessible establishments will increase awareness to the public and inspire people to travel to New York City. The resource will also be in the form of a document for ease of viewing. This Accessible Guide to New York City will be a resource to individuals with disabilities, their caretakers, occupational therapists, and accessible travel agents. By bringing to light the barriers that exist at destinations in the city and demanding changes be implemented, leaders will be influenced to make changes to allow those with varying abilities to visit their establishments. Therefore, disabled individuals will experience enhanced quality of life and increased engagement in occupations.

Activity Based Intervention for Adolescence Experiencing Parental or Sibling Bereavement

Student Presenter: Emily Olsen
Faculty Mentor: Kelly Lavin
School/College: Health Professions

Children and adolescents who have lost a parent or sibling have a lower sense of belonging with peers that impacts social participation which subsequently affects academic performance and engagement in new or previously enjoyed occupations. There is a need for interventions that are trauma-informed, client-centered, and occupation-based. This care has the potential to improve a child's opportunity for success and create a better quality of life. However, after a thorough investigation of the available programs in the New York area for children and adolescents, none of the professionals running the program were occupational therapists. Occupational therapists have a unique perspective on mental health, but are often underutilized. The purpose of this project is to develop and implement an activity-based support group for adolescents who are experiencing bereavement due to the death of a parent, guardian, or sibling. The program aims to increase sense of belonging through the development of social participation skills, engagement in previously enjoyed and/or new meaningful occupations, and defining identity after loss. The approach of this project consists of implementing four activity-based support group sessions to high school students who have lost a parent or sibling, and the development of a manual consisting of six activity based interventions. To ensure sustainability resources use d as well as the manual will be left at the site for counselors to use if needed.

Addressing Emotional Impact of School Performance and Participation through Occupational Therapy Intervention

Student Presenter: Alicia Terry Jones
Faculty Mentor: Kaitlin Olivieri
School/College: Health Professions

School-aged students, found to have various deficits affecting their school day, such as deficits in handwriting and reading, experience challenged school performance. Occupational therapists are trained to assist with fine motor skills, such as handwriting, visual information processing skills for reading, and also on self-regulation and education participation. However, there is a scarcity of therapy interventions to address the self-esteem challenges students with deficits can face. A pilot program was created to address self-esteem targeting students and designed to be implemented by teachers in their classroom during the school year, providing them with a resource to facilitate students in managing and improving their self-esteem. The program incorporates self-affirming statements coupled with movement activities to encourage retention of statements to shift self-esteem in students. The tool is aimed to subsequently increase school participation and performance, which would be measured through handwriting. Students would be asked to provide a self-esteem self-assessment and a writing sample prior to inception and routinely during the program to capture changes over time. The program administered in a short, simple 3 - 5-minute daily format would be most sustainable, allowing teachers to implement it during the year. Program design was informed through assessing occupational therapy interventions, observation inside and outside school setting, and research on self-esteem.

Advocacy for Accessible Public Spaces for Children with Intellectual and Physical Disabilities: A Multifaceted Approach

Student Presenter: Alexander Velez
Faculty Mentor: Alexander Lopez
School/College: Health Professions

All children have the right to participate in age-appropriate play and recreation within their community, regardless of ability, free of physical barriers, where they can physically and socially participate with their peers, as ratified by the United Nations Convention on the Rights of the Children (Grover, 2005). Children with disabilities face occupational injustice and deprivation due to inaccessible environments, in particular playgrounds, as it affects their occupational participation in play and their development (Gately, 2023). The goal of this project is to explore different ways of advocating for more accessible public spaces, in particular playgrounds. The methods for achieving this goal are researching different evaluation tools to create a checklist that can be used to evaluate the accessibility of playgrounds in Long Island, NY. The findings will be published on Destination Accessible, a website whose purpose is to give information about the experience of accessibility of public spaces in New York. The findings will inform the targeted population and their caregivers about the accessibility of the visited playgrounds. Feedback from the professionals and the information being published will be used as determinant for the success of this project. The outcome of this project will be to raise awareness of accessible playgrounds and increase participation in play in these spaces for children with physical and intellectual disabilities.

Agriscapes: Revitalizing the Red Hook Waterfront

Student Presenter: Leah-Sarah Clayton
Faculty Mentor: Farzana Gandhi
School/College: Architecture & Design

This thesis proposes an adaptive reuse framework that not only preserves Red Hook's industrial character but reimagines it as a self-sustaining agro-industrial network, resilient to climate threats. By integrating flood-adaptive design, ecological restoration, and urban food production, this project envisions Red Hook as a model for sustainable development at the intersection of industrial heritage and environmental responsibility.

Defining the Problem:

1. Number of crops lost to severe weather coditions

2. Red Hook 100 year flood plain

3. Abanonded Waterfronts

4. Typical factory typologies don't allow outside integration

Finding the Solution:

1. How can agriculture become resilient?

2. How can flood prone areas become resilient?

3. How can we adaptively reuse these industrial waterfronts?

4. How can rethink the typical factory typology?

How can the adaptive reuse of waterfront warehouses integrate agro-industrial systems to create flood-resilience and sustaiable infrastructure that enhances food security, fosters commuity engagement and serves as a resilient hub for Red Hook, Brooklyn?

AI Assisted Note-Taking Effects on Course Comprehension

Student Presenters: Doris Prela, Simrat Renu, Vontay Farmer
Faculty Mentor: Melissa DiMartino
School/College: Arts & Sciences

In post-secondary education, disability remains a pressing challenge as students with disabilities still encounter difficulties obstructing their ability to have a well-rounded educational experience. Previous research finds that students with self-reported learning disabilities faced greater difficulty with assignments and obstacles related to non-academic responsibilities than their peers (Dong et al., 2016). Disability, across the board, conjures up many unaddressed difficulties with course comprehension for students in an academic setting. Developments in artificial intelligence have taken a new approach to expand accessibility with image generator apps, transcribing, lipreading, and speech recognition tools. Based on the previous research of disability and technology to assist learning, this study seeks to explore the efficacy of AI accommodation for students. For this study, participants will be categorized through self-reported surveys into three groups: no disability, self-reported disabilities, and officially reported disabilities. Student comprehension and content quiz scores will be measured.Then, an AI transcriber tool will be used for a week to record notes which will be sent out to students. The course comprehension and quiz scores will be measured again post-AI and compared among the groups. We aim to test if the implementation of AI tools affects the educational experiences at New York Institute of Technology with the goal of enhancing inclusion on campus.

AI in Radiological Fracture Screening: A Comparative Analysis

Student Presenters: Daniel Nasef, Jonathan Mayer, Joseph Tawfellos, Sanjay Jacob
Faculty Mentor: Milan Toma
School/College: Osteopathic Medicine

Fracture detection in radiographic imaging is a critical, yet time-consuming, task that relies

heavily on radiologists. Recent advancements in artificial intelligence offer promising tools to screen X-ray images for fractures, potentially enhancing efficiency and time to diagnosis. This study compares traditional Machine Learning (ML) models, Deep Neural Networks (DNNs) , and Convolutional Neural Networks (CNNs) in screening X-ray images for fractures across multiple anatomical regions. Using a diverse and annotated dataset of full-body radiographs, we evaluated each approach based on accuracy, sensitivity, specificity, and computational efficiency. While CNNs are typically preferred for processing spatial data and images, our results suggest that traditional ML models outperformed both DNNs and CNNs in detecting fractures, particularly when images are pre-processed and annotated. This comparative analysis highlights the strengths and limitations of each approach and provides valuable insights for the future integration of AI-based tools in radiological fracture detection.

Airway Management and Anesthetic Challenges in Tracheoesophageal Fistula: A Case Report on Complications Following McKeown Esophagectomy

Student Presenters: Suraj Jain, Fawaz Syed, Victor Masi, Maria Chimarios, Nicholas Bulba
Faculty Mentor: Jordan Keys
School/College: Osteopathic Medicine

A 69-year-old male who underwent a McKeown Esophagectomy due to signet-ring cell adenocarcinoma of the esophagus and subsequently developed a tracheoesophageal fistula (TEF) underwent bronchoscopy to manage respiratory complications and control persistent bilious secretions associated with the TEF. Initial use of a laryngeal mask airway, which was used to avoid dislodging the existing tracheal stent, was compromised by air leakage due to fistula-related issues. This necessitated a switch to endotracheal intubation. A smaller diameter tube was strategically positioned just past the vocal cords, and before the fistula site. Utilizing the venturi effect, this placement minimized air leakage by concentrating airflow through a narrow passage, effectively improving oxygen saturation to 99%. Anesthetic management included etomidate, fentanyl, succinylcholine, lidocaine, and Narcan, with succinylcholine specifically chosen to prevent laryngospasm and maintain the ability for spontaneous breathing. This case emphasizes the importance of adaptable airway management and anesthetic strategies in complex postoperative conditions.

AISTETIC

Student Presenters: Pranaav Venkatasubramanian, Guang Too
Faculty Mentor: Michael Nizich
School/College: Engineering & Computing Sciences

Our group (i.e., computer science and bioengineering students, College of Engineering and Computer Sciences) is involved in a project with biology students to develop a DNA structural formation prediction software (DARPOS), for use at the NYIT's "Entrepreneurship and Technology Innovation Center."" Our research team uses software that predicts the formation of individual segments of noncanonical, exotic DNA structures i.e., alternative DNA (e.g., Z-DNA) and multistranded DNA (triplex-DNA, G4-DNA, i-motif DNA), in human and non-human genes (e.g., sickle cell anemia). Python software and machine learning algorithms and models are being used to predict these unusual segments of DNA. It is our hypothesis that these noncanonical DNA structures can reveal information on genomic instability, resulting in cancer. We are using four DNA prediction softwares to identify Z-DNA, G4-quadruplex DNA, triplex DNA and i-motif DNA in sickle cell anemia genes. Our goal is to characterize genes for the presence of different segments of alternative and multistranded DNA to better understand their gene expression and target them when they develop into a disease. Additionally, our goal is to make these currently extremely complex DNA prediction softwares easily available to non-technical biologists through an easy-to-use cloud-based portal

An Investigation of Cry It Out in Adulthood

Student Presenters: Doris Prela, Raul Castillo-Leon
Faculty Mentor: Melissa DiMartino
School/College: Arts & Sciences

Infants' attachment to their primary caregiver is crucial for healthy psychological development (Bowlby, 1969). The Cry It Out (CIO) method involves letting babies cry alone in intervals to self-soothe. While past research shows no adverse effects on attachment and development at 18 months (Bilgin et al., 2020), we hypothesize that CIO's effects on adults' instead psychological well-being merit further investigation. This study focuses on relationship attachment, stress response, and coping. Participants' caregivers will be asked about sleep training methods used during infant years, creating CIO and control groups. Study subjects will then be tested using the Adult Attachment Questionnaire (AAQ) and a Dissociative Experiences Scale (DES). Lastly, their heart rate variability will be measured in response to a distressing video of a crying infant. These will assess whether the CIO group has on average higher rates of insecure attachment, dissociation levels, and lower HRV associated with poor mental health.(Mather et al., 2019) The findings could lead to CIO being reconsidered in parenting and pediatric circles, informing the development of new therapeutic interventions aimed at resolving early life distress. The study is in the data collection phase, with 30 participants and caregiver responses available and will have analyzed results by the presentation date.

Antimicrobial Efficacy of Formaldehyde-Phenol Preservation in Cadavers

Student Presenters: Sanjana Guruswamy, Jamie Heichelbech
Faculty Mentor: Bryan Gibb
School/College: Osteopathic Medicine

Formaldehyde-phenol perfusion is utilized in the preservation of cadavers for anatomy labs under the notion that it not only effectively preserves living tissue, but secondarily for its antimicrobial activity. However, there may still be viable bacteria on preserved cadavers due to bacterial resistance or incomplete perfusion of the formaldehyde-phenol solution. This study aims to isolate bacteria from formaldehyde-phenol preserved cadavers that have been stored at room temperature to determine if bacterial colonization is from survival of the preservation process or environmental exposure. This will provide as a measure for the efficacy of the formaldehyde-phenol preservation technique and whether the addition of paraformaldehyde powder influences these antimicrobial properties.

Chosen due to its susceptibility to bacterial growth, the nasopharynx of fifteen cadavers were swabbed and cultured on Tryptic Soy Agar (TSA). Two of these cadavers were found to grow bacterial colonies. Based on the positive cultures, it can be concluded that viable bacteria can be cultured from cadavers perfused with formaldehyde-phenol solution and the addition of paraformaldehyde powder does not prevent viable bacteria from being cultured. The findings of this study are critical to prevent potential illness any surviving bacteria may cause not only to faculty but to the hundreds of students interacting with the cadavers who are under the impression of mitigated risk.

Aortic Arch Calcification in a mouse model of Chronic Kidney Disease: A Multifactorial Process

Student Presenters: Matthew D. Cirrone, Saud A. Nasruddin, Jaden S. Alexander, Mugdha V. Padalkar
Faculty Mentor: Olga Savinova
School/College: Osteopathic Medicine

Chronic kidney disease (CKD) is a significant risk factor for cardiovascular disease, particularly in the setting of atherosclerosis and hyperlipidemia. CKD patients frequently exhibit vascular calcification, driven by complex interactions between mineral metabolism, lipid accumulation, and chronic inflammation. To investigate these mechanisms, we utilized LDL receptor mutant mice on a hyperlipidemic diet. At 10 weeks, mice were assigned to either a high-fat diet (HFD) or HFD supplemented with nephrotoxic adenine to induce CKD. Unexpectedly, adenine treatment led to a paradoxical reduction in lipid levels, preventing the CKD group from developing atherosclerosis. Given the known association between CKD and vascular calcification, we specifically examined aortic arch calcification as an indicator of vascular pathology. Hearts were scanned using MicroCT at 10-micron resolution, and aortic arch calcification was assessed using Dragonfly software. Our analysis revealed no significant difference in aortic arch calcification between the CKD and control groups (two-tailed unpaired t-test, $p = 0.1997$; Control n = 13, CKD n = 5), suggesting that plaque burden, rather than CKD alone, is a key determinant of vascular calcification. Limitations of this study include the sample size. These findings emphasize the complex interplay between vascular calcification, lipid metabolism, and CKD, warranting further investigation into mechanisms driving cardiovascular disease in CKD patients.

Architecture and Immigration: Mexican Gateway Hub

Student Presenters: Heriberto Cruz Cruz
Faculty Mentor: Farzana Gandhi
School/College: Architecture & Design

This proposed Gateway Hub is intended to be a dynamic cultural and immigration center designed to serve as a welcoming, supportive space for immigrants, particularly the large and growing Mexican community in the neighborhood of Sunset Park, New York. Inspired by Mexican culture and architecture, the hub will blend elements of a welcome center, embassy, and immigration office to provide a comprehensive and culturally resonant experience for newcomers. Sunset Park's substantial Mexican population makes it an ideal location for this project, addressing the unique challenges faced by immigrants adjusting to life in the US, which include but is not limited to language barrier, legal/ immigration assistance, integration, culture adjustment, etc The Gateway Hub will support immigrants through essential services, including assistance with any legal related issues, language classes, and cultural orientation programs, helping ease their transition into a new country.

By combining practical resources with cultural connections the center will foster a sense of belonging and empowerment for newly arrived individuals and families.

Are Perceptual Changes in Meditation Caused by Decreased Eye Movements?

Student Presenters: Amy Ketankumar Patel, Briana Alcindor, Yana Kostova, Annora Brown, Bekah Ruiz
Faculty Mentor: Robert Alexander
School/College: Arts & Sciences

Meditation has been linked to many reported changes in perception, including colors becoming more vivid, changes in brightness, and the blurring of boundaries between objects. The mechanisms behind these perceptual changes are not yet known. This experiment included a "meditation"" task, where we presented a single image of a clay pot on a computer monitor for 15 minutes. Participants sat at a fixed distance in front of the monitor and were instructed to concentrate all their attention on the clay pot and to "keep out" all other thoughts, feelings, sounds, body sensations. Eye movements were recorded using an eye tracker, allowing us to analyze saccades and fixation patterns during the task. Participants answered a series of debriefing questions designed to elicit comments about perceptual effects that might have occurred. We predicted that participants who report a blurring of boundaries would produce fewer eye movements. While many participants reported that nothing happened during the task, about a third of participants reported some perceptual effects, including changes in perceived brightness. Contrary to our predictions, the eye movement data showed no significant differences between the participants who experienced perceptual changes compared to ones who did not. Our future work will focus on improving the experimental design to better capture predicted perceptual effects and explore their association with eye movements patterns.

Assessing the Mental Health Impacts of Hookup Culture

Student Presenters: Ayesha Mulla, Tristan Fikaris, Moussa Bah
Faculty Mentor: Melissa DiMartino
School/College: Arts & Sciences

Hook-up culture is defined as a social phenomenon in which individuals engage in casual sexual encounters without the expectation of a committed relationship (Bogle, 2008). Research has found that individuals who participate in hook-up culture often experience lower self-esteem and emotional distress (Owen et al., 2010), and that refraining from casual sex can improve one's self worth and emotional stability (Travis et al., 2019). Given hook-up culture has negative effects on psychological well-being, our study seeks to implement an intervention into hook-up culture, to see if the effects are reduced when abstaining from casual sex.

Participants will take a survey that asks about whether they engage in 'hook-up' culture. If they engage in it, they will then agree to take part in a 3-week intervention, where they are asked not to engage in casual sex. Participants will take both a pre-and post survey that measures self-esteem, depression, and anxiety, in order to see if there are differences in psychological well-being when individuals are engaging in hook-up culture versus when they are not. Findings may provide insights into the psychological effects of casual sex and inform future discussions on sexual behavior and emotional health.

Assessing the Oculomotor Behaviors of Otolaryngologists

Student Presenters: Ayesha Mulla, Natalia-Adriana Androne, Maha Naveed, Ahaylee Rahman,
Faculty Mentor: Robert Alexander
School/College: Arts & Sciences

Becoming an expert otolaryngologist ("ear nose and throat"" doctor or ENT) requires the acquisition of skills through practice, like any other field. Even expert ENTs make mistakes, however, and those mistakes can lead to surgeries on incorrect body parts, permanent harm to patients, or even death. Improving the training of ENTs will improve patient health and safety. In this proposal, we will apply experimental behavioral approaches from psychology to the study of otolaryngology. Specifically, we aim to collect behavioral data from expert and novice ENTs as they view profession-relevant images. This study will quantify the differences in eye movement behaviors between expert and novice ENTs, giving us insight into what behaviors experts have learned that novices have not yet learned. We predict that novices will expend an excessive amount of time and resources searching non-informative regions of the images, while experts will consistently look at specific task-relevant regions. If successful, our project will establish a novel oculomotor biomarker of expertise in otolaryngology. That biomarker can then be used to create educational assessment tools that can directly assist with the training of ENTs, potentially reducing error rates. We may also be able to identify specific behaviors that are potentially critical to performance, allowing us to train experts to be even better than they already are.

Atypical Presentation of STEMI with Normal Initial Cardiac Workup: The Importance of Clinical Suspicion

Student Presenter: Supriya Baskaran
Faculty Mentor: Tanel Celebi
School/College: Osteopathic Medicine

This case describes a 47-year-old male with a history of hyperlipidemia and a significant coronary artery calcium score who presented with progressively worsening exertional chest pain. Initial diagnostic testing, including serial troponins, EKG, and stress testing, failed to reveal clear signs of myocardial ischemia. Despite the negative findings, his clinical presentation raised concern for unstable angina, leading to hospital admission and further evaluation. Cardiac catheterization ultimately uncovered a 100% occlusion of the right coronary artery, which was masked by the development of collateral circulation, preserving left ventricular function and preventing the expected EKG and biomarker abnormalities. This case underscores the importance of clinical suspicion and judgment in evaluating patients with potential acute coronary syndromes, as standard diagnostic tools may not always detect significant coronary pathology. It highlights the need for early cardiac catheterization in select cases, even in the absence of overt ischemic changes, to prevent missed diagnoses and adverse outcomes.

Beyond Classrooms: Schools of Tomorrow

Student Presenter: Ethan Steinberg
Faculty Mentor: Farzana Gandhi
School/College: Architecture & Design

By rethinking K-12 Education, this project rethinks the system by integrating adaptive learning spaces that support individualized, peer-to-peer, and self driven learning. Inspired by the Montessori principles, the design encourages hands-on exploration, allowing the students to learn at their own pace technology-enhanced personalized learning paths. Quiet zones provide focused study areas, while open collaboration spaces foster discussion and teamwork.

21st century learning initiatives guide the approach, emphasizing STEAM education, digital literacy, and innovative teaching methods. Teachers act as facilitators rather than lecturers, promoting project-based learning and interdisciplinary collaboration. Flexible environments, modular furniture, and writeable surfaces create dynamic engaging spaces that adapt to different learning styles.

To balance structure and adaptability, this project incorporates both dedicated and reservable spaces. Dedicated areas offer stability for specific subjects or learning styles. While reservable spaces provide flexibility allowing students and educators to modify the environment as needed. By prioritizing adaptability and student-driven learning, this design aims to create a future-ready educational experience.

Beyond Research: Virtual Reality Puzzles Using CT Derived Data for Learning Anatomy

Student Presenters: Asweel KK. Mehaboob, Eashan Jindal, Brian Bagelman
Faculty Mentor: Aki Watanabe
School/College: Arts & Sciences

Understanding anatomy is a fundamental yet challenging aspect of medical and biological education and research. The complexity and three-dimensional (3D) nature of anatomical structures make it difficult for students to fully grasp spatial relationships through traditional methods like textbooks and static 3D models. These approaches, while valuable, often lack the hands-on interactivity that enhances learning and retention. In addition, although many research groups are generating a wealth of 3D digital anatomical models, their use is typically limited to research. To bridge these gaps, we developed a virtual reality (VR) application to provide an immersive and engaging approach to anatomical education. This application features detailed 3D models of both human and non-human anatomical structures. To make the experience interactive and engaging, we created 3D puzzles based on the brain and skull models that have been segmented into anatomical regions. Users can manipulate, explore, and reconstruct these structures in a puzzle-like format, reinforcing spatial understanding and retention. Additionally, by leveraging VR technology, this tool makes immersive anatomy education portable and accessible, allowing such experiences to occur inside and outside the classroom. Through this app, we present how anatomical models generated through our research can have expanded roles beyond research in creating engaging learning experiences.

Beyond the Swipe – How Dating Apps Affect Student Safety and Mental Health

Student Presenters: Keerthi Kapavarapu, Shivani Jaishankar
Faculty Mentor: Wenjia Li
School/College: Engineering & Computing Sciences

Dating apps are incredibly popular among college students, making social interactions easily accessible. However, our research shows there's a darker side: many students experience emotional stress, lowered self-esteem, and significant safety risks like catfishing and harassment. Despite there being safety measures provided by dating apps, they haven't been nearly effective enough to protect the impressionable young adults.

Through surveys conducted with our fellow students and a careful review of recent studies, we've uncovered the seriousness of these issues. Our findings clearly demonstrate that most dating platforms prioritize looks of the users which negatively impacts their mental health and personal safety.

To address these problems, we suggest exploring new methods of connecting people online—focusing less on appearance and more on shared interests, such as music. This will theoretically reduce risks and help create safer, more genuine interactions.

Our project highlights important problems students face today and suggests innovative, research-based solutions to improve digital dating environments. By presenting our work, we aim to raise awareness, spark meaningful conversations, and encourage positive changes to make online dating safer and healthier for everyone.

Bioinformatics to Study Genomic Instability in Genes Associated with Sickle Cell Anemia: Z-DNA; G4-Quadruplex DNA, & i-Motif Quadruplex DNA

Student Presenters: Aangi Shah, Annabella Elbaz, Mary Stein, Sweta Kumararaja, Adelaide Mensah
Faculty Mentor: Claude Gagna
School/College: Arts & Sciences

Researchers consider DNA to be the Watson-Crick B-DNA molecule. However, this needs to change! Researchers need to start thinking about DNA having the potential to develop exotic, unusual non-canonical segments of DNA within a specific gene, i.e., alternative left-handed ds-Z-DNA, and multistranded DNAs such as G4-Quadruplex DNA and i-motif Quadruplex DNA. We are developing a novel portal, i.e., DNA and RNA Predictive Operating Software (i.e., DARPOS) at NYIT via AESTIC, in order for researchers to more fully characterize their "genes of research interest"" for potential non-canonical DNA structures. This interdisciplinary bioinformatics research project involves undergraduate and graduate students from the Entrepreneurship and Technology Innovation Center (ETIC), College of Arts and Sciences (Dept. of Biological & Chemical Sciences) and the College of Engineering and Computer sciences. Noncanonical DNAs have functions in regulating normal gene expression and the development of pathologies. We are first testing the novel portal by characterizing the hemoglobin gene and sickle cell anemia-based genes in a separate project. Thus far we have not located any segments of potential Z-DNA in any of the genes, however, we have obtained data that suggests the possible inclusion of some quadruplex DNA segments in these genes. The portal will be free to use by researchers all over the world. This will bring prestige to NYIT as it strives to become an R2 institution.

Cannabidiol (CBD) as a Promising Anti-Cancer Drug

Student Presenter: Ariel Shaddaie
Faculty Mentor: Dong Zhang
School/College: Osteopathic Medicine

Cannabidiol (CBD)'s potential as a promising anti-cancer drug is attributed to its low toxicity levels and its ability to inhibit the growth of certain cancers in mouse tumor models. The endocannabinoid receptors, CB1 and CB2, play a crucial role in regulating cellular calcium homeostasis in the cytoplasmic and endoplasmic reticulum (ER) membranes, and CBD affects these receptors. The Unfolded Protein Response (UPR) pathway is activated if there is prolonged ER stress, and it targets cells for apoptosis, which is the target pathway of CBD. In our study, we used Western blotting to investigate the effects of CBD on melanoma and normal skin fibroblast cells. Our multi-cancer project validated RNA-sequence data on multiple cancer cells treated with 5 µM CBD, showing upregulation of CHOP and PARP in A375 cells (a melanoma cancer cell line). These markers, both CHOP and PARP, are indicative of activation of the UPR pathway, which is associated with CBD-induced apoptosis. Different cancer cell lines have varying sensitivity to CBD-induced apoptosis, with A375 melanoma cells requiring a concentration of CBD (5.77 µM) to induce apoptosis. We are continuing to investigate the effects of CBD on other cell lines and are studying the activation of the UPR pathway in A375 cells.

Characterizing Sox9 Lineage Cell Populations within Achilles Tendon Repair using Single-cell RNA Sequencing and Transgenic Fate Mapping

Student Presenters: Hannah Gaddam, Christopher Janton, Gianna Salib, Chahat Arora
Faculty Mentor: Michael Hadjiargyrou
School/College: Arts & Sciences

The Achilles tendon, a crucial structure linking the calcaneus to the gastrocnemius, endures immense mechanical stress and is highly susceptible to rupture– an injury that, even with surgical intervention, rarely restores the tissue to pre-injury strength. Limited vascularization and a dense extracellular matrix contribute to the poor healing capacity of tendons and ligaments. New technologies, like single-cell RNA sequencing, have begun to characterize cellular heterogeneity within the Achilles tendon. Tenocytes, which are fibroblasts responsible for producing the extracellular matrix, are localized in the midbody of the tendon. Non-tenocytes, which include pericytes, endothelial cells, and nerve cells, are found in the paratenon sheath, a thin vascularized layer supplying blood to the tendon. Single cell expression mapping of Sox9 and CXCL12 revealed that Sox9 expression is localized to tenocytes, while CXCL12 expression is localized within endothelial cells. As expected, we histologically localize Sox9-lineage cell populations to the tendon midbody and enthesis, while CXCL12+ cells localize to the paratenon sheath. In response to Achilles injury, we observe the infiltration of CXCL12+ and Sox9+ cells into the tendon repair region at 8 weeks post-injury. Future studies will focus on the histological staining of key cell markers and the quantification of various cell populations at different time points, further detailing the cellular dynamics of tendon repair.

Chemistry in 3D: Mastering Chirality in a Virtual Reality Environment

Student Presenters: Rahul Kapur, Reia Thomas, Joana Thomson, Amna Syeda
Faculty Mentor: Jacqueline Keighron
School/College: Arts & Sciences

Virtual reality is a newer, increasingly popular technology that has promising applications in education as it provides an immersive and interactive 3D experience, by incorporating various modes of education in one environment. Such technology may aid students in better understanding a variety of topics like chirality, which a surveyed group of students deemed to be difficult to grasp. Chirality is a fundamental component of upper-level science courses, and its comprehension is fundamental to the STEM student experience. We hypothesize that if students have a more interactive component in their learning experience, then they will have a stronger and faster recall of concepts through association. To address this hypothesis, students will be provided with a VR setup and training to navigate a preliminary 3D environment produced in the platform FrameVR. The primary learning material featured in the environment will be the mini-lectures, concise videos that review a multitude of subtopics regarding chirality. Interactive 3D models will supplement this material as they are correlated with the mini-lecture, simulating the experience of a 3D modeling kit. Students will then navigate through practice questions in a gaming format to assess comprehension of learning objectives. This model serves as a supplemental tool to traditional coursework and also offers diverse learning styles, making complex concepts more accessible and improving STEM education for a wider range of students.

Choroid Plexus Organoids: A gateway to study Choroid Plexus differentiation and multiciliogenesis

Student Presenter: Miriam Farah
Faculty Mentor: Haotian Zhao
School/College: Arts & Sciences

Choroid Plexus (CP), a highly specialized epithelial structure within the brain ventricles, produces cerebrospinal fluid and serves barrier functions in the brain. Recent studies have emphasized the multifunctional role of CP in brain development, homeostasis as well as an immune organ. Primary neoplasms of CP are rare intracranial tumors that predominantly occurs in childhood and can be categorized into benign CP papilloma, and malignant CP carcinoma (CPC). CPC patients have worst prognosis even after chemotherapy, surgery and radiation. The development of safer and more effective therapies for CPC requires a better understanding of its molecular biology. However, the small patient population, scarcity of patient specimens and lack of accurate experimental models have hindered these efforts. To address the existing gap between research and therapeutic development, this study utilized CP organoids derived from human induced pluripotent stem cells (iPSC) and embryonic stem cells (ESC). Specifically, human iPSC line IMR-90 and human ESC line H9 were used to develop CP organoids based on previously published protocols. After 30 days, fluid filled cystic structures were grossly evident. Immunofluorescence and H&E data revealed epithelial characteristics similar to those of CP epithelium in humans and mice.

Cluster AS3 phages Babushka and DanHam62 isolated from soil in Long Island NY

Student Presenters: Hameeda Fatima Rasheed, Daniela Jazmin Jara, Leah Joby, Ramanpreet Kaur, Kristy Larsen
Faculty Mentor: Bryan Gibb
School/College: Health Professions

Bacteriophages are the most abundant organisms in the biosphere, and harbor potential as therapeutics for bacterial infections. The isolation and characterization of bacteriophages provide valuable insights into complex evolutionary relationships between phages and their host bacteria. Arthrobacter phages Babushka and DanHam62 were isolated by enrichment on Arthrobacter globiformis B-2979 from moist soil collected in Long Island New York as part of the Science Education Alliance-Phage Hunters Advancing Genomics and Evolutionary Science (SEA-PHAGES) program. The genomes of Babushka and DanHam62 were sequenced at the University of Pittsburgh and found to be 38380 bp and 38467 bp long respectively with average GC content of 66% with 12bp 3' Sticky Overhang ends. Both phage were placed into cluster AS3 and share 92% overall nucleotide similarity and 85% gene content similarity. While closely related, other members of AS3 are more similar to each. Phage DanHam62 has 99% nucleotide sequence similarity to phage Atlantica and Babushka has 93% nucleotide similarity to phage Leona. The genome organization for AS3 phages is similar within the cluster with structural genes on the left arm followed by a central region of reverse strand transcribed genes containing a putative tyrosine recombinase, immunity repressor, and others DNA binding proteins. The right arm of the genome is forward strand transcribed and contains a series of DNA metabolism genes and other genes with no known function

Cluster FD Phage Swim Has a Linear Genome and No Integrase But Still Forms Lysogens

Student Presenters: Aminah Sarowar, Stanley Pierre Louis, Sumreet Baidwan
Faculty Mentor: Bryan GIbb
School/College: Arts & Sciences

Bacteriophages are the most abundant organisms in the biosphere, and harbor potential as therapeutics for bacterial infections. The isolation and characterization of bacteriophages provides valuable insights into complex evolutionary relationships between phages and their host bacteria. One of these is lysogeny, in which the bacteria does not immediately die following infection. Phage Swim was isolated by enrichment on Arthrobacter globiformis B-2979 from moist soil collected next to a residential driveway in Long Island as part of the Science Education Alliance-Phage Hunters Advancing Genomics and Evolutionary Science (SEA-PHAGES) program. Structural annotation of Swim's genome identified thirty-three protein-coding regions, none of which were common genes known to cause lysogeny. As such, automatic databases classified phage Swim as lytic. This is contrary to the early experimental results, which are indicative of lysogeny. Lysogens of Swim, and all FD phages were isolated, in which Swim tested positive for superinfection immunity, in which bacteria cells are protected from subsequent infections. This is confirmation of lysogeny, as lysogens can repress future infection. To reconcile this discrepancy, we set out to identify putative repressor genes, which we will clone and transfect into electrically competent Arthrobacter globiformis cells.

Cognitive Healing – Beyond the Treatment

Student Presenter: Gena Gurman
Faculty Mentor: Kelly Lavin
School/College: Health Professions

Cancer survivors are at risk for developing cancer-related cognitive impairments, thus impacting participation in education and work. There are limited tools available to cancer patients that specifically focus on increasing cognition post-cancer treatment. Backed by evidence-based research, this capstone project focuses on creating an online resource to increase awareness and educate cancer survivors about the cognitive deficits that may arise after cancer treatment, how this affects their participation in school and work, and provide tools and recommendations to improve cognitive abilities. This educational resource will be published on The National Coalition for Cancer Survivorship website, where the usefulness of the resource will be measured through website analytics and reviewed by experts in the field. The goal of this resource is to raise awareness about cognitive deficits and, ultimately, improve cancer survivors' self-advocacy with their health care team. Additionally, by providing cognitive remediation techniques and tips, there will be an improved quality of life for individuals post-cancer treatment.

Competence Begins With Knowledge: How To Safely and Effectively Transport Students With Disabilities On A School Bus

Student Presenter: Kiran A.S. Persad
Faculty Mentor: Kelly Lavin
School/College: Health Professions

The yellow school bus is crucial in providing children with disabilities (ages 3-21) safe and accessible transportation to access education. While it is considered the safest mode of transportation, children are still at risk of harm due to bus staff lacking knowledge of safety precautions and behavioral management techniques for children with social/emotional disabilities. This project is important to occupational therapy as it addresses instrumental activities of daily living (IADLs) and equips bus staff with the necessary tools to ensure safer travel for these children. The aim of this study is to provide key stakeholders, such as bus staff, with additional training to enhance their understanding of the various conditions they encounter. The goals of this project are (1) to increase bus staff knowledge about the different disabilities they may encounter, (2) to improve their confidence and competence in transporting these children, and (3) to assess whether there was change in pre-test and post-exam scores after the training was administered. This project will take place at a non-profit school bus company named NYCSBUS. An interactive slideshow presentation will focus on common diagnoses of the children they transport and will be presented to NYCSBUS staff. The training aims to improve bus staff's understanding and ability to handle this population. Future practices will expand the course to include more diagnoses.

Comprehensive Pipeline for Infectious Diseases Genetic Connectivity Inference

Student Presenters: Levi Dong, Sarah Ranginwala
Faculty Mentor: Leonidas Salichos
School/College: Arts & Sciences

In response to the evolving landscape of infectious diseases, we have developed a comprehensive computational pipeline to infer genetic connectivity and enhance our understanding of viral transmission dynamics. This study focuses on three major pathogens, Influenza A (H3N2 and H1N1) and SARS-CoV-2, by integrating robust phylogenetic methods with extensive genomic data. For Influenza A, we curated a dataset comprising domestic sequences from the NCBI database collected between 2018 and 2023 for both H3N2 and H1N1. These were supplemented by randomly selected international sequences serving as reference standards. All sequences were rigorously processed and filtered before being aligned using MAFFT. Phylogenetic trees were then constructed using RAxML with 100 bootstrap replicates to ensure statistical reliability and were visualized with Figtree. The pipeline was also implemented for SARS-CoV-2, with both domestic and international sequences downloaded from the GISAID database. The resulting trees and genetic connectivity outputs enable the identification of transmission clusters and key nodes of viral spread. Our integrated framework provides insights into the genetic connectivity between states and allows the identification of PoHI, geographical points of health interest. Here, we present the flowchart of our pipeline in a case study of Influenza A.

Consequences of not using Incentive Spirometry

Student Presenter: Kayinat Sundas
Faculty Mentor: Richard Morgan
School/College: Osteopathic Medicine

Most residents admitted to the emergency department due to traumas and rib fractures are scheduled for physiotherapy to help improve the thoracic volume of inspired air

(Dote et al., 2020). For respiratory physiotherapy in many patients with chest trauma and rib

fractures, an incentive spirometry device is widely used that is designed to motivate the patients to get the maximum number of inspiratory volumes through visually aided feedback. Incentive spirometry is a device that is neither invasive nor expensive (Dote et al., 2020).

 The first report that showed incentive spirometry to reduce pulmonary complications was given by Bartlett et al., along with other studies that investigated the uses of incentive spirometry (Dote et al., 2020). The residents in the facility where the project is implemented primarily are post-acute care and post-surgical care on a long-term basis, and they don't use incentive spirometry most of the time due to laziness and forgetfulness. Most of them are hospitalized in the emergency department after being admitted to long-term care due to the pulmonary complications they develop. They must know the benefits and importance of using incentive spirometry daily for 15 minutes every 2 hours.

Materials used were posters and videos that demonstrated benefits and methods of using incentive spirometry. Benefits of digitally making posters are lower production costs, ease of preparation & transport, & display to a larger audience (Newsome et al., 2021).

Cross Cultural Perception in Non-Verbal Classroom Communication Abstract

Student Presenters: Annora Brown, Luning Chen, Samantha Richardson
Faculty Mentor: Melissa DiMartino
School/College: Arts & Sciences

Nonverbal communication is a large part of communication playing a prominent role in conveying authority. Communication in the classroom is vital because the essence of education is conveying a skill or idea to another person . With 5% of all college students in the U.S. being international, it is important to understand how cultural differences in preferred body language affect perceived teacher credibility (Terzian & Osborne, 2023). Prior research found that if the body language of a teacher is not cohesive with students' cultural expectations, then they perceive the teacher as less credible, affecting student learning (Buckner & Frisby, 2015). This study aims to better understand international students' perception of teachers' authority in the U.S. We will compare international and domestic students' perception of teachers' body language in the classroom. Students will watch two 2-minute-long recordings of a college lecture. One video contains body language aligned with common teaching mannerisms in authoritarian Asian cultures and the other will contain body language showing common teaching mannerisms in non-authoritarian American culture. Participants will then complete a short questionnaire assessing the two video lecturers' perceived credibility & level of engagement. The aim is to understand the effects of nonverbal cues in cross-cultural teaching environments and explore how to bridge the gap between international & domestic students' learning experience.

Cytokinesis failure and multinucleate neurons in a rat model of human primary microcephaly

Student Presenter: Justin Popp
Faculty Mentor: Raddy Ramos
School/College: Osteopathic Medicine

Loss of function of citron kinase (CK) causes microcephaly in humans, mice, and rats. Multinucleated brain cells are also found in all three species after loss of CK function. The conserved importance of CK in brain development indicates that rat and mouse models can serve as valuable research tools to understand CK function and potentially discover approaches to treat affected patients. In the current study we will use neuroanatomical techniques and diverse microscopy methods to catalog different brain cell-types that exhibit multinucleation in a genetic rat model of microcephaly including from neural tube and neural crest cell derived progenitor cells.

Dangers of the Gambling industry

Student Presenter: Michael Fahey
Faculty Mentor: Patty K. Wongpakdee
School/College: Architecture & Design

This project titled, "Dangers of the Gambling industry" was designed to visually communicate the alarming statistics surrounding gambling addiction in the United States through an engaging and informative infographic. The primary objective was to capture the viewer's attention and encourage them to delve deeper into understanding the magnitude of the issue. The infographic not only presents key data but also emphasizes the pervasive influence of casinos and online gambling businesses, which profit from the inherently addictive nature of their services. By showcasing the intersection of profit-driven business models and addiction, the project seeks to raise awareness about the detrimental effects gambling can have on individuals and society at large. The aim is to foster a deeper understanding of how these industries exploit vulnerable individuals, driving home the need for more robust prevention efforts, responsible gambling initiatives, and policy changes to address this growing problem. Ultimately, this infographic serves as both an educational tool and a call to action, urging viewers to reflect on the widespread impact of gambling addiction and the responsibility of both the industry and society to combat it.

Designing for Inclusion: A Customizable Yoga Pose Library System for Users with Low Mobility and Physical Disabilities

Student Presenter: Woohee Byun
Faculty Mentor: Kevin Park
School/College: Architecture & Design

Current yoga apps often rely on pre-recorded flows and offer limited customization, creating barriers for users with low mobility or physical disabilities. This research project explores a new approach to yoga app design through the development of a pose library system that allows users to exclude specific postures based on injuries, flexibility levels, or mobility constraints—an option missing in leading apps such as Down Dog, Pocket Yoga, and Yoga Studio.

Through a combination of empathy interviews, surveys, and comparative usability testing, the study evaluates how these existing apps serve (or fail to serve) beginner to intermediate yogis with accessibility needs. Early findings indicate a critical gap in personalization and injury prevention features, underscoring the need for a more adaptable and inclusive user experience.

This research culminates in the design of a mobile-first yoga pose customization tool with smart exclusions and therapeutic suggestions tailored to users' needs. The project aims to shift the standard from one-size-fits-all to adaptive wellness technology, offering a scalable model not just for yoga, but for broader fitness platforms.

Developing Educational Tools to Help Collegiate Student-Athletes Manage and Prevent Occupational Imbalance, Anxiety, and Depression

Student Presenter: Taylor D'Alessandro
Faculty Mentor: Kelly Lavin
School/College: Health Professions

Student-athletes face challenges that require them to juggle many roles and responsibilities, putting them at higher risk for occupational imbalance, anxiety, and depression (Davis et al., 2019; Hamlin et al., 2019; Liu & Taresh, 2024; Lopes Dos Santos et al., 2020). Addressing occupational imbalance and mental health is within the occupational therapy scope of practice. However, there is no defined role set in place for occupational therapists in college athletics (American Occupational Therapy Association [AOTA], 2021; Schindler, 2019 as cited in Dirette, 2019).

The goal of this project is to increase knowledge and awareness of the challenges collegiate student-athletes face and ways to prevent and manage occupational imbalance, depression, and anxiety through education tools. Additionally, the project will aim to advocate for the role of occupational therapy within this domain.

These tools will be disseminated through social media platforms that are widely used by the student-athlete population, such as Instagram, to bring increased knowledge and awareness to the subject. Posts will include evidence-based facts and strategies for occupational balance and mental health and ways occupational therapy can play a role in facilitating these strategies.

The project aims to bring awareness to the challenges student-athletes face and provide helpful strategies to overcome these challenges through an occupational therapy lens. It is anticipated that maintaining occupational balance

Development of a 3-D Printed Model Website Demonstrating Different Non-canonical DNA molecules

Student Presenters: Sweta Kumararaja, Shrika Renganathan, Safa Chaudhri
Faculty Mentor: Claude Gagna
School/College: Arts & Sciences

We are developing a variety of different easy to use software programs and instructions, that will enable researchers and students to easily and quickly produce 3-D models of unusual, non-canonical DNAs, such as left-handed double-stranded (ds-) Z-DNA (i.e., alternative form of ds-B-DNA). Additionally, other models will include multistranded DNA structure, i.e., G4-quadruplex DNA, i-motif DNA and triplex DNA. Different variations of these noncanonical DNA models will be available to print, e.g., ball and stick, flat. Models can be printed up to a size of 8 inches and then colored for specific DNA structural components, e.g., base pairs, and sugar phosphate backbone. These 3-D models accurately describe the complexity of intact, unaltered, noncanonical deoxyribonucleic acids. Eventually, these images and instructions will be posted on a website for anyone to use. Being able to physically hold a DNA model will help better understand how its structure can regulate its function. Canonical, traditional, Watson-Crick right-handed ds-B-DNA will also be available.

Differential gene expression and RNA-Seq analysis identify key genetic variants in chromosome 13 linked to prostate cancer

Student Presenters: Meet Boghani, Ashwin Nori
Faculty Mentor: William Letsou
School/College: Arts & Sciences

Prostate cancer is one of the most frequently diagnosed malignancies in males globally. Yet compared to men of European ancestry, men of African ancestry face elevated risk and mortality. To improve early detection and treatment, and to address this important disparity, it is crucial to understand the genetics of risk predisposition. Using publicly available RNA-seq data, we discovered genes potentially responsible for the development of prostate cancer in the region chr13:23,000,000–23,999,999. We analyzed gene expression in matched normal and tumor samples from 52 patients in the TCGA-PRAD study available through The Cancer Genome Atlas. Transcript counts were derived from genomic .bam files using RNA-SeQC, and differential expression was analyzed using DESeq2; results were visualized using ggplot2. We observed eight notable genes that may be related to prostate cancer, including SPATA13, PCOTH, MIPEP, C1QTNF9B, RPLP1P13, TNFRSF19, SACS-AS1, and SACS. MIPEP (P= 9.5×10^{-15}, log2FC = 1.84) and PCOTH (P = 5.5×10^{-7}, log2FC = 1.66) were both more highly expressed in tumor cells compared to normal cells. Data from Ensembl and Genecards indicated that PCOTH may be involved in prostate cancer cell growth.

Discovery and Characterization of 8 Novel Bacteriophages Against Staphylococcus pseudintermedius

Student Presenters: Nithin Reji, Victoria Kuo, Brandon Gaffoor, Joel Joseph
Faculty Mentor: Bryan Gibb
School/College: Arts & Sciences

Staphylococcus pseudintermedius (SP) is a bacterial pathogen responsible for skin and soft tissue infections in animals, particularly dogs and cats. The resistance of SP to conventional antibiotics, particularly in methicillin-resistant strains (MRSP), necessitates alternative treatment strategies such as bacteriophage therapy. However, bacteriophages (phages), viruses that infect and kill bacteria, SP remain relatively underexplored. This study aimed to isolate and characterize novel bacteriophages capable of infecting SP, with the goal of assessing their therapeutic potential.

Phages were screened from domestic animals, wastewater, and soil. Seven were isolated from wastewater, one from an animal source, and none from soil, highlighting wastewater as a key reservoir. Of the eight phages, seven exhibited lytic activity, forming clear plaques, while one showed potential lysogenic behavior. Transmission electron microscopy revealed structural diversity, with three Podoviridae phages (Hank, VB481, and B02) displaying similar morphology, suggesting possible genetic redundancy. The remaining five phages belonged to Myoviridae or Siphoviridae families, indicating a range of morphotypes.

Calcium supplementation enhanced titers in 4 phages but showed no significant difference. DNA analysis confirmed phage genomes, with most estimated at 10 kilobases or larger. Ongoing research includes whole-genome sequencing and host range studies to determine genetic composition and infectivity.

Dissection, Preparation, and Submission of Mammalian Eye Globes for Micro-CT Scanning

Student Presenters: Ryan Xurei Wu, Zainab Yusaf, Saamia Gondal, Afiyat Khan, Sweta Kumararaja
Faculty Mentor: Claude Gagna
School/College: Arts & Sciences

Our group is carefully dissecting adult cow and pig eye globes, that were fixed in either 10% neutral buffered formalin or Davidson's fixative, and processing them in such a way as to prepare these tissues for micro-CT scanning, i.e., Micro-computed tomography [SkyScan 1173 High Energy Desktop X-Ray micro-CT Scanner (Micro Photonics)]. Our goal is to obtain high resolution pictures and three-dimensional orientations of different parts of the eye globe, particularly, the crystalline lens. We are also looking at external structures, such as the extra ocular muscles and the optic nerve. We are examining different tissue-based processing fixatives and histotechnological procedures in order to determine which processes best preserve the morphology of the eye globe and all its internal and external parts. Prepared eye globes will soon be scanned. Past micro-CT scan resulted in poor images with background noise. These issues will be soon resolved with the micro-CT scanner technician. Our data will enable researchers to better preserve eye tissue for their various eye globe-based research projects and integrate immunohistochemical data.

Diving Deep: Analyzing Human Performance Under Stress with Wearable Technology

Student Presenters: Mihir Paragkumar Brahmbhatt, Levi Dong, Zainab Faisal
Faculty Mentor: Leonidas Salichos
School/College: Arts & Sciences

Wearable biometric devices, including smartwatches and fitness trackers, are increasingly used to monitor real-time physiological signals in both clinical and performance-based settings.

This project aims to explore the physiological demands of freediving using wearable technology to improve performance and develop safety standards for freediving. In this project we analyze both publicly available datasets and specialized wearable data, including heart rate, oxygen saturation, sleep patterns, exercise intensity, and recovery metrics, to extract key physiological biomarkers. he insights gained from this work will form the foundation for future integration with specialized Garmin wearable data and freediving-specific measurements . Ultimately, this work aims to enhance our understanding of human performance under extreme stress, inform predictive modeling for dive readiness, and foster interdisciplinary collaboration in biomedical data science.

DNA And RNA Predictive Operating Software (DARPOS): Novel Bioinformatics Research Tool for Characterizing Noncanonical DNAs in Genes

Student Presenters: Mary Stein, Aangi Shah, Annabella Elbaz, Zainab Ahmad
Faculty Mentor: Claude Gagna
School/College: Arts & Sciences

Deoxyribonucleic acid is an extremely dynamic and vibrant molecule that can adopt a variety of different structures, e.g., Z-DNA. This interdisciplinary project involves biology students, computer science and bioengineering students. The Technology Innovation Center is also involved in this project. Our goal is to use four different DNA prediction softwares (i.e., DeepZ, G4Mismatch, G4Boost and G4-iM Grinder) from peer-reviewed publications in order to characterize potentially unusual segments of DNA structures in genes, which regulate gene structure and function, i.e., genomic instability. The DNA and RNA Predictive Operating Software (DARPOS), is presently being tested, and when completed will be available to researchers al around the world. How these noncanonical DNAs affect gene function will help to more completely understand normal gene expression, development of disease, and in the production of DNA-based drug/biologics.

Do reusables pose greater infectious risks than disposables for consumer goods? A systematic literature review

Student Presenter: Sanjidah Ira
Faculty Mentor: Patti Happel
School/College: Osteopathic Medicine

Increased concern over climate change and the emergence of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus resulted in a clash of political directives around reusable and disposable food serviceware. Decreasing single-use items will likely reduce consumption and environmental emissions; however, improper cleaning of reusable items could result in greater risks of disease transmission. We sought to assess the risks of reusable and disposable food serviceware and document disinfection protocols by conducting a systematic literature review of articles that assessed materials or products that could be fomites to specific food-borne pathogens. After initial screening, the study team extracted data from 122 articles. The most common pathogens studied were E. coli (25% of included studies), general bacteria (24%), and Norovirus (16%). Thirteen studies (8%) focused on SARS-CoV-2. A majority of studies analyzed plastics (27%), stainless steel (22%), or porous surfaces such as paper and cardboard (12%). Forty seven of the studies (35%) were conducted in a food service setting, and 40 studies (30%) tested disinfection techniques. Despite a large body of related literature, there is very little evidence suggesting that either reusable or disposable food serviceware is safer for minimizing infectious risks. Pathogens can survive on various fomites, though greater surface porosity and higher humidity levels increase viability of most pathogens.

Does sound affect your engagement during a task? Task engagement when listening to lo-fi, pink noise, or silence

Student Presenters: Michael Cornacchia, Sebastian Antezana, Yasira Donoso
Faculty Mentor: Nicole Calma-Roddin
School/College: Arts & Sciences

Music has been used to motivate and engage people for hundreds of years. An emerging genre of music, lo-fi, is becoming a more commonly used way to stay engaged while working or studying. We aim to study how sound affects task engagement. Participants will be randomly assigned to three groups. Each group will be asked to answer trivia questions based on general knowledge. In the first group, participants will be prompted to answer the questions without any background sound. In the second group, participants will be prompted to answer the questions while listening to pink noise. In the third group, participants will be prompted to answer the questions while listening to lo-fi music. Participants will complete trivia questions for fifteen minutes. After, they will complete the Flow Short Scale to measure engagement and a demographic questionnaire. We predict that participants will have the highest level of engagement in the music condition compared to the other conditions; we also expect that participants exposed to pink noise will have higher engagement when compared to the silence condition. These results are applicable to educational settings, work settings, and learning environments.

Domestic Violence: A Closer Look at the Hidden Epidemic

Student Presenter: Dama Ordoñez
Faculty Mentor: Patty K. Wongpakdee
School/College: Arts & Sciences

My domestic violence poster provides a comprehensive overview of the prevalence and impact of domestic violence and sexual assault. Key features of the poster include: Domestic Violence Rates by State, Countries with High Rape Rates, Most Common Forms of Sexual Harassment, Percent of LGBTQ+ Victims of Domestic Violence, etc. This poster provides crucial data that helps raise awareness about domestic violence, sexual assault, and harassment, and emphasizes the need for targeted interventions and support systems for vulnerable groups.

Drug Mechanism of "Drug C" on Cell Growth

Student Presenters: Jaden Fu, Eugene Atiase
Faculty Mentor: Navin Pokala
School/College: Arts & Sciences

Using the yeast, Saccharomyces cerevisiae, a model organism, we tested the antimicrobial ability and mechanism of "Drug C". We analyzed the growth of the cells on multiple media types to determine the best media for our study. Then, we assessed an array of drug dilutions and tested for the drug's potency at various concentrations. Using the drug concentration at a minimum inhibitory concentration, we used yeast cells with a plasmid containing a drug-resistance gene, grew colonies with this library-containing yeast, and extracted the DNA of the yeast to transform into the bacteria Escherichia Coli. Finally, we isolated the plasmid, purified it, and sequenced it for analysis. This will allow us to find genes that, when overexpressed, will enable the cell to survive in the presence of our drug.

Earlier Intervention: Educating Teachers and Staff of the Role of Occupational Therapy in a Montessori School Setting

Student Presenter: Tina-Marie Bonsangue
Faculty Mentor: Kelly Lavin
School/College: Health Professions

Background & Rationale – A Montessori school teaches children of different ages ranging from 18 months - 6 years old. This time period is crucial for development, as children reach different developmental milestones that will impact their ability to learn and process information. Occupational therapists have a unique insight as they are trained in these areas. They seek to understand the way a child responds to their environment and how they may process information doing such. If a child demonstrates difficulties with reaching milestones or processing information learned in school, occupational therapists can provide interventions to target such deficits, ultimately reaching the child's goals.

• Purpose & Objectives – The goal of the project is to inform and educate Montessori teachers and staff members about the role of occupational therapy in the Montessori school setting. The project seeks to inform teachers and staff of fine motor skills, gross motor skills, sensory processing, sensory integration, and emotional regulation to help understand how children react and participate in school. Coupled with education of expected developmental milestones, teachers and staff can better understand their students and implement interventions taught by the occupational therapist.

• Methods & Implementation – The approach consists of education via PowerPoints, resources, and weekly discussions. The setting is a Montessori school with children ranging in ages from 18 months to 6 years

Educating Parents on how to Promote Growth and Development for Children Diagnosed with Developmental Delays

Student Presenter: Kathleen Reed
Faculty Mentor: Kelly Lavin
School/College: Health Professions

According to the CDC about 1 in 6 (17%) of children in the United States are diagnosed with at least one developmental delay (Cleveland Clinic, 2024). Within New York State, at the age of 24 months, 5% of children were diagnosed with a severe developmental delay and 17.5% of children were diagnosed with a mild developmental delay (Sheldrick et al., 2023). Van keer et al., (2017) stated that many parents of these children feel they are not provided with adequate information about their child's condition. The purpose of this doctoral capstone project is to provide a free and accessible resource for parents of children with developmental delays. This resource will provide educational information on how parents can help promote their child's growth and development through their child's main occupations including education, social participation, and play. In today's society, technology and social media platforms have become a norm and are widely used. By using a social media platform, such as Instagram, this resource can reach numerous parents of children with developmental delays. The effectiveness of this doctoral capstone project will be evaluated through the like and comment count of each post. The overarching goal is to receive at least ten likes and three comments on each post. In order to determine the project's success is through receiving comments from other users based on its relevance, helpfulness, and if it was informational/educational.

Education to College Faculty and Students in Return to Learn Guidelines for Students Post Concussion

Student Presenter: Mya-Ann Tschopp
Faculty Mentor: Kelly Lavin
School/College: Health Professions

Background: A concussion is a brain injury that presents with unique signs and symptoms, specific to an individual. College students are at a disadvantage due to academic workload and are expected to self-advocate. Not all institutions have return to learn (RTL) protocols and require documentation for accommodations. Occupational Therapy (OT) takes an individualized approach to overcome challenges and regain skills to participate in school. Purpose: The purpose is to increase knowledge and awareness to college students and faculty on concussion, RTL guidelines, and accommodations. As well as, enhance the understanding of how OT fits in this process and improve quality of life. Methods: The implementation of an educational instagram targeting college faculty and students. This will provide information on symptoms of concussion, accommodations and adjustments used for different symptoms, the role of OT, and other resources. Outcomes: Even if they are not college faculty or students, the community gained a better understanding of the information on concussion and the RTL process. They also have increased knowledge on how OT can help throughout the process and resources available. Future Implications: Using or collaborating with an institution's primary instagram would be beneficial to reach the target audience. Students tend to search about a concussion after the fact, causing only those interested to search for a concussion based instagram.

Effect of Gold Nanoparticle Conjugation on Glucose Oxidase Activity

Student Presenters: Gregory Lipkovich, Abdur-Rehman Hussain, Muntaha Ahmad, Aakash Soni, Raquel Mulakandov
Faculty Mentor: Jacqueline Keighron
School/College: Arts & Sciences

Nanotechnology has become a major field of study, focusing on methods of improving molecular mechanisms, as well as procedures of care in fields such as biochemistry, molecular biology, and medicine. The use of gold nanoparticles with biomolecules, such as enzymes, has proven successful in improving the catalytic parameters such as specific activity. This study focuses on the investigation of the glucose oxidase, a keystone enzyme in diagnosis and treatment of diabetes, and the changes to its activity profile when immobilized to a solid scaffold. The analysis continues to contrast the activities of free enzyme versus conjugated enzyme in several conditions, such as in the presence of inhibitor and denaturing temperature conditions. Findings of the analysis include valuable data for the size and concentrations of enzyme-nanoparticle conjugations, as well as significant resistance of conjugate enzyme when in the presence of an inhibitor and denaturing temperatures when compared to free enzyme. These finding point to how current diagnosis and treatments of diabetic patients, among other conditions, can be improved to provide more detailed, accurate, and reliable data for treatment providers.

Effects of Cardiopulmonary Stress from Cancer and Associated Treatment on Cardiovascular Risk Score in Cardiac Patients: A Pilot Study

Student Presenter: Bilal Niazi
Faculty Mentor: Todd Cohen
School/College: Osteopathic Medicine

Background: The predicting risk of cardiovascular disease EVENTs (PREVENT) score has become a widely used tool to assess cardiovascular disease (CVD) risk, increasingly replacing the previously used atherosclerotic cardiovascular disease 2013 risk estimator (ASCVD). No comparative studies have evaluated PREVENT and ASCVD risk scores in patients with a history of cancer.

Methods: A six-year retrospective analysis (2019-2025) was performed using the Long Island Heart Rhythm Center electronic medical records. Patients with a history of cancer were age and sex-matched to controls. PREVENT and ASCVD scores were calculated and comparison was performed utilizing a paired t-test; p0.05 was statistically significant.

Results: 5 patients were included based on data availability in their medical charts, along with age and sex-matched controls. PREVENT scores for 10-year total CVD risk were 8.41% and 4.52% for cancer patients and controls, respectively (p=0.19). PREVENT scores for 30-year total CVD risk were 29.79% and 18.77% for cancer patients and controls, respectively (p=0.28). The 10-year ASCVD scores were 7.94% and 9.94% for patients with a history of cancer and controls, respectively (p=0.039).

Conclusions: PREVENT score was higher in patients with oncologic disorders as compared to controls. However, the ASCVD scores were lowered in those with a history of cancer. This study is limited due to its small sample size and retrospective design.

Elevate: Rethinking Urban Mobility Infrastructure

Student Presenter: Luke John Stefanchik
Faculty Mentor: Farzana Gandhi
School/College: Architecture & Design

Cities around the world are removing/decking over their highways for linear parks and boulevards. Is this enough to repair decades of damage caused by highways and car-centric infrastructure? We need to develop a new typology that weaves public transit with community services and adaptive reuse, and bridges the divide created by highways. For my site, I have chosen the intersection of the sunken Brooklyn-Queens Expressway with the Hell Gate rail bridge along Astoria Blvd. in Queens. This area is dominated by cars, and the bridge is in severe disrepair. Right now, two different projects (Metro-North's Penn Station Access and MTA's Interborough Express) plan to make use of this railway. Merging these projects creates an opportunity to develop this new typology. I am proposing to add two bus lanes to the BQE. At street level, the expressway will be decked over to create a park with exhibition and performance spaces for local artists. A section of the bridge will be torn down and rebuilt with modern, lightweight materials. The space under the bridge will house prefab, modular workshops for local artisans to create and sell their work. Ramps and catwalks will allow visitors to explore the infrastructure and view artisans at work. Sustainable aspects incorporated into the project include hanging vegetation, solar canopies, and retrofitted shipping containers in the park. This hub will bridge the divide created by the expressway and serve as a catalyst for future transit design.

Empowering Engagement: Advocating for Occupational Therapy in Supporting Transitioning Adolescents and Young Adults with Autism Spectrum Disorder

Student Presenter: Sierra Kaitlin Basso
Faculty Mentor: Kelly Lavin
School/College: Health Professions

Autism Spectrum Disorder (ASD) affects nearly all occupations and areas of adulthood including activities of daily living (ADLs), instrumental activities of daily living (IADLs), education, work, leisure and social participation. Adolescents and young adults with ASD have poor occupational performance and participation within these areas. Occupational therapists can promote skill development, reduce interfering behaviors, improve performance and participation and foster functional independence of these individuals. This project will be implemented at a nonprofit organization that provides opportunities for adolescents and young adults with ASD to engage in various occupations in a supportive environment. It will utilize occupational therapy assessment and intervention methods to increase the occupational participation and performance of transitioning adolescents and young adults with ASD in meaningful activities within the program. The goals of this project are to (1) implement 3-5 task or environment modifications, (2) create 3-5 task breakdown visuals and (3) design an educational material providing support staff with methods and equipment to use when working with young adults with ASD. Future implications include expanding modifications and visuals for use within activities and continuing to develop educational resources for support staff.

Enhancing Long-Term Memory Retention Through Interactive Narrative Games

Student Presenter: Gianna Salib
Faculty Mentor: Nicole Calma-Roddin
School/College: Arts & Sciences

Narrative games are increasingly used in education due to their engaging, immersive format and potential to enhance learning. This study investigates whether a text-only interactive narrative game, built using Twine and focused on neuron communication, supports better long-term memory retention than a traditional textbook-style presentation of the same content. Grounded by the Levels of Processing theory, we hypothesized that students who played the game would show less memory decay over time than those who received the information in a more conventional format. Participants (N = 33) were randomly assigned to either the game or text group and completed a 20-item multiple choice assessment immediately after reviewing the material. Approximately three weeks later, participants completed the same assessment again to measure retention. While both groups began with similar initial scores, the narrative game group demonstrated less memory decline (M = 0.39) than the textbook group (M = 1.60), though this difference did not reach statistical significance (p = .095). Although further research is needed, these results suggest a promising trend in favor of narrative-based learning for memory retention.

Evaluating Standardized Patient and Simulation Lab Training for Clinical Readiness

Student Presenters: Mansi Patel, Yura Kim, Sweta Patel, Paula Ryo, Maria Pino
Faculty Mentor: Maria Pino
School/College: Osteopathic Medicine

This study investigates medical students' perceptions of the effectiveness of standardized patient (SP) encounters and mannequin-based simulation labs in preparing them for clinical rotations. In light of the transition to virtual learning during the COVID-19 pandemic, we sought to evaluate how both in-person and virtual formats influenced students' confidence and competence in core clinical skills, including history-taking, physical examination, communication, documentation, and oral presentation.

With IRB approval from NYIT, an anonymous survey was distributed to third- and fourth-year osteopathic medical students at both the Old Westbury and Arkansas campuses of NYIT College of Osteopathic Medicine. The survey captured students' reflections on their largely virtual preclinical training and asked them to compare the perceived effectiveness of traditional in-person instruction with that of virtual alternatives.

Overall, students reported that SP encounters significantly enhanced their clinical skill development. However, feedback regarding simulation labs was mixed, and virtual SP experiences were generally viewed as inadequate substitutes for in-person training.

These findings emphasize the continued importance of experiential, hands-on learning in medical education. They also highlight the limitations of virtual adaptations, particularly in replicating the depth and impact of in-person clinical training

Evaluation of carotid artery intima-media thickness by micro-CT

Student Presenter: Harshul Singh
Faculty Mentor: Olga Savinova
School/College: Osteopathic Medicine

Calcium deposits in blood vessels can lead to the development of atherosclerotic plaques and increase the intima-media thickness of blood vessels. Vessel thickening that occludes blood flow can occur in the common carotid artery. This Impairment of blood flow to the brain can alter cognitive function and lead to dementia. Carotid artery intima-media thickness (cIMT) could potentially serve as an indicator for dementia. This study aimed to develop a method for measuring cIMT by micro-computed tomography (MICRO-CT) in the carotid arteries of the NYITCOM cohort of cadaver body donors with and without a dementia diagnosis. In this pilot study, we used microCT imaging and Dragonfly software to quantify measurements of cIMT in the common carotid and internal carotid for both left and right arteries. The measurement consists of the distance between the lumen-intima interface's leading edge and the media-adventitia interface's leading edge. Starting 5 millimeters below the bifurcation of the carotid arteries, 3 measurements were taken for each carotid artery sample, and the mean cIMT was calculated. A distance of ≤0.9 mm indicates healthy arteries, >1.0 mm indicates early atherosclerosis, and >1.5 mm indicates advanced atherosclerosis.

Exploring Fixational Instability in Ophthalmic Conditions

Student Presenters: Nancy O. Mahfouz, Simrat Renu, Doris Prela, Ayesha Mulla, Kathiana Jeanty
Faculty Mentor: Robert Alexander
School/College: Osteopathic Medicine

Fixational eye movements—microsaccades, drifts, and tremors—play a vital role in maintaining visual stability and supporting normal vision. Disruptions in these small, involuntary motions are linked to visual impairments associated with various ophthalmic disorders. This review explores recent research on fixational stability and its connection to disease, highlighting advancements in eye-tracking technologies for diagnosis and treatment. A comprehensive literature review identified studies on fixational eye movements and ophthalmologic conditions through keyword searches and reference analysis. Evidence suggests that many eye diseases influence fixational behavior in distinct ways, providing insights into disease mechanisms and progression. Behçet uveitis, cataracts, amblyopia, macular disease, glaucoma, and other conditions have unique fixational patterns that vary with disease progression. For example, different muscular dystrophies affect fixation stability differently, with Stargardt disease showing less stable fixation than best vitelliform macular dystrophy. Fixational stability is also impacted differently by abrupt versus gradual scotoma progression. Analyzing fixational eye movements can improve diagnosis, assess treatment efficacy, and guide clinical care. Eye-tracking tools, including those integrated into telehealth platforms, hold promise for enhancing personalized patient care through non-invasive monitoring and targeted therapies.

Fetching Phage: Efforts to Isolate, Identify, and Characterize S. pseudointermedius bacteriophages and isolate S. pseudointermedius strains from canines

Student Presenter: Mary Stein
Faculty Mentor: Bryan Gibb
School/College: Arts & Sciences

S. pseudointermedius is an opportunistic pathogen found in canines, associated with chronic skin infections in dogs. S. pseudointermedius can induce life threatening infections in dogs and like MRSA, S. pseudointermedius strains exhibit antibiotic resistance which, in turn, makes the pathogen difficult to treat. This contributes to growing concern in the field of veterinary medicine. The search to discover alternative treatment has driven researchers to investigate non-conventional interventions like bacteriophage therapy. The goals of this project were twofold: to isolate S. pseudointermedius specific bacteriophages as a novel treatment against the antibiotic-resistant pathogen, and to isolate new strains of S. pseudointermedius for further analysis of the isolated phages. A total of eight bacteriophages for S. pseudointermedius were isolated, and twelve canine abdominal skin swab samples were used as a source to isolate putitive S. pseudointermedius bacterial strains. Following published methods of bacterial isolation using selective and differential media yielded inconclusive results regarding the identity of the bacterial isolates. Additionally, none of the eight isolated phages infected the isolates, raising concern that isolated bacteria were not S. pseudointermeius . We are using PCR with primers specific to S. pseudointermedius and also 16S primers, which are more generic to identify the isolated bacterial strains.

Fixational Eye Movements in Neurological Disorders: A Review

Student Presenters: Audrie Saad, Eteri Kulieva, Talia Lilikakis, Zainab Faisal, Sanika Kumar
Faculty Mentor: Robert Alexander
School/College: Arts & Sciences

Fixational eye movements, including microsaccades, are essential in maintaining visual stability and focus. Emerging research suggests that abnormalities in these movements may serve as early indicators of neurological dysfunction. This review examines research that discusses the various pathological conditions that affect microsaccades, their impact on microsaccadic and other fixational eye movement dynamics, and the studies that point to microsaccadic features as potential indicators of differential and early diagnoses of multiple clinical conditions. We will discuss, for example, eye movement abnormalities that are seen in diseases like Amyotrophic Lateral Sclerosis, where increased square-wave jerks indicate fixational instability, particularly in patients with bulbar involvement, suggesting a link to brainstem dysfunction. In the case of mild traumatic brain injury (TBI), damage to the rostral superior colliculus can result in the inability to focus and align the eyes. We propose that the objective assessment of fixational eye movement parameters may help refine differential diagnostics in neurological disease and assist in the evaluation of ongoing therapy regimes. In addition, determining the effects of disease on fixational eye movement features may help evaluate visual impairment in an objective manner, particularly in young patients or those experiencing communication difficulties.

From Rags to Riches? Examining Income Gaps Worldwide

Student Presenter: Ifeanyichukwu Agoha
Faculty Mentor: Patty K. Wongpakdee
School/College: Architecture & Design

This infographic, titled "From Rags to Riches? Examining Income Gaps Worldwide," visually represents global income inequality, wealth distribution, and economic disparities. It highlights that nearly 4 billion people—half of the world's population—live on less than $6.70 a day, emphasizing the stark divide between the richest and poorest. Key data points include GDP per capita comparisons, working hours, and life satisfaction across different income brackets. The Gini coefficient analysis reveals severe inequality in countries like South Africa, where more than half the population lives in poverty. The infographic also examines life expectancy in relation to GDP, showcasing how economic wealth correlates with quality of life. Notably, 8.5% of the world's population—approximately 700 million people—live in extreme poverty. By presenting compelling statistics and clear visuals, this infographic sheds light on the ongoing economic disparities and the urgent need for equitable global development.

Genomic Impact of the Smallest Subunit of DNA Polymerase δ: a Mutation and Structural Variant Analysis

Student Presenters: Rishika Thayavally, Heer Bhuva
Faculty Mentor: Leonidas Salichos
School/College: Osteopathic Medicine

DNA polymerase δ plays a critical role in the synthesis of the lagging strand during S phase and is implicated in various DNA repair processes. In mammals, the holoenzyme of DNA polymerase δ consists of four different subunits (POL δ4): POLD1/p125, POLD2/p50, POLD3/p68, and POLD4/p12. In this study, we focus on the smallest subunit of POL δ4, p12. Previously, we showed that p12 plays a key role in homologous recombination repair, highlighting the importance of POL δ4 in DNA repair mechanisms. Our research investigates the genomic consequences of p12 knockout in mice and its impact on DNA repair. We analyzed DNA sequencing data from mouse lung tissues, comparing p12 mutant to wild-type counterparts to identify somatic mutations unique to knockout mice. We utilized tools such as BWA, GATK, and MANTA to sequence and detect single nucleotide (SNV) and structural variants (SV). Our analysis identified 21,724 SNVs and INDELS, the majority of which were located in non-coding regions, while approximately 200 (~1%) were in protein coding regions. Chromosome variant density analysis revealed significant peaks in chromosomes 1, 4, 5, 6, 8, and 14, with chromosome 6 exhibiting a particularly high number of variants. Structural variant analysis identified 3,904 SVs, of which 3,840 (~98%) were breakend variants. In future analysis, we aim to identify genes affected by these variants and assess correlations between variant distribution and genomic elements such as centromeres and telomeres.

Ground Zero NYC Trauma Center Impact of COVID-19 Pandemic on Mechanism of Orthopedic Injury

Student Presenter: Roma Tarar
Faculty Mentor: Stephen Dirusso
School/College: Osteopathic Medicine

A registry from a ground zero Level II trauma center in NYC was analyzed to correlate trauma admissions with orthopedic injury to mechanism of injury changes as well as associations with patient demographics throughout pre-, during, and two years following the pandemic.

A retrospective review using a NYC level II trauma registry was conducted with 2,689 patients who had orthopedic injuries. Demographics and mechanism of injury were analyzed using SPSS v27 with $p<0.05$ indicating significance.

This study found an overall decrease in blunt trauma orthopedic admissions in all studied intervals compared to Pre-COVID. MVA blunt trauma orthopedic admissions increased Pre-COVID to COVID and stayed elevated 1-year Post-COVID and 2-years Post-COVID. Fall blunt trauma orthopedic admissions decreased from Pre-COVID to COVID before returning to Pre-COVID levels 1-year Post-COVID and then decreasing even further 2-years Post-COVID.

Orthopedic injury due to MVAs likely increased due to higher speeds and decreased traffic during NYC lockdowns. Fall blunt trauma admissions with orthopedic injury were also likely decreased due to at home isolation. Black non-Hispanic populations faced an increase in orthopedic injury, consistent with many other disparities this population faced during the pandemic. These findings on the trends of mechanism of injuries during the pandemic may help orthopedic surgery services be better equipped and more prepared for similar situations.

Gut Dysfunction and Enteric Neuroinflammation in a 5xFAD Mouse Model of Alzheimer's Disease

Student Presenter: Alexander Kaminer
Faculty Mentor: Vladimir Grubisic
School/College: Osteopathic Medicine

Abstract: Alzheimer's disease (AD) is the leading cause of dementia and is characterized by the loss of thebrain neurons, neuroinflammation, and deposits of amyloid beta (Aβ) and tau proteins. AD alsocauses disruptions in the gastrointestinal (GI) system's normal functions, contributing to the ADpatients' low quality of life. Gut functions are under the direct control of the enteric nervoussystem (ENS), a network of neurons and glia embedded in the gut wall, also known as "the brain in the gut."" However, the AD-induced processes in the ENS remain poorly understood.This project investigates gut functions in concert with neurodegeneration, neuroinflammation,and Aβ deposits in the ENS of the 5xFamilial AD (5xFAD) transgenic mice, one of the standardmouse models for studying AD. We also utilized the dextran sodium sulfate (DSS) model ofcolitis to investigate whether intestinal inflammation exacerbates amyloidosis and GIdysfunction/neurodegeneration. Colonic motility was assessed in vivo using a colonic beadassay, and tissues were analyzed using immunohistochemistry (IHC), qPCR, and Western blot.Preliminary data revealed a reduced glial fibrillary acidic protein (GFAP) expression anddecreased density of HuC/D staining positive cells in 5xFAD tissues. These results indicate glialdysfunction and neurodegeneration in the ENS, potentially contributing to gut dysregulation.Our findings suggest that 5xFAD mice are a good model for studying AD-related gutdysfunction.

Gut Epithelial Functions in Mouse models of Autism Spectrum Disorder

Student Presenter: Christina Wilson
Faculty Mentor: Vladimir Grubisic
School/College: Arts & Sciences

Autism Spectrum Disorder (ASD) has been linked to altered intestinal permeability and colonic motility arising from gut epithelial barrier dysfunction and secretomotor abnormalities. These functions are regulated by the enteric nervous system (ENS), a network of neurons and glial cells within the gut epithelium. ENS alterations may contribute to ASD pathophysiology, emphasizing the need to understand the role of glial regulation. ASD is a multifactorial condition that can arise from genetic and environmental factors. Nonetheless, the influence of gene mutations or environment on gut epithelial structures and their function in ASD remains unclear. Our study explores colonic epithelial dysfunction utilizing in-utero valproic acid (VPA) exposure mice, a widely used model to study environmental ASD pathophysiology. Distal colon preparations were mounted in Ussing chambers. Short-circuit current (ISC) and transmural electrical resistance (TER) were recorded to assess epithelial secretomotor function and gut wall permeability. While TER showed no significant difference, VPA-treated mice exhibited a markedly greater ISC responses to veratridine ($p = 0.006$, Mann-Whitney U test, n = 11), suggesting that in-utero VPA treatment changes the plasticity of the neuronal circuitry that controls secretomotor functions. Future research should investigate the efficacy of genetic models to clarify the pathophysiological mechanisms of gut dysregulations in ASD.

Human Value

Student Presenter: Syed Tehseen Abbas Rizvi
Faculty Mentor: Sebastien Marion
School/College: Engineering & Computing Sciences

"To make a more curious search into the rights of States, and duties of Subjects, it is necessary, (I say not to take them in sunder, but yet that) they be so considered, as if they were dissolved, (i.e.) that wee rightly understand what the quality of humane nature is, in what matters it is, in what not fit to make up a civill government, and how men must be agreed among themselves, that intend to grow up into a well-grounded State. "-Hobbes, This quote Holds a perspective that requires us to step away from societal constraints, and imagine as if we are bare life itself , this forces us to advance into life with a fresh perspective that allows us to create a more reasonable understanding according to our times.

Implicit Foreign Accent Bias Effects on Student Competency Assessments in Higher Education

Student Presenter: Yana Kostova
Faculty Mentor: Melissa DiMartino
School/College: Arts & Sciences

International students constitute 5% (about 1 million) of the student population in the United States, majority of whom have detectable foreign accents when speaking English. Foreign accents often serve as markers of cultural identity and can help foster relationships within individual communities, however, within educational contexts, they can inadvertently trigger biases, influencing perceptions of competence, intelligence, and credibility. Given the strong correlation between culture, race, and speech accent, native speakers frequently, and unconsciously, racialize accents, attributing perceived stereotypes to them. For example, when evaluating non-native speakers, American students reported more positive social attitudes, such as higher intelligence, to speakers with milder rather than heavy foreign accents (Wang et al., 2017). Language proficiency, as a singular metric, inadequately reflects broader cognitive capacities, so it is essential to recognize that individuals who have a foreign accented speech are not inherently deficient in intelligence or knowledge.

This research examined the effect of implicit foreign accent bias on student competency assessments in higher education. A convenience sample of professors wase recruited from an urban university in a highly diverse environment, who are frequently exposed to foreign accented speech. Participants were asked to listen to 3 separate recordings and answer brief questionnaires after each one of them.

Implicit Homophobia in Religion

Student Presenters: Ola Abozid, Lily Barcohana, Arianna Reyes Castillo
Faculty Mentor: Melissa DiMartino
School/College: Arts & Sciences

Religion plays a significant role in shaping individual and collective views on morality, dictating what is considered acceptable or taboo (Trica, 2024). Religious teachings provide different paradigms on marriage, gender roles, and other factors that influence the attitude one develops toward society, including homosexuality. Religious fundamentalism often correlates with anti-homosexual bias (McDermott et al. 2014), as religious texts are consistently used as justification against LGBTQ+ rights. Since non-affirming religions are associated with higher internalized homophobia (Barnes, 2012), the study aims to question the role religious texts play in these beliefs.

This project aims to investigate the effects of religious scripts on individuals' attitudes toward homosexuality. A convenience sample of adults will be recruited to participate in the study. Participants will be assigned one of two conditions: (1) Religious passages that are heteronormative; (2) Religious passages that are LGBTQ+ inclusive. After reading the passages, participants will be presented with four non-heteronormative images and asked to evaluate the photo. The survey will measure attitudes toward homosexuality, religiosity, and internalized shame. This project will highlight the implicit effects of religion on how people perceive non-heteronormative behaviors. The results will expand on the literature on the effects of religious and cultural norms on psychological processes.

Importance of genetic testing for early intervention in Lynch Syndrome

Student Presenters: Kavya Srinivasan, Riana Khan, Alisha Tiwari, Supriya Basakaran
Faculty Mentor: Maria Levada
School/College: Osteopathic Medicine

Lynch syndrome, otherwise known as hereditary nonpolyposis colorectal cancer (HNPCC) syndrome, is recognized as the most common cause of inherited colorectal cancer. It is an autosomal dominant disorder associated with microsatellite instability, and can be caused by mutations in various DNA mismatch repair (MMR) genes, such as MLH1, MSH2, MSH6, and PMS2. In addition to colorectal cancer, these mutations ultimately lead to an increased risk of cancers of the endometrium, ovaries, stomach, genitourinary system, and more. In this case study, we present a 52-year-old patient who presented to her obstetric and gynecology (OBGYN) physician with occasional pelvic pain and a family history of gynecological cancers. One sister was diagnosed with ovarian cancer at the age of 47, and another with endometrial cancer (diagnosis age unknown). At the time of her symptoms, the patient's transvaginal and abdominal ultrasound results were negative. Due to her family history and symptoms, a genetic testing was performed which revealed MSH6 mutation for Lynch syndrome. Ultimately, the patient underwent prophylactic hysterectomy and salpingo-oophorectomy. In further review of her specimen pathology report it was found to contain an endometrial polyp with adenocarcinoma, FIGO grade 1, in a background of atypical hyperplasia.

Increased Vascular Stiffness in a Mouse Model of Genetic Risk for Late-Onset Alzheimer's Disease

Student Presenters: Isha Joshi, Kelly A. Borges, Saud Nasruddin, Isabelle Lombardi, Roxane Ghadami
Faculty Mentor: Olga Savinova
School/College: Arts & Sciences

While associations between cardiovascular disease and late-onset Alzheimer's disease (LOAD) have been described extensively, the mechanisms linking their pathophysiologies remain in question. Building on the progress made toward understanding vascular contributions to LOAD, this study aims to determine whether specific genetic risk factors for LOAD are associated with cardiovascular pathologies. We have collected ultrasound echocardiography data on 12 male and 12 female mice grouped by genotypes relevant to LOAD: (1) "LOAD1"" mice carry a humanized APOE4 knock-in allele and CRISPR/cas9-generated R47H point mutation of TREM2; (2) "LOAD2"" mice express the humanized APP allele along with APOE4 and TREM2R47H mutations, and (3) C57BL/6J ("B6"") control mice are wild-type for APOE and TREM2 genes. VisualSonics Vevo Lab software was used to analyze data. Data were compared across groups by one way ANOVA and Kruskal-Wallis testing. Parameters including heart rate, ejection fraction, left ventricular mass, and pulse wave velocities (PWV) were analyzed before and after 10 months on a high-fat, high-sugar diet. We observed significantly higher aortic and carotid PWVs in LOAD1 and LOAD2 males compared to B6 males (aPWV LOAD1 3.74 +/- 0.386 vs. B6 3.27 +/- 0.314; P = 0.001; LOAD2 3.88 +/- 0.372 vs. B6 3.27 +/- 0.314; P < 0.0001); aortic PWV was also higher in LOAD2 compared to B6 females (aPWV LOAD2 3.52 +/- 0.211 vs. B6 3.10 +/- 0.236; P = 0.004).

Individual Differentiation by Surface Metrology of Fingerprints at Multiple Scales

Student Presenter: Shani Kahan
Faculty Mentor: Brian Beatty
School/College: Osteopathic Medicine

Fingerprints are patterns of ridges and sulci formed by dermis structural characteristics. Disruptions to these can change fingerprint structure. Such changes are harder to measure with standard fingerprints that rely on maintaining ridge and sulcus integrity. Therefore, three-dimensional fingerprint structure data is valuable.

Two existing technologies, the S Neox optical profilometer and the Gelsight Mobile2 were used to scan left hand fingerprints of four individual body donors from the NYITCOM Anatomy Lab. These fingerprints were molded, and epoxy casts were made. Casts were then scanned with the S Neox at 3.49 x 2.6 mm area, and with the Gelsight Mobile2 at 18.5 x 15 mm area. To compare outcomes at comparable sizes, the data from the larger area scanned by Gelsight (= Gelsight BIG area) was cropped to the same dimensions of the S Neox data (= Gelsight SMALL area).

A one-way ANOVA of the samples scanned with the Gelsight BIG area, SMALL area, and the S Neox found no significant differences in variables when scale-sensitive fractal analysis (SSFA) parameters were grouped by finger number. However, when grouped by individual, significant differences were found in SSFA parameters when scanned with the S Neox, the SMALL Gelsight area and the BIG Gelsight area.

Ultimately, it appears that of all three methods employed here, none found differences between fingers, but all found differences between individuals.

Infectious Disease Random Walk Model

Student Presenter: Gamana Gogineni
Faculty Mentor: Leonidas Salichos
School/College: Arts & Sciences

During the Covid-19 pandemic each state implemented local intervention strategies. Moreover, very few models have tried to study the phylodynamic and phylogeographic characteristics and the temporal viral diffusion of multiple airborne outbreaks by include regional connectivity to develop unified mitigation strategies, mostly providing localized results. Here, we are developing a random walk model to simulate the spread of infections across the 50 United States. In this study, we are implementing our model simulations using sample transmission rates between states to help predict the outcome of various hypothetical infectious outbreaks. This approach offers a framework for understanding and predicting the spatial propagation of infectious diseases, with potential applications for public health planning and resource allocation. Future work will expand the analysis to include other demographics in the model and incorporate more accurate transmission rates derived from our data. This enhanced model will provide a more comprehensive method for predicting and mitigating the spread of infectious diseases.

Integrating Nuclear Texture and Size Analysis For Automated PAP Smear-based Cervical Cancer Detection

Student Presenters: Andrew Attia, Yamini Patel, Ashika Sinha, Vishva Ravani, Heer Bhuva
Faculty Mentor: Niharika Nath
School/College: Arts & Sciences

Cervical cancer is the fourth most common cancer among women globally, with about 660,000 new cases and 350,000 deaths in 2022. The five-year survival rate is 67%, rising to 91% with early detection. The Papanicolaou (Pap) smear remains a cornerstone in prevention, enabling cytopathologists to identify precancerous lesions by analyzing stained cervical cells for nuclear anomalies. However, traditional methods are time-consuming and rely on basic morphological features like nuclear size and roundness, limiting sensitivity and causing inaccuracies. These issues are worse in low-resource settings, where screening programs often rely on less effective methods such as Visual Inspection with Acetic Acid (VIA), resulting in a high disease burden. To address these challenges, this study explores automated techniques to augment Pap smear interpretation. Specifically, we used nuclear texture and size features to characterize cells across four categories which are normal, light dysplasia, moderate dysplasia, and severe dysplasia, using Pap smear images from an available dataset. We identified the most discriminative features, visualized them with Tableau, and employed K-means clustering to group cells by feature similarity. This approach enhanced both efficiency and accuracy, offering a promising step toward scalable, automated early detection, especially in resource-limited environments.

Interactions Among Enteric Glia and Eosinophils in Mouse Colitis Model

Student Presenters: Jake Borenkoff, Szymon Samborski
Faculty Mentor: Vladimir Grubisic
School/College: Osteopathic Medicine

About 3.1 million Americans suffer from Inflammatory Bowel Disease (IBD). The enteric nervous system (ENS), made up of neurons and glial cells within the gut, plays a regulatory role in normal gut function. During inflammation, the glial cells react and promote pathophysiology. The mechanism is unknown. We hypothesize that a part of this mechanism comes from the interaction between glia and eosinophils. We are testing this hypothesis using a Boyden Chamber. Glial cells and bone marrow stem cells are derived from mouse colon and bone marrow, respectively. The stem cells are then differentiated into eosinophils. Differentiated eosinophils are displaced by using a fluorescent activated cell sorter (FACS). Enteric glial cells can be conditioned with Lipopolysaccharide (LPS) to become reactive glia. The conditioned glial media and glial media without LPS, along with a control, are plated separately and covered by a cell-permeable membrane. Then, eosinophils are plated onto the membrane and can permeate through the membrane into the wells. The cell media and the side of the membrane contacting that media, are imaged for the presence of eosinophils. The LPS should induce glia to release eosinophil chemoattractants causing the eosinophils to migrate across the membrane. This study shows novel enteric glia-eosinophil interactions that could be used for the development of novel IBD treatments. Future studies involve in-vivo visualization of the glia-induced eosinophil migration.

Investigation of Bacterial Drug Resistance Mechanisms in Response to Drug B

Student Presenters: Lina Mohamed, Sonam Lama
Faculty Mentor: Navin Pokala
School/College: Arts & Sciences

The objective of our study is to understand resistance mechanisms for Drug B, a drug we are investigating. We are using yeast as a model organism to study this. We monitored the effects of the drug on on cell growth and metabolism to identify optimal conditions for selecting for resistance-conferring genes. We have isolated resistant strains, and will sequence and analyze genes associated with resistance. By understanding how cells respond to the drug at both the genetic and cellular levels, we hope to contribute valuable insights into the broader field of drug resistance and provide a foundation for future studies on drug development and resistance management.

Leading Causes of Death Among Native Hawaiians and Pacific Islanders

Student Presenter: Manogna Rachapudi
Faculty Mentor: Navin Pokala
School/College: Arts & Sciences

Native Hawaiian and Pacific Islander (NHPI) populations face significant, yet understudied, health disparities in the U.S., driven by colonization, structural inequities, and limited access to culturally appropriate care. These disparities are often masked by the aggregation of NHPI data with other racial groups. This study analyzes mortality data from the National Vital Statistics System (2011–2022) and U.S. Census estimates to investigate leading causes of death among NHPIs, disaggregated by sex and subgroup (Native Hawaiian, Samoan, Guamanian).

We calculated age-adjusted mortality rates (AAMRs), proportional mortality, and stratified analyses by subgroup and sex. Comparative analyses were conducted using Asian American (AA) and Non-Hispanic White (NHW) populations. Logistic and Joinpoint regression were used to examine disparities and trends over time.

Results show that NHPI males and females experience significantly higher mortality than AAs and NHWs, particularly from heart disease, cancer, diabetes, injuries, and suicide. Median age at death was 66—11 to 12 years younger than AAs and NHWs. Samoans showed the highest mortality burden; Native Hawaiians and Guamanians experienced distinct, subgroup-specific risks. Educational attainment was linked to age at death.

This study underscores the need for disaggregated data and culturally informed public health strategies to reduce persistent NHPI health inequities.

Lifes Cycle

Student Presenter: Jade Forrester
Faculty Mentor: Christine Kerigan
School/College: Architecture & Design

A digital artwork that displays the complexities of mundane life and how being stuck in a routine can change us for the better and for the worse.

Mechanism of Drug D

Student Presenter: Samee Khaled
Faculty Mentor: Navin Pokala
School/College: Arts & Sciences

I am investigating how drug D functions to kill yeast cells. I did a selection to find plasmids that confer resistance to the drug and I will present the sequence analysis and results of this experiment. This will further showcase the mechanism behind drug D and how it affects yeast cells.

Metabolic Health & Cardiovascular Risk in Taxi Drivers

Student Presenter: Nour Rezk
Faculty Mentor: Jana Abumusallam
School/College: Arts & Sciences

Cardiovascular disease (CVD) is a leading cause of mortality in the United States, with metabolic syndrome (MetS) being a major risk factor. Taxi drivers represent a particularly vulnerable population due to the sedentary nature of their profession, irregular work hours, and limited access to healthcare (1), placing them at an increased risk for MetS. This study aims to assess the prevalence of MetS among taxi drivers and determine how individual risk factors, specifically waist circumference, blood pressure, triglycerides, glucose, and HDL cholesterol, contribute to its overall burden. Needs assessment questionnaires were used to gather information on demographics, workplace conditions, and health behaviors. MetS prevalence was calculated by identifying drivers that met three or more of the diagnostic criteria. Prevalence tests were conducted to evaluate the influence of each MetS component on the overall likelihood of diagnosis. The analysis reveals which risk factors are most prevalent and identifies potential targets for intervention. Understanding the distribution and contribution of specific MetS factors in this occupational group is essential for guiding tailored health interventions. The findings could inform future public health initiatives and workplace wellness programs aimed at reducing cardiovascular risk in taxi drivers.

Modeling Qubit-Environment Dynamics: Comparing the Master Equation and Monte Carlo Wave Function Approaches

Student Presenters: Hansen Torres, Faraz Khan
Faculty Mentor: Yusui Chen
School/College: Arts & Sciences

Dynamics of open quantum systems at small scales can be calculated more precisely using methods like the Lindblad Master Equation; however, this can be computationally inefficient for larger systems. To address this limitation, we explore the Monte Carlo Wave Function (MCWF) method, a stochastic technique that simulates quantum jumps by generating a random number and evolving the system's wave function until the jump condition is met. This method provides an efficient alternative for studying open quantum systems. In this project, we model a two-level quantum system (qubit) interacting with a quantized electromagnetic field with both of these methods. For both coherent and incoherent systems, we study how each method evaluates its evolution considering the following dissipative processes: spontaneous emission and photon cavity loss. We show that at small scales, MCWF yields similar results to the Master Equation's deterministic results. We conclude that the MCWF method may be used to reliably simulate larger systems efficiently compared to the Master Equation method.

Modeling Tumor and Viral Evolution Through Generational Hitchhiker Mutations

Student Presenter: Kyle Stephens
Faculty Mentor: Leonidas Salichos
School/College: Arts & Sciences

During tumor evolution, mutations are expected phenomena within cells, with hundreds upon thousands of them regularly being observed within cancer. However, only some of which promote growth. These fitness (or driver) mutations increase the rate at which a cellular population grows over time. Mutations occurring prior to fitness mutation and do not influence the growth rate are called generational hitchhikers (g-hikers). This numerical regime allows for accurate determination of tumor growth and mutational impact based on the frequency of g-hiker mutations for a singular sample. Our algorithm has already been tested with over 900 tumors from the Pan-Cancer Analysis of Whole Genomes (PCAWG) database. Here, we develop a python script version of this algorithm that can be applied during viral outbreaks, aiming to estimate transitional rates and mutational effects.

Modular, Scalable, Low-Energy Reverse Osmosis Water Desalination System: A Self-Assembled Solution for Residential and Small Scale Use

Student Presenters: T'ron Strapp, D'ron Strapp, Dani Gulino, Shan Caballes
Faculty Mentor: Ehsan Kamel
School/College: Engineering & Computing Sciences

Our aim is to bring our research, theories, and calculations to fruition by creating a modular and scalable water desalination machine. It will allow for citizens to create freshwater at home which will decrease the dependency and pressure on industrial WD plants to keep up with increasing consumption. The machine will also be equipped with a sustainable power source, a method of brine treatment, a design for easy portability, the ability to connect multiple units together to increase the water production as needed for every household, and much more. This research has the potential to not only inform others of this critical issue, but to make a significant impact on global efforts to combat water scarcity by improving the scalability and sustainability of the water desalination process.

Molecular and Cell Biology Mechanisms of Drug A

Student Presenters: Isha Joshi, Thomas Waller
Faculty Mentor: Navin Pokala
School/College: Arts & Sciences

Yeast is a model organism used to investigate metabolic processes of eukaryotic organisms, including humans. Since yeast is a single-celled organism, it can be used to identify genes of interest quickly. In this study, we are trying to identify genes which confer resistance to Drug A. By observing growth on different media, we could infer what metabolic pathways could be affected. We then measured the minimum inhibitory concentration (MIC), the lowest concentration of Drug A that shows lack of growth. Using this, we selected plasmids that could confer resistance to our unknown Drug A. The resistant strain's plasmid was isolated, purified, and multiple copies of it were made using E.coli, which reproduce at a faster rate. We will present the sequence and analysis of the plasmid and we hope to find a connection between Drug A and certain genetic sequences for complex eukaryotic organisms.

Molecular Characterization of Restriction Enzyme Resistance in Citrobacter freundii Bacteriophage Feind

Student Presenter: Andrew Sean Lee
Faculty Mentor: Bryan Gibb
School/College: Arts & Sciences

Bacterial resistance to conventional antibiotics is a growing threat, driven by their accessibility, homogeneity, and overuse, leading to rapid pathogen mutations. In 2019, antibiotic-resistant strains were linked to 5 million deaths worldwide, with U.S. treatment costs exceeding $4.6 billion annually. Bacteriophage therapy presents a promising alternative. One target, Citrobacter freundii, is an opportunistic pathogen implicated in nosocomial infections. C. freundii bacteriophages Feind and Enem were isolated from wastewater collected at NYIT. The genome of Phage Feind was found to be resistant to digestion by restriction endonucleases suggesting that the phage modifies its genome with one or more genes. This is a common strategy employed by bacteriophages to bypass bacterial defense mechanisms. Through bioinformatic tools we identified several putative genes in phage Feind that may be responsible for the genome modification. We are in the process of developing a molecular functional assay to test each of the candidate genes to obtain experimental evidence to identify the gene responsible.

Morphometric Approach to Estimate Variation in Cochlear Canal Shape in the Basal Mammaliaform Morganucodon

Student Presenters: Mansi Patel, Ramza Shahid, Simone Hoffman
Faculty Mentor: Simone Hoffman
School/College: Osteopathic Medicine

This study investigates cochlear canal variation in the basal mammaliaform Morganucodon to better understand early mammalian auditory evolution. The inner ear underwent significant changes throughout mammaliaform history—from a short, straight canal with a lagena macula to the coiled cochlea of modern therians, associated with enhanced hearing capabilities. We examined whether cochlear features such as canal length, coiling, and apical expansion size (associated with the lagena) varied at the base of mammaliaform evolution and whether this variation correlated with distinct Morganucodon populations.

We microCT scanned 37 petrosals and used a combination of linear measurements, volume calculations, and geometric morphometric methods. Landmark-based analyses employed 11 fixed and 54 curved semi-landmarks. Cochlear canal volume differed significantly by fissure ($p = 0.01173$), suggesting population-level variation, while length remained conserved. Principal component analysis (PCA) of the landmark-based data revealed variation in cochlear curvature; however, interpretation is potentially limited by irregular landmark placement, highlighting a major limitation of this method.

Moving forward we are employing the landmark-free analyses SPHARM which are expected to provide a more objective and reproducible quantification of cochlear shape variation. These findings provide new insight into cochlear morphological diversity and the auditory evolution of early mammals.

Motivational Typing Study

Student Presenters: Marckailla Marcellus, Penelope Fiero, Anyelica Ozuna
Faculty Mentor: Melissa DiMartino
School/College: Arts & Sciences

This study aims to examine whether individuals identified as "go-getters"" exhibit a greater psychological response compared to "non-go-getters"" when performing a competitive task. To explore this, we will recruit 15 students from NYIT and engage them in a typing-based game. Participants will be categorized as "go-getters"" or "non-go-getters"" based on the number of attempts they make to achieve their highest score within their 30-minute appointment window. Additionally, a post-experiment questionnaire will assess the subject's feelings of stress, anxiety, and perceived performance. We hypothesize that "go-getters"" will display a more significant psychological stress response compared to "non-go-getters."" Reason why we hypothesize this is because "go-getters"" are typically more driven to achieve high performance, which may result in higher levels of stress and pressure when trying to meet their own competitive standards. This research contributes to understanding the intersection of competitive drive and psychological stress, offering insights into how high-achieving individuals manage performance pressure while simultaneously exhibiting their maximum performance.

My Feedback Is Better than Yours: Are Narcissistic Consumers More Likely to Provide Survey Responses and Product Reviews?

Student Presenter: Berke Cinar
Faculty Mentor: Colleen Kirk
School/College: Management

In this research, we propose that consumers higher in narcissism are more likely to use giving feedback, in the form of marketing surveys and product reviews, as a strategy for maintaining and increasing their grandiose sense of self. Specifically, admirative consumers believe that providing their opinions will be seen as offering greater value to companies and other consumers (a self-promotion strategy). In contrast, rivalrous consumers perceive that withholding their opinions is a way to derogate others (a self-defensive strategy). Formally, we hypothesize that admiration will be positively associated with completing a survey (H1a) and posting a product review (H1b), whereas rivalry will be negatively associated with these outcomes (H2a and H2b). Further, we hypothesize that the association between admiration and giving survey (H3a) and review (H3b) feedback will be mediated by narcissists' beliefs that their opinions are more valuable than those of others. On the other hand, the negative association between rivalry and giving survey (H4a) and review (H4b) feedback will be mediated by the perception that others do not deserve their feedback. Finally, we propose that these associations will attenuate when consumers are financially incentivized to complete a survey (H5a and H5b), as in that case, all consumers will be equally motivated to participate.

Neural Gaze: Analyzing Fan and Non-Fan Viewing Behavior Through Deep Learning

Student Presenters: Chakradhar Sai Valluru, Stevie Ann Hill, Ayesha Mulla, Edrich Silva, Aziza Swift
Faculty Mentor: Robert Alexander
School/College: Engineering & Computing Sciences

Fandom subcommunities centered on "shipping"″—the romantic pairing of characters—often develop distinct interpretations of character interactions, but little empirical research has explored how these interpretations influence neural gaze patterns during media consumption. This study aims to investigate how repeated media exposure shapes fans' and non-fans' visual engagement. To address this gap, we tracked participants' eye movements using an EyeLink1000 Plus as they watched character interactions from a popular television show. A neural gaze analysis pipeline is developed using a deep learning architecture tailored for saliency prediction, incorporating advanced feature extraction and bias conditions to capture nuanced differences in gaze behaviors related to media familiarity and interpretation. Our findings revealed distinct gaze patterns between fans and non-fans: fans exhibited a heightened focus on character interactions, while non-fans demonstrated a more dispersed gaze distribution. Eye-tracking data visualizations further confirmed these differences, illustrating how repeated media exposure fosters unique gaze behaviors among fans. By integrating deep learning with eye-tracking techniques, this study provides empirical evidence that prior media exposure influences gaze behavior. These results highlight the cognitive impact of fandom engagement and suggest broader applications for understanding media consumption patterns across different audiences.

Nonverbal Communication in Cross-Cultural Teaching

Student Presenters: Annora Brown, Luning Chen, Samantha Richardson
Faculty Mentor: Melissa DiMartino
School/College: Arts & Sciences

Nonverbal communication accounts for a large part of verbal communication. Possibly and negatively viewed body language and mannerisms vary by culture. This study seeks to test the effect of culturally accepted nonverbal communication in the classroom as interpreted between Indian international students and non-international students who have been residents of the United States for more than 13 years. If the body language of a teacher is not cohesive with a student's cultural mannerisms, then students will perceive a teacher as less credible. This will be tested using four lecture recordings from two teachers. One video from each professor will contain body language perceived the most positively in Indian cultures and two with body language perceived most positively in American cultures.

NTM Comics Presenting ©Maverix

Student Presenter: Noah T. Mactutus
Faculty Mentor: Christine Kerigan
School/College: Architecture & Design

My work is in the medium of comic books using the current trend of graphic novels. Using graphic novels has allowed me to further develop the characters and spend time enriching the artwork vs standard comic books. The nature of the books falls into the superhero genre and distinctively avoids a vigilante approach. I would be sharing both novels in the series. Volume one is entitled ©MaverixTM Vol 1: Decimation. Volume two is entitled ©MaverixTM Vol 2: Judgment of Doom.

I have chosen to use the traditional method of hand-drawing with pencil, pen and ink on Bristol board paper. The richness on the page that this form creates has been lost in today's digital world of comic book artistry. Many knowing eyes have been able to pick up on the technique by viewing pages on a cellphone even after being colored. They appreciated the feel and expressiveness it creates within the art. To the untrained eye, I know it still passes on the story and emotion of the art for their enjoyment in a way not available digitally. Once the pages have been drawn and inked, I then color them using the millions of colors available on the computer.

Occupational Empowerment: Building Self-Esteem, Healthy Relationships, and Resilience for Parenting Young Mothers in Homelessness

Student Presenter: Katelyn T. Latchman
Faculty Mentor: Kelly Lavin
School/College: Health Professions

Homeless parenting youth are vulnerable population experiencing social isolation and a disconnection from conventional environments for employment, education and family responsibilities. They often experience occupational imbalance, in social participation, child-rearing and home maintenance.

This project addresses occupational imbalances through tailored education, practical support, and resources using a trauma-informed and culturally sensitive approach. The goal is to equip participants with skills and knowledge needed to engage in social participation and perform IADLs effectively.

The project was implemented through seven workshops focusing on; communication skills, healthy and unhealthy relationships, mother-child bonding, coping with grief and separation through occupational interventions, domestic violence awareness, and building self esteem. Developed based on a needs assessment to ensure relevance and cultural sensitivity, the program was shaped with input from social workers and the organization.

Preliminary outcomes show that participants are attaining knowledge and a deeper understanding of healthy relationship dynamics, child-rearing, and home maintenance. While ongoing, initial findings highlight the importance of trauma-informed and culturally sensitive practices in occupational therapy. Future implications include advocating for OT's role with at-risk youth and researching the impact of homelessness on occupational performance of parenting youth.

Optimized Large-Scale Production and Formulation of Bacteriophage for Therapeutic Applications

Student Presenters: Nigel Oommen, Andrew Attia, Yamini Patel
Faculty Mentor: Bryan Gibb
School/College: Health Professions

Bacterial antimicrobial resistance (AMR) poses a global crisis, causing an estimated 4.95 million deaths worldwide in 2019 alone. Among these, methicillin"resistant Staphylococcus aureus (MRSA) accounted for more than 100,000 deaths. Bacteriophages, natural predators of bacteria, present a promising alternative to antibiotics. However, using phage therapy demands large-scale production of high-titer phage stocks, free of bacterial debris and safe for administration.

Here, we optimized the amplification and concentration of an anti-MRSA phage previously isolated in our lab. After initial difficulties, we succeeded by propagating the phage in Tryptic Soy Broth, then applying ultrafiltration and diafiltration to concentrate the lysate and exchange the medium for phosphate buffered saline—a safe, standard buffer for therapeutic use. This streamlined approach consistently yielded at least a 100-fold increase in phage titer while improving stability, sterility, and safety. Our workflow offers a versatile protocol that researchers can adopt for broader phage-based interventions.

Original Research: The Impact of Obesity on Orthopedic Injuries and Fracture Patterns in Motor Vehicle Accidents at Level 1 Trauma Center

Student Presenter: Philip Zitser
Faculty Mentor: Spencer Turkel
School/College: Arts & Sciences

Background: Obese individuals face higher mortality and longer ICU rates. The present study investigated the association between obesity and orthopedic trauma outcomes in motor vehicle accidents.

Methods: Our cohort consisted of 555 adult patients who presented to Richmond University Medical Center following a motor vehicle accident between 2010 and 2022. The 555 adult patients were separated into groups based on their Body mass index: BMI greater than or equal to 30 were categorized as obese while BMI less than 30 were considered non-obese. Incidence of bone fractures and injury severity were compared between the two groups.

Results: Our results showed that the mean number of fractures was similar between the obese and non-obese groups. However, the obese group was more likely to have upper extremity, lower extremity, and tibia/fibula fractures than the non-obese group. In addition, the mean injury severity score was similar between both groups, but obese patients were more likely to have severe thorax injuries.

Conclusions: Among 555 patients, 178 (32.6%) were obese. The mean number of fractures (0.62 vs. 0.46, p=0.096) was similar between the obese and non-obese. However, obese patients had a significantly higher risk for upper extremity(7.3% vs. 3.4%, p=0.045) and lower extremity fracture (7.3% vs. 2.7%, p =0.01), specifically of the tibia/fibula (5.6% vs. 1.6%, p=0.008). No significant differences were found in the head, thoracolumbar, or pelvic fracture.

Out With the New, In with the Old

Student Presenter: Michelle Villacis Uribe
Faculty Mentor: Farzana Gandhi
School/College: Architecture & Design

New York City, a vibrant melting pot of cultures, presents a unique opportunity to democratize access to cultural knowledge by establishing small, community-focused hubs throughout its boroughs. In East Harlem, a historically rich cultural community has faced challenges, including gentrification, leading to a gradual erosion of its cultural identity. Creating these localized hubs on existing underutilized spaces in this specific community, can help dismantle the barriers often associated with large cultural institutions, fostering a sense of ownership and active participation among residents. In addition to these smaller hubs, a larger central space will be established to serve as an educational and experiential center, offering workshops and classes on language, food, art, music, dance, and traditional wear. This central hub will not only provide a space for learning but also for hands-on practice, allowing community members to actively engage with and celebrate their cultural heritage. This decentralized model would not only make cultural resources more accessible but also ensure that every neighborhood feels represented and valued within New York City's broader cultural fabric.

Personal Factors Contributing to Social Responsibility

Student Presenters: Ilana John, Evan Yang, Kripa Savani
Faculty Mentor: Melissa DiMartino
School/College: Arts & Sciences

Social responsibility is defined as the moral framework in which individuals and organizations focus on investing their time and energy in a way that benefits society. Since the COVID-19 pandemic, research finds that there has been an overall decline in moral obligations to assist others, which causes distance between the members of society. According to this article, the United States is divided more than ever before in terms of social interaction (Mehta et al., 2023). However, there has been little to no research that investigates the individual reasons for the lower social responsibility rates. Our study seeks to explore the individual factors that contribute to social responsibility.

Participants will be asked how they would respond to several videos with a proposed social responsibility situation. Afterwards, participants will complete a questionnaire that investigates whether they are intrinsically or extrinsically motivated and whether they are more aligned with collective or individualistic culture. Results will reveal whether there are differences in levels of social responsibility and outcome measures.

This study is important because the peak of loneliness and isolation of people who feel like they do not have a sense of community leads to more antisocial and depressive behaviors. Therefore, Social responsibility is one of the paramount things that make a better living space for people in the same society.

Phylodynamic Insights and Genetic Connectivity of SARS-CoV-2 and Influenza A

Student Presenters: Sarah Ranginwala, Levi Dong
Faculty Mentor: Leonidas Salichos
School/College: Arts & Sciences

Due to the severity of the Covid-19 pandemic, millions of SARS-CoV2 genomes have been

sequenced and stored in public databases like GISAID. Additionally, the World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC) have extensive records for each country, state and region. Similarly, the National Center for Biotechnology Information (NCBI) hosts more than 60,000 sequenced genomes for Influenza type A variants

H1N1 and H3N2, for the time period between 2018 and 2023. By studying the statistical trends in these viruses, which undergo frequent mutation and consequently have become endemic in the population, we can determine a framework to enhance our pandemic response in the event of future outbreaks.

Here, we compare regional connectivity rates of COVID-19 between US states with data from influenza subtypes H1N1 and H3N2. More specifically, we perform a phylodynamic analysis and calculate genetic connectivity between geographic nodes in the US for SARS-CoV2, H1N1, and H3N2. Analysis of the data allows us to identify geographic patterns of viral transmission and adjust our pandemic response and regulation accordingly. In this study, these targeted topologies are referred to as points of health interest (PoHI), as, if shown to be robust across different epidemics, they can transform national health policies for more efficient and unified mitigation strategies and resource allocations.

Pitt Hopkins Syndrome Unveiled: Breaking Through the Block with Osteopathic Care

Student Presenter: Vaibhav Duggal
Faculty Mentor: Sheldon Yao
School/College: Osteopathic Medicine

Pitt Hopkins Syndrome (PTHS) is a rare neurodevelopmental disorder caused by a mutation in the transcription factor 4 gene. The mutation causes defective regulation of the enteric nervous system resulting in a pathology defined by psychomotor delay, syndromic facies, intellectual disability, and a range of GI comorbidities. Current management emphasizes the treatment of the associated comorbidities to improve day to day quality of life. Osteopathic manipulative treatment (OMT) has been implemented in the treatment of various GI pathologies. Our 3-year-old female patient with a PTHS presented with complaints of severe constipation, abdominal pain, muscle spasms, restlessness, and other GI issues. Alongside her complaints her OSE was significant for celiac ganglion restriction, colon density, psoas spasms and an anterior sacral base. The patient underwent weekly treatments for two weeks and continued with biweekly treatments for two more sessions. OMT was tolerated each visit with no adverse effects. The patient became more relaxed with each session and the patient's mother reported her daughter was less restless now being able to take naps after lunch. She also reported her daughter was now having multiple daily bowel movements, minimal abdominal pain and was overall in a better mood. This study further demonstrates the efficacy of OMT in managing gastrointestinal complaints, while expanding its use beyond common GI pathologies and into a rare neurodevelopmental disorder.

Precedent Performance Project

Student Presenters: Matan Lobel, Rayhaan Albaquerque
Faculty Mentor: Clarke Snell
School/College: Architecture & Design

Studying the environmental performance of the ED HALL building on OW campus through physical calibration of performance simulations using a 3D computer model and a variety of sensors.

Predicting Factors That Contributed to Longer Emergency Medical Services (EMS) Transport Times to an Inner-City Hospital During COVID-19

Student Presenter: Benjamin Galinson, Sean Decker, Matthew J. Cannata, Kelsey N. Mendell
Faculty Mentor: Stephen Dirusso
School/College: Osteopathic Medicine

Introduction:

The COVID-19 crisis spurred many changes in healthcare systems. The study's purpose was to determine predictors of EMS transport times (ETT).

Methods:

Single-institution retrospective study using a prospectively collected trauma registry at a Level II trauma center Bronx, NY. Time intervals were divided into pre-COVID (3/21/2019-12/13/19), COVID (3/21/2020-12/13/20), 1-year post (3/21/2021-12/13/21), and 2-years post (2YPC) (3/21/2022-12/13/22). ETT was subdivided into short (≤20 min) and extended (>20 min). Multi-variate analysis (Logistic Regression (LR)) was used to identify independent significant ETT predictors. Area under the Receiver-Operating Characteristic curve (AuROC) was used to assess model performance. Odd Ratios (OR) were computed for significant predictors.

Results:

2,248 patients were studied. The AuROC was 0.77 indicating a good association between independent and dependent variables. The LR Model indicated the following significant predictors ($p<0.05$): Age (16-44, OR=0.51), Blunt Trauma (OR=6.96), Fall (>0 feet, OR=1.63), New Injury Severity Score (<15, OR=1.40), Verbal Glasgow Coma Scale Score (1-3, OR=1.462), ED Respiratory Rate (>20 breaths/minute, OR=0.97), 2YPC Transports (OR=0.66).

Conclusions:

These data reveal influencing factors of EMS ETT during pandemics in urban environments and may be utilized when implementing optimization strategies for protocols in future crises.

Preferential Matching into Primary Care Residencies: The Impact of Global Health Education

Student Presenter: Austin Irwin
Faculty Mentor: Lillian Niwagaba
School/College: Osteopathic Medicine

Introduction: Medical students who participate in global health experiences are more likely to pursue careers in primary care specialties, opting to practice in medically underserved, low-income, and rural communities. We aim to assess the relationship of global health experiences and specialty of residency match for osteopathic physician trainees.

Methods: We analyzed match results from 2,717 alumni from the 2016-2023 graduating classes of an osteopathic medical school using R statistical software. The global health certificate (GHC) consisted of a didactics semester, a field practicum experience, and a research semester.

Results: Our institute graduated 209 alumni who completed GHC coursework between 2016 and 2023. Within the GHC cohort, 68.4% went on to match in primary care specialties, compared to 57.3% in those without the GHC. Analysis revealed a statistically significant ($p < 0.01$) association between GHC completion and matching into primary care.

Discussion/Conclusions: Completion of global health coursework is associated with higher rates of pursuing primary care and general surgical specialties. These results reflect the value of global health curriculum in American medical schools to highlight the utility of primary care and less subspecialized surgical specialties, particularly in the context of a shortage of primary care physicians and subspecialization in our country.

Professors Openness and Students Sense of Belonging

Student Presenter: Kylee Crain, Fatima Shamsher, Amelia Rasheed, Labiba Fairuj
Faculty Mentor: Nicole Calma-Roddin
School/College: Arts & Sciences

Students' sense of belonging is important because it can improve academic performance, help students be more open minded in the classroom, and can enhance the feeling of security while at the school. We are researching how professors' openness relates to students' sense of belonging. We define a professor's openness as sharing life experiences, personal issues, family life, and hobbies with their students, as well as being lenient on schoolwork/class time. We measure students' sense of belonging using the Hoffman Sense of Belonging Scale. We measure professors' openness by asking students to complete a survey we have created. We predict that there will be a positive correlation between professor openness and students' sense of belonging. This is because professors who are more open with their students likely promote a safer environment, allowing the students to feel more comfortable. Being comfortable in a classroom may allow students to feel like they belong in the class. This sense of belonging that they feel is important to help them to academically thrive.

Psychological Reactions to Video Stimuli: A Comparative Study of Horror and Non-Horror Videos

Student Presenters: Geraliz Mones, Stevie Ann Hill, Cortney Street
Faculty Mentor: Melissa DiMartino
School/College: Arts & Sciences

Jump scares are sudden, unexpected events in media designed to startle viewers, often evoking strong emotional responses such as excitement and anxiety (Straube et al., 2009). Research suggests that while some individuals find jump scares thrilling, others experience heightened distress, with sensation-seeking tendencies playing a role in these differing reactions (Scrivner et al., 2022). While prior studies have explored general emotional responses to fear-inducing content, the specific impact of jump scares remains under explored. This study aims to investigate emotional responses to jump scares by comparing them with non-jump scare videos and neutral videos in terms of enjoyment, anxiety, happiness, and sensation-seeking tendencies. Participants will be randomly assigned to one of three conditions: (1) a suspenseful video with a jump scare, (2) an identical suspenseful video without a jump scare, or (3) a neutral control video. After viewing the videos, participants will complete a survey assessing enjoyment, anxiety, happiness, and sensation seeking tendencies. Findings from this study will contribute to a deeper understanding of the psychological effects of media and inform content creation tailored to sensation-seeking audiences. This is important because emotional responses to stimuli have shown that it is influenced by an innate psychological mechanism such as fear. It is essential to examine how different videos trigger illicit emotional states.

Race and Reality: A Visual Journey Through Racial Inequality in America

Student Presenter: Leonine Murray
Faculty Mentor: Patty K. Wongpakdee
School/College: Architecture & Design

My infographic examines racial inequalities experienced by communities of color in America. The poster follows the journey of a person through their life showing different inequalities people of different races may or may not face throughout their lives. Starting with education and literacy, moving on to financial equality, housing, healthcare and ending with statistics that can result in death or other life long consequences such as hate crimes and incarceration. The purpose of my project is to show the reality of challenges faced by communities of color. However, I also wanted to give an unbiased exploration of the facts. Showing that each community has their own specific struggles even communities that do not have people of color. Through this impartial lens people are able to see the discrimination that each community faces.

Rare idiosyncratic reaction of acute drug induced hepatotoxicity in the setting of long term Metronidazole, Aztreonam, and Vancomycin use

Student Presenter: Saba Iqbal
Faculty Mentor: Ahmed Saeed
School/College: Osteopathic Medicine

Drug-induced liver injury (DILI) is a significant cause of acute liver dysfunction, responsible for 14% of acute liver failure cases and a leading indication for liver transplantation in the U.S. It results from direct toxicity or idiosyncratic reactions influenced by genetic, immunological, and metabolic factors. Antibiotics, particularly metronidazole, vancomycin, and aztreonam, account for 45% of DILI cases. We present the case of a 64-year-old female with past medical history of hypertension, hyperlipidemia, type II diabetes mellitus, and peripheral arterial disease (PAD), coming to the emergency department with a one week history of myalgias, generalized weakness, and diarrhea, following prolonged antibiotic use for osteomyelitis after a distal phalanx amputation two months earlier. At that time, to treat the infection she had received a three-week intravenous course of metronidazole, vancomycin, and aztreonam via a peripherally inserted central catheter (PICC) line. She later developed a diffuse rash, swelling, eosinophilia (peak of 17.4%), and suspected DRESS, thereby treated with prednisone and Benadryl. Later, the patient's condition worsened involving acute kidney injury (AKI), suspected drug-induced interstitial nephritis, and hepatocellular injury, suggestive of immune-mediated liver damage mimicking autoimmune hepatitis. This case underscores the complexity of diagnosing DILI, especially when comorbidities and immune-mediated mechanisms are involved.

Recommending Better: A UX Research Approach to Visibility and Accuracy in E-commerce

Student Presenter: Renjia Chen
Faculty Mentor: Kevin Park
School/College: Architecture & Design

Product recommendation systems play a critical role in e-commerce by helping users discover relevant products, improving shopping efficiency, and driving sales.

This project focuses on SSENSE's product detail page, where the recommendation module often goes unnoticed or fails to meet user expectations.

Through user interviews, I identified two core usability issues:

1. Low visibility – many users didn't realize the recommendation module existed

2. Limited relevance – the recommended products often didn't match the user's style or intent

To address these challenges, I applied various UX research methods including:

tree testing, preference testing, etc.

This research aims to redesign the recommendation experience to be more discoverable, relevant, and user-centered — ultimately helping shoppers find the right products faster and with greater satisfaction.

Relationship Between Empathy and Emojis

Student Presenters: Kaitlyn D. Kemraj, Zakir M. Mozuddin
Faculty Mentor: Nicole Calma-Roddin
School/College: Arts & Sciences

Empathy is the ability to understand and share others' emotions. Since emojis help convey text tone and emotion in digital communication, here we examine the relationship between how empathetic an individual is and their emoji usage while texting. We presented participants with a scenario mimicking a text conversation and asked them to respond as though they were texting a close friend. We measured how many and which emojis were being used in the reply and measured participants' empathy levels via the Perth Empathy Scale. We also measured participants' empathy using a modified version of the Perth Scale intended to measure empathy specifically in text communication. We expect that the results will indicate a positive correlation between empathy and emoji frequency, with more emojis correlating to a higher empathy score. These findings could improve understanding of online communication, help determine which emojis are more often used, and provide avenues to improve the design of digital tools that enhance emotional expression in virtual settings.

Restoring Rest: A Sleep Management Guide to Support Mental Health and Well-being in Individuals with Spinal Cord Injury (SCI)

Student Presenter: Alessia DiBucci
Faculty Mentor: Kelly Lavin
School/College: Health Professions

Background & Rationale: Depression and anxiety symptoms, as well as sleep disorders and disturbances, are prevalent in adults with spinal cord injury (SCI). There is a significant lack of attention and a gap in the literature on occupational therapy addressing the relationship of sleep and mental health in adults with SCI.

Purpose & Objectives: To develop and disseminate a sleep management resource for adults with SCI and their caregivers, educate them on sleep management strategies, improve mental health, and demonstrate the role occupational therapy can play in these areas.

Methods & Implementation: Creating a web-based guide following a thorough literature review on evidence-based interventions for sleep and mental health, with intentions to implement through presentations and postings on United Spinal's website.

Outcomes & Impact: This project will positively impact adults with SCI and occupational therapy. It will increase knowledge and awareness of healthy sleep interventions and resources, draw needed attention to the correlation between mental health and sleep, and highlight the benefits of occupational therapy.

Conclusion & Future Implications: This project has provided a deeper understanding of SCI, mental health, and the occupation of sleep. Sustainability for this project involves yearly updates and ongoing presentations. Future recommendations include further research on the impact of SCI on mental health and sleep quality.

Retail Therapy or Digital Distress? The Psychological Toll of TikTok Shop

Student Presenters: Josey M. Spiers, Amy Patel
Faculty Mentor: Melissa DiMartino
School/College: Arts & Sciences

TikTok (TT) has transformed content consumption with personalized algorithms, with 62% of U.S. young adults (18-29) using the platform daily. Since TT Shop's launch in September 2023, ByteDance has reported $11.7 billion in revenue, integrating product advertising into entertainment. Despite its growing influence, research on its impact remains limited. TikTok's significant societal influence is further highlighted by its controversial role in global politics and data security concerns. Its ban in countries like India and potential restrictions in the United States underscore the platform's profound impact on culture, economy, and individual behavior (Mishra, M., Yan, P., & Schroeder, R., 2022).

This longitudinal, repeated-measures study examines TT Shop's effects on consumer spending. Undergraduate students will track their TT Shop spending for three weeks, reduce TikTok usage by 40% and record spending for another three weeks. Self-esteem, fear of missing out (FOMO), and general anxiety will be measured at the end of each period.

The findings will provide insight into the psychological and behavioral effects of algorithm-driven digital consumption, highlighting a need to understand TT Shop's psychological and financial impact on young adults. By exploring how platform use influences spending habits and mental health, this research offers strategies for sustainable purchasing, digital well-being, and ethical algorithm-driven advertising, addressing real-world challenges.

SaME Lab: BPS Platform Comparison

Student Presenter: Kyra Duke
Faculty Mentor: Clarke Snell
School/College: Architecture & Design

The BPS Platform Comparison project aims to systematically evaluate the outputs of popular architectural modeling platforms—IES VE, SketchUp/Sefaira, Rhino/Climate Studio, and Revit/Insight—using a common Building Performance Simulation (BPS) workflow. The research involves modeling a baseline project across all platforms, running comparable BPS workflows, and analyzing the outputs. The key objectives are to compare the results of each platform, identify any discrepancies, and, if necessary, calibrate the workflows to ensure accurate and consistent outcomes. An outcome comparison matrix will document and analyze the results systematically, identifying opportunities for improvement or further exploration. The final deliverable includes a comprehensive assessment of the strengths and limitations of each platform, with a focus on their effectiveness in delivering accurate and reliable building performance data.

This research enhances understanding of the latest BPS technologies available. As the field of architecture continues to prioritize sustainability and energy efficiency, the project supports future career opportunities and provides valuable experience, contributing to more informed and sustainable architectural practices.

Secondary Hypogonadism in a Young Male with Leptomeningeal Neurosarcoidosis: A Case Report of Fertility-Preserving HCG Therapy

Student Presenters: Anushka Bhatt, Sonika Rathi
Faculty Mentor: Satoru Kobayashi
School/College: Osteopathic Medicine

Sarcoidosis is a chronic granulomatous disorder with multisystem involvement, including the CNS. Leptomeningeal neurosarcoidosis is a rare manifestation that may affect the hypothalamic-pituitary axis and lead to endocrine complications such as hypogonadism. Testosterone replacement is the standard therapy for hypogonadism, but it suppresses spermatogenesis. We present a case report of a 34-year-old male patient with leptomeningeal neurosarcoidosis who developed progressive symptoms of hypogonadism, including fatigue, low libido, testicular atrophy, and decreased body hair, treated with HCG therapy. He denied previous testosterone use and had no other identifiable risk factors for hypogonadism. Laboratory testing revealed low serum total testosterone (<10 ng/dL). Given his desire to preserve fertility, exogenous testosterone was deferred. HCG therapy was considered as an alternative, as it stimulates endogenous testosterone production, increases testicular volume, and maintains spermatogenesis. Further endocrine evaluation was obtained. This case highlights a rare presentation of hypogonadism in the setting of leptomeningeal neurosarcoidosis and introduces HCG as a fertility-preserving alternative to testosterone therapy. We aim to demonstrate that in young males with reproductive goals, HCG can be an effective treatment, providing symptom relief without compromising future fertility. This case explores the rare use of HCG therapy in sarcoidosis-related hypogonadism.

Short-term humanities interventions help medical students understand the patient's perspective

Student Presenter: Adil Ansari
Faculty Mentor: Julia Molnar
School/College: Osteopathic Medicine

Addressing bias and stigma in healthcare is essential in medical education, as these barriers hinder quality care and contribute to disparities. Humanities-based activities, like narrative medicine and visual arts, help students develop empathy, observational skills, and a patient-centered approach while fostering awareness of health inequalities.

We designed a humanities-based workshop on obesity medicine, addiction, and mental health at the New York Institute of Technology College of Osteopathic Medicine and the University of Kentucky College of Medicine in the summers of 2023 and 2024. Forty-two rising second-year medical students participated in five two-hour sessions featuring narrative medicine, visual art, patient and physician accounts, and culinary demonstrations. The workshop concluded with a showcase of student-created visual artworks reflecting their experiences.

Pre- and post-assessments showed significant ($p < 0.05$) improvements in students' confidence in discussing stigmatized topics, using appropriate language, and embracing diverse perspectives. Participants strongly supported incorporating more humanities-based interventions in medical education, demonstrating their feasibility across institutions with varying curricula.

Simulating Blood Flow in the Left Anterior Descending Artery Using Smooth Particle Hemodynamics

Student Presenter: Gazi Husain
Faculty Mentor: Milan Toma
School/College: Osteopathic Medicine

Smoothed Particle Hydrodynamics (SPH) is increasingly popular for computational blood flow simulations, thanks to its capacity to handle large vessel deformations without re-meshing. This pilot study used SPH to model blood flow in the left anterior descending artery (LAD), a key site for cardiovascular disease. LAD samples from cadaveric hearts were micro-CT scanned, reconstructed in 3D, and simulated using IMPETUS software with non-Newtonian blood properties and vessel biomechanics. Results showed complex flow, especially at vessel expansions, with the distal one-third displaying the highest stress, velocity, strain, and displacement. Flow separation, recirculation, and elevated wall stress occurred at sharp geometric changes. Constricted sections exhibited increased velocity and shear stress, while expanded areas showed turbulence and flow separation. These dynamics can affect endothelial cell function and promote atherosclerotic plaque formation. Overall, this pilot study highlights SPH's promise for enhancing our understanding of blood flow mechanics in the LAD, with applications for optimizing stent designs, predicting bypass graft outcomes, and improving targeted drug delivery.

Simulating Open Quantum System Dynamics Using Quantum Circuits

Student Presenters: Faraz Khan, David Rogola, Abel Mekuria
Faculty Mentor: Yusui Chen
School/College: Arts & Sciences

The dynamics of open quantum systems, which interact with an environment, are typically modeled using the Lindblad Master Equation under the assumption of Markovian (memoryless) evolution. However, many real-world systems exhibit non-Markovian behavior, where past interactions influence future dynamics. In this project, we develop a quantum simulation algorithm to simulate non-unitary open-system evolution using unitary quantum gates. By expressing the system's evolution in the Kraus operator representation and applying Sz.-Nagy's dilation theorem, we embed non-unitary Kraus operators into a higher-dimensional unitary space. For instance, a two-level system (one-qubit) undergoing amplitude damping can be mapped to four individual two-qubit circuits, which, after tracing out environmental degrees of freedom, accurately reproduce open-system dynamics. To extend beyond the Markovian regime, we implement the Ensemble of Lindblad Trajectories (ELT) method, which reconstructs non-Markovian effects by weighting past-time trajectories to approximate the full evolution. This approach enables efficient quantum simulations of open-system dynamics, broadening the applicability of quantum computing in modeling complex quantum environments.

SPF for the Mind: Integrating Dermatologic Awareness to Strengthen STEM Engagement for Underrepresented Students

Student Presenter: Kelsey Liu
Faculty Mentor: Michael Granatosky
School/College: Osteopathic Medicine

Skin cancer is a major public health problem with nearly five million cases treated annually in the United States. Many cases are preventable through education and proper skin protection —particularly against ultraviolet radiation, the most significant modifiable risk factor. Yet, people of color have traditionally been underrepresented in skin cancer research and face barriers to accessing quality science, technology, engineering and mathematics (STEM) education, reinforcing disparities in healthcare and scientific fields.

To help bridge this gap, we implemented a four-part, hands-on curriculum focused on dermatology and research, consisting primarily of students of color from middle and high schools based in Long Island and New York City. This curriculum is designed to prepare them for higher education and foster interest in STEM-related fields. Each session focused on a different phase of the research process and included a hands-on activity to reinforce key concepts taught during the session. The final lesson promoted public speaking and science communication skills by having students present their work.

Results indicate that students who completed the curriculum are more likely to demonstrate increased interest in STEM subjects/fields and increased dermatological knowledge. These findings highlight the importance of empowering underrepresented youth and advancing equity in science and healthcare.

Synthesis and characterization of selective pyruvate carboxylase (PC) inhibitors for studying cancer cell metabolism

Student Presenters: Vishva Hareshbhai Ravani, Diyaben Kanpariya
Faculty Mentor: Subhabrata Chaudhury
School/College: Arts & Sciences

Synthesis and characterization of selective pyruvate carboxylase (PC) inhibitors for studying cancer cell metabolism

Enzyme pyruvate carboxylase (PC) plays an important role in central metabolism and is located in mitochondria of most eukaryotic cells. Due to its crucial function, PC has become a potential target for drug development for several human health disorders, including type-2 diabetes and cancer. Despite its association with several human diseases, there are currently no identified potent or specific pharmacological modulators of PC activity. Recently our group has discovered a new class of substituted imidazolidinetriones (IZTs), many of which display low i⃞-M affinity in PC inhibition assays. Our initial SAR studies on 1,3-disubstituted IZTs revealed that an R1 substitution containing aromatic group and an ethanoate (CH2CO2R) group at R3 favors enhanced potency. Herein we report an extension of IZT analog with multiple diester functionalities that are derived from L- and D-glutamic acids. We anticipate these analogs will display improved potency compared to our initially synthesized IZTs.

Synthesis of a Benzoimidazole-containing compound as a potential PDE5 inhibitor

Student Presenters: Reshmi K John, Diego Landaverde
Faculty Mentor: Jole Fiorito
School/College: Arts & Sciences

Alzheimer's Disease (AD) is the most common form of dementia. It is characterized by the accumulation of amyloid plaques and neurofibrillary tangles that consist of amyloid beta and tau protein, respectively. Many researchers have investigated the nitric oxide pathway since it has been proven to improve synaptic plasticity, learning, and memory. Investigation has shown that inhibiting phosphodiesterase 5 enzyme (PDE5) is a potential treatment for improving learning and memory. PDE5 functions by specifically hydrolyzing cGMP into its inactive form. This study aims to develop a benzoimidazole-containing PDE5 inhibitor. Various synthetic and analytical methods, such as flash chromatography, vacuum filtration, thin layer chromatography (TLC), Liquid Chromatography–Mass Spectrometry (LCMS), and nuclear magnetic resonance (NMR) were used to obtain the molecule. Future studies will determine if this benzoimidazole-containing compound is a PDE5 inhibitor.

Systematic Review of OMT in Ehler's Danlos Syndrome

Student Presenters: Erin Clifford, Stefanie Blejec
Faculty Mentor: Bernadette Riley
School/College: Osteopathic Medicine

Background:

Ehlers-Danlos syndrome (EDS) is a group of inherited connective tissue disorders that may result in chronic pain, joint instability, and musculoskeletal dysfunction. Currently, treatment options are limited, and alternative therapies may be beneficial.

Objective:

This systematic review aims to assess the potential benefits of osteopathic manipulative treatment (OMT) in patients with Ehlers-Danlos syndrome (EDS).

Methods:

A systematic search was conducted using PubMed, Google Scholar, Web of Science and Cureus for studies published at any time that include the key words of "osteopathic"" or "OMM"" or "OMT"" and "Ehlers-Danlos Syndrome"" or "EDS."" Inclusion criteria included articles published at any time that discussed osteopathic treatment for patients with EDS or symptoms of EDS. Data on patient outcomes, treatment interventions, pain levels, and any relevant findings were summarized qualitatively.

Results:

Findings suggest that OMT may lead to improvements in pain management and functional outcomes for EDS. However, the small sample sizes and methodological variability across studies limit generalizability.

Conclusion:

The results indicate that OMT could be a promising adjunctive therapy for managing symptoms in EDS patients, but further research with larger sample sizes and more rigorous methodologies is needed to confirm these findings.

The correlation of recurring COVID-19 illnesses and its potential impact of organ damage across a continuum.

Student Presenters: Kaylie Lamar, Nada Abdallah, Stacey Alverado, Madelyn Diaz-Portillo
Faculty Mentor: Jessica Varghese
School/College: Health Professions

As the world continues to adapt to life in the wake of the COVID-19 pandemic, a growing concern has emerged: what happens to individuals who contract the virus more than once? This exploratory study dives into the connection between repeated COVID-19 infections and the risk of long-term organ damage. While many patients recover fully from a first infection, some experience lingering symptoms-often referred to as "long COVID." This study seeks to explore whether repeated infections can worsen those outcomes, potentially affecting vital organs like the heart, lungs, kidneys, and even the brain. Understanding the long-term impact of COVID-19 is essential not just for healthcare workers, but for everyone. As reinfections become more common and new variants continue to emerge, raising awareness about these potential risks is critical. The more we know, the better we can protect our health, seek appropriate care, and advocate for system-wide changes in healthcare delivery. By exploring the scientific literature on this topic, we hope to shed light on an evolving health challenge and encourage proactive, informed decision-making for all individuals navigating life in a post-pandemic world.

The Effects of Precise Cues in Radiologic Search

Student Presenters: Ola Abozid, Raul Castillo-Leon, Layla El-Rowmeim, Maryan J. Botlero
Faculty Mentor: Robert Alexander
School/College: Arts & Sciences

It is inefficient for radiologists to search for one specific thing, as they may miss other findings when scanning images. For example, examining and detecting potentially cancerous nodules can be difficult due to the typically small size and low density. There is also no universal search model that radiologists can use for all abnormalities. It has been found that precise target cues ("find the red apple"") are known to guide search more efficiently than imprecise cues ("find the apple""). This effect, though, has only been explored in cases where hue differentiates targets from distractor objects, which is not the case in radiology. Can precise cues improve search performance in radiology? Answering this question can help to understand performance in contexts where targets cannot be identified using hue features (e.g., x-rays). In a novel approach, this project quantified the effects of precise vs imprecise non-hue text cues in radiologic search tasks while recording participants' eye movements. The project characterized the performance and gaze behavior of non-experts while viewing chest X-rays. The central hypothesis was that search would be more efficient with precise than with imprecise cues. However, the results found minimal difference in gaze behavior, suggesting that cues pertaining to shape (e.g., "round"" or "lobulated"") are generally inefficient in searching for nodules or that novices are unable to use the information effectively due to their lack of knowledge.

The Impact of Nursing Burnout on Patient Outcomes

Student Presenters: Amandaly Maria Diaz, Isabella Persaud, Raymond Paolillo
Faculty Mentor: Jessica Varghese
School/College: Health Professions

Nursing burnout is a growing crisis that directly compromises patient outcomes. Characterized by emotional exhaustion, fatigue, and disengagement, burnout impairs nurses' ability to provide safe and effective care. Patients treated by burned-out nurses face higher risks of medical errors, delayed interventions, and reduced adherence to treatment protocols. Nursing burnout can lead to increased hospital-acquired infections, medication errors, and longer recovery times.

Additionally, overwhelmed nurses often struggle with communication and emotional detachment, leading to decreased patient satisfaction and trust in healthcare providers. The lack of attentiveness and compassion can result in unmet patient needs, negatively impacting overall recovery and well-being. Addressing nursing burnout through adequate staffing, mental health support, and policy reforms is crucial for improving patient safety and clinical outcomes.

This literature review aims to analyze the research available and look at quality improvement measures implemented in nursing practice. The goal is to conduct quality/health services research to improve healthcare delivery and outcomes. Ensuring nurses' well-being is not only vital for the workforce but is also essential for maintaining high-quality patient care and positive health results.

The N400 and Childhood Language Development

Student Presenter: Isha Joshi
Faculty Mentor: Nicole Calma-Roddin
School/College: Arts & Sciences

Semantic processing, the process of encoding language with meaning, is an important part of child language development. One method used to study semantic processing is event-related potentials (ERP), which uses data collected via electroencephalography (EEG). The ERP component most known for indicating semantic processing is the N400. I conducted a literature review considering what the N400 indicates about meaning processing in child development from infancy through teenage years. Semantic processing, as indicated by the N400, has been examined through various fascinating studies.Throughout my literature review, different research methods were used with the measurement of the N400 to test language processing. Research suggests that early detection of the N400 in childhood serves as a predictor of language development impairments. If the N400 is absent or delayed, it can indicate disruptions in semantic processing in later childhood. Learning the significance of measuring the N400, and what it reveals about language development, could lead to further studies bridging neurology and semantic meaning in psychology.

The Relationship Between Empathy and Life Stressors

Student Presenters: Jessica Kaur, Noyan Jawad
Faculty Mentor: Nicole Calma-Roddin
School/College: Arts & Sciences

Empathy represents a critical emotional intelligence skill that potentially shapes an individual's perception and internalization of loss and emotional pain. We hypothesize that experiencing significant life stressors, including challenging transitions and difficult experiences, may relate to an individual's capacity for empathy. To investigate this, we will administer an anonymous online survey to college students. We will utilize the Social Readjustment Rating Scale to measure life experiences. Along with this, we will present a scenario to participants and measure their empathy based on their response. Through this, we can analyze the relationship between life stressors and empathetic responses. This research could offer valuable insights for those who work in fields that require empathy, such as the medical field, social work, or counseling.

The Role of Osteopathic Manipulation in Acute Infection Care: A Health Policy Research Brief

Student Presenter: Nneka Mezu
Faculty Mentor: Regina M. Olasin, Joerg Leheste
School/College: Osteopathic Medicine

Acute infections pose significant public health challenges. Osteopathic manipulative treatment (OMT), known for its self-healing properties, has shown promise as an adjunct to anti-infective respiratory system therapy for shortening hospital stays, reducing antibiotic use, and thus lowering costs. Yet, OMT remains under-explored due to the lack of research funding for osteopathic institutions. The U.S. Congress has noticed this issue publicly in one of its appropriation bills (HR118-585), but significant action is yet to follow.

We believe that the general increased use of OMT in acute infectious disease treatment can improve health outcomes and propose a blueprint for effective implementation based on partnering suitable osteopathic and allopathic institutions with a track record of pre-clinical and clinical work leading to novel clinical interventions and cures.

Infectious diseases disproportionately affect vulnerable populations, requiring protection, information literacy, and advocacy. Public health campaigns can educate people about OMT as a safe and effective treatment and gain support for its use in primary and acute care settings, ensuring insurance coverage and reducing financial barriers for patients and physicians.

Infectious diseases remain a major health risk for individuals and society, while research exploring osteopathic treatment options remains underfunded and unexplored, mandating advocacy and congressional action.

The Role of Select Nutraceuticals in the Management of Hidradenitis Suppurativa: A Scoping Review

Student Presenter: Sanjidah Ira
Faculty Mentor: Joseph Simone
School/College: Osteopathic Medicine

Hidradenitis suppurativa (HS) is a chronic inflammatory skin disease marked by painful nodules, abscesses, and scarring, leading to significant physical and psychological burden. A lifelong, recurring condition that is often difficult to manage, standard treatments for HS include antibiotics, hormonal therapies, retinoids, biologic agents and surgical interventions. However, these often yield incomplete or temporary results, driving interest in adjunctive nutraceutical therapies. This scoping review evaluates the clinical evidence surrounding vitamin D, zinc, and iron supplementation in HS management. A systematic search of peer-reviewed literature identified 9 relevant studies. Vitamin D and zinc supplementation demonstrated clinical benefits, including reduced disease severity scores and nodules. Although no interventional trials on iron supplementation were found, multiple studies reported a high prevalence of iron deficiency anemia in HS patients, underscoring the need for further investigation. This review underscores the therapeutic promise of vitamin D and zinc in HS while highlighting the potential role of nutraceuticals as adjunctive therapies in the comprehensive management of HS.

The Timing of Re-Entry in Reward-Based Crowdfunding: How Funding Outcomes Shape Creator Return and Future Success

Student Presenter: Christopher Torres
Faculty Mentor: Wenyao Hu
School/College: Management

This study examines how funding outcomes affect the timing of a reward-based crowdfunding creator's return to platforms like Kickstarter and how this timing influences future campaign success. Using Kickstarter data, it investigates two key dynamics: (1) whether creators who fail return faster or slower than those who succeed, and (2) whether shorter intervals between campaigns correlate with higher success rates. Kickstarter is an all-or-nothing platform where creators seek funds from backers, offering non-equity rewards like exclusive products or experiences.

Attribution theory suggests that creators may view failure as externally driven, leading to quicker re-entry, while success may prompt consolidation before relaunch. In contrast, hubris theory predicts that successful creators might re-enter faster due to overconfidence, while failed creators may hesitate. Real options theory frames re-entry as a strategic decision between leveraging recent visibility and waiting to reduce uncertainty.

The study explores whether shorter campaign intervals enhance success through a momentum effect, maintaining visibility and engagement. Unlike prior research that links initial outcomes to strategy changes, this study emphasizes the role of re-entry timing on performance. The findings offer insights for creators, marketers, and policymakers to optimize crowdfunding timing and improve success.

Thriving Beyond Cancer: Enhancing Cognitive & Daily Functioning for Young Adult Survivors Through an Occupational Therapy Approach

Student Presenter: Sharon John
Faculty Mentor: Kelly Lavin
School/College: Health Professions

Adolescent and young adult (AYA) cancer survivors (18-39) often face cognitive impairments, challenges with work or school reintegration, and psychosocial barriers. Despite occupational therapy's (OT) potential role in survivorship care, accessible OT-based digital resources are limited. Thriving Beyond Cancer addresses this gap through a digital platform and social media campaign offering OT-driven strategies to enhance cognitive function, occupational participation, and quality of life. Objectives include raising awareness, delivering practical interventions, and increasing survivor engagement via Instagram and Facebook. The project incorporates evidence-based content, digital guides, cognitive exercises, and mindfulness tools. Expected outcomes include improved cognitive skills, greater adoption of OT strategies, and enhanced survivor participation. This initiative highlights OT's value in cancer recovery, informing best practices for integrating OT into survivorship care. Future directions include content expansion, professional collaborations, and advocacy for sustainable, OT-focused interventions in AYA survivorship.

Tidal Reclaim

Student Presenter: Kelvin Rodriguez Cabrera
Faculty Mentor: Jeannette Sordi, Marcella Del Signore
School/College: Architecture & Design

The Redhook Coastline, once a hub of industrial vitally, is re-imagined as a permeable interface between land and water, fostering resilience, by integrating marshlands, recreational zones, and adaptive infrastructure. This project transforms hardened edges into dynamic multi-use landscapes. The design prioritizes flood mitigation, community connectivity, and ecological restoration. Redhook evolves into a sustainable urban model embracing nature as a vital ally in its future.

Too Tired to Socialize, Too Burned Out to Learn: Investigating Social Burnout in College Students

Student Presenters: Amy Ketankumar Patel, Josey Spiers
Faculty Mentor: Robert Alexander
School/College: Arts & Sciences

Burnout, a state of emotional exhaustion, lack of purpose, and increased lethargy, can severely affect performance. Social burnout is a subtype, causing social exhaustion and listlessness. For college students, demanding social, academic, and extracurricular pressures can lead to social burnout, where they feel obligated to uphold certain standards, impacting their well-being. This study will examine how social burnout affects academic performance, including comprehension and engagement. Students will participate in a classroom intervention where those with higher burnout scores lead a team-building exercise. They will create trivia questions on the course material, with their lower-burnout partners answering. The goal is to increase engagement and help burned-out students feel more involved. Participants will complete a Social Burnout Scale (11 items), Course Comprehension Scale (10 items), and Mindfulness Scale (10 items), all scored on 5-point Likert scales, which will be combined to measure burnout and classroom engagement pre- and post- intervention. This study will validate a social burnout scale, developed by Chinese medical students, to assess if USA undergraduates experience similar burnout. The results could inform strategies to support student well-being, academic success, and manage burnout from social activities.

Transformers for functional Near-Infrared Spectroscopy-based Brain-Computer Interfaces

Student Presenter: Neda Abdollahpour
Faculty Mentor: N. Sertac Artan
School/College: Engineering & Computing Sciences

Functional near-infrared spectroscopy (fNIRS) is a noninvasive neuroimaging technique that measures cerebral hemodynamic responses. It offers a portable and cost-effective solution for monitoring brain activity and has gained increasing attention due to its affordability, ease of use, and relatively high spatial resolution compared to electroencephalography (EEG). fNIRS has broad applicability in real-world scenarios such as brain-computer interfaces (BCI), cognitive workload assessment, and mental state classification.

Despite its advantages, fNIRS signals present several challenges, including low signal-to-noise ratio, susceptibility to motion artifacts, and complex temporal-spatial dynamics. Traditional signal processing methods often rely on handcrafted features and domain-specific filtering, which can limit the flexibility and scalability of fNIRS-based systems.

To address these issues, we explore the use of deep learning—specifically, transformer-based architectures—for analyzing fNIRS data. Transformers are well known for their ability to model long-range dependencies and capture both spatial and temporal features in sequential data. In our approach, we implement a customized transformer model tailored for classification tasks within fNIRS-based BCI systems. Our results demonstrate improved accuracy over conventional methods, emphasizing the potential of transformers in advancing neural decoding of fNIRS signals.

Two Systems, One Problem: The Value of a Cross-Cultural Approach to Maternal Health

Student Presenters: Philesha Teape, Brianna Cummings, Hira Iftikhar, Mackenzie Sivilli
Faculty Mentor: Joerg Leheste
School/College: Osteopathic Medicine

Maternal mortality remains a global health crisis, shaped by healthcare affordability, education, and access. Despite progress, maternal mortality rates remain above the World Health Organization's 2030 goal of 70/100,000 live births. This health policy research project takes a global perspective, drawing from the New York Institute of Technology College of Osteopathic Medicine (NYITCOM) Global Health program trip to Ghana. We set out to identify and compare key elements of maternal healthcare in the United States and Ghana, hypothesizing that both systems can learn from each other to improve outcomes. One focus lies on the role of midwives in both countries, highlighting their contributions to reducing maternal mortality. In doing so, we examined how access, insurance, and geographic barriers affect care. Beyond structural challenges, we investigated how religious beliefs shape pregnancy practices, sometimes conflicting with medical advice and reinforcing the need for education to ensure patient safety. We then compared current efforts to improve sexual and reproductive health care. Ultimately, this research underscores the importance of global collaboration and innovative policy solutions in advancing maternal healthcare worldwide. Based on our findings, a maternal health crisis in both countries warrants attention from international organizations focused on global health equity, such as the Gates Foundation and Doctors Without Borders.

Two's a Party, Three's a Cure: Phage-Phage and Phage-Antibiotic Synergy

Student Presenters: Yamini Patel, Andrew Attia, Nigel Oommen
Faculty Mentor: Bryan Gibb
School/College: Arts & Sciences

The rise of antimicrobial resistance (AMR) has necessitated alternative treatment strategies for bacterial infections, particularly those caused by Staphylococcus aureus, a major pathogen in healthcare settings. Bacteriophage therapy has emerged as a promising approach, but its potential synergy with antibiotics remains underexplored. This study investigates the combined effect of our isolated phage(s) with different classes of antibiotics targeting S. aureus. By assessing bacterial survival, resistance development, and overall treatment efficacy, we aim to determine whether phage-antibiotic combinations/ phage-phage combinations enhance bacterial clearance compared to monotherapies. Preliminary findings suggest that specific antibiotic classes, when paired with phages, improve bacterial eradication and delay resistance evolution. These results support the growing interest in phage-antibiotic synergy as a viable strategy to combat AMR. Our study contributes to the foundation for future clinical applications, highlighting the potential of combination therapies in overcoming antibiotic-resistant infections.

Typing Notes vs Handwritten Notes and the Correlation to Memory and Grades

Student Presenters: Jordan Vargas, Melissa Molina, Miranda Onsrud
Faculty Mentor: Jessica Varghese
School/College: Health Professions

The method of note-taking—whether handwritten or typed—may influence memory retention and academic performance. This paper explores the correlation between college students' note-taking styles and their outcomes by synthesizing findings from existing descriptive and exploratory research. Prior studies suggest that handwritten notes foster deeper cognitive engagement through active summarization, whereas typed notes, while faster, tend to encourage verbatim transcription and may lead to shallower information processing. Drawing from existing research this paper describes how each method affects comprehension and long-term memory in college students. The findings indicate a potential advantage of handwritten notes in enhancing academic performance, offering insights that can inform educational strategies and study practices.

Understanding Myself; Empowering children with medical complexities to participate in their health management

Student Presenter: Chaya P. Konig
Faculty Mentor: Kelly Lavin
School/College: Health Professions

Children with medical complexities comprise 1/4 households in the USA. Much research has been conducted exploring the experience of these children's families. There is a dearth of research exploring the experiences of these children.

Self-determination in health-management has lead to better health outcomes in adults with various conditions. Likewise, supplying information to children in an age-appropriate manner has lead to a reduction in need for pre-procedural anti-anxiety medications in certain instances.

Using this as a model, I wrote three stories for children with medical complexities explaining some of the equipment that they might use. One focuses on gastronomy-tubes, another focuses on Alternative Augmentative Communication devices, and the last describes the importance of using standing frames. These are being disseminated via websites of organizations serving children with rare diseases.

Understanding Postpartum Depression in Rural Women: The Importance of Early Detection and Intervention

Student Presenters: Hannah Saji, Lauren Choi, Jennifer Kemp, Dominique Decosta
Faculty Mentor: Jessica Varghese
School/College: Health Professions

Many new mothers feel pressured to appear happy and capable, and convince themselves that feeling sad, anxious, or detached can lead to shame or fear of judgment. This stigma can prevent women from seeking help, exacerbating their condition and increasing feelings of loneliness and distress. It is crucial for mothers, specifically within isolated rural areas, to know what kind of resources are available and where to seek this support early on. Rural areas lack transportation, lack childcare, and have a lower socio-economic status compared to urban areas. As a result, there is a shortage of hospitals and clinics, which results in women's immediate needs, within rural areas unmet. Making telehealth resources available within a 5-10 minute proximity would create more accessibility and connection between healthcare providers and mothers. Improving accessibility of resources will allow for women to seek early treatment such as engaging in close monitoring and routine screenings during prenatal and postpartum care, which will help healthcare providers to recognize these signs early and allow them to intervene before symptoms worsen. Addressing barriers that many women feel that hold them back from seeking help such as negative perceptions of PPD, societal expectations, and lack of support, can reassure new mothers that what they are feeling is valid, common, and treatable, rather than a sign of weakness.

Unscathed Bone Microarchitecture in Setting of Warfarin Exposure

Student Presenters: Ben Caruso, Jaden Alexander, Julie Ochs, Saud Nasruddin
Faculty Mentor: Olga Savinova
School/College: Osteopathic Medicine

Warfarin, a widely used anticoagulant, has been implicated in bone health due to its inhibition of vitamin K-dependent post translational carboxylation of proteins essential to bone metabolism. Given the increased risk of osteoporosis and fractures in long-term warfarin users, understanding its effects on bone structure is critical. To investigate this, we utilized LDL receptor knockout mice, and placed them on either a high-fat diet (HFD) or HFD with warfarin treatment for 20 weeks, beginning at 8 weeks of age. Warfarin treatment was then discontinued for an additional 8 weeks before femurs were scanned using MicroCT at 10-micron resolution and analyzed using Dragonfly to assess cortical thickness, trabecular separation, and bone volume. Statistical analysis was performed using a two-way ANOVA. No significant differences were observed between groups in trabecular separation ($p = 0.8159$), cortical thickness ($p = 0.3308$), or bone volume ($p = 0.6997$). However, a significant increase in bone volume normalized to body weight was observed in warfarin-treated females ($p = 0.026$). This effect may be driven by reduced body weight in warfarin-treated mice rather than an absolute increase in bone mass. Alternatively, it may reflect sex-specific differences in bone remodeling following warfarin discontinuation, potentially influenced by estrogen's protective role in bone metabolism. These findings highlight the need for further research into warfarin's long-term effects on bone health.

Until All The Pieces Fit

Student Presenter: Yoselin Benitez
Faculty Mentor: Kelly Lavin
School/College: Health Professions

Language barriers between English and Spanish create significant challenges for Latino families who have a child with Autism Spectrum Disorder (ASD). Limiting access to essential resources, interventions, and support systems, leading to disparities in the availability of services and information. Parents experience distress relating to their child's diagnosis of ASD, which has an effect on play participation for the child, child rearing, communication with the healthcare system and community participation. The purpose of this project is to create an educational program that will educate and empower the Latino community on ASD, accessible resources, and healthy coping strategies while tackling the cultural stigma. The approach of this project consists of two educational presentations to the administration and members of a church. Forms of implementing the project are that the program will be culturally tailored, it will be presented in Spanish and provide all resources in the native language. It will also take into consideration education for the community and parents. The program should increase knowledge about ASD, available resources and healthy coping strategies that will decrease stigmatization among the community. Culturally tailored programs in the native language build trust and create community engagement, contributing to a program's success. To ensure sustainability resources used will be left at the site for members to use if needed.

Walking Works

Student Presenter: Elizabeth Ward
Faculty Mentor: Patty K. Wongpakdee
School/College: Architecture & Design

My project is an infographic poster highlighting the benefits of walking. The poster focuses on physical and mental health and how different demographics (age, economics, geography, etc.) relate to walking behavior. I translated this complex data through visualization and iconography to create a compelling visual design. The goal is to encourage walking for health and call attention to the importance of walkable cities.

Womanhood Blues

Student Presenter: Zahra Shafiq
Faculty Mentor: Kelly Lavin
School/College: Health Professions

Postpartum depression affects new and expecting mothers due to the onset of negative feelings that occur after having a baby. Occupational disruption is a problem for women at risk for or suffering from PPD because symptoms of depression hinder their ability to participate in meaningful roles and daily activities. The goal of my DCP is to advocate for and educate women who are domestic violence survivors about occupational imbalance and the importance of increasing knowledge and self-awareness. This project will educate women on PPD, the risk factors, signs, and symptoms, and identify areas of occupational disruption. My project will include therapeutic activities and connecting women to helpful resources to increase their engagement in occupations. The project is taking place at a women's domestic violence shelter. The approach is to hold an educational workshop that is open to the public through the social media platform of the organization. This seminar will inform the clients, administration, supporters, and stakeholders of the organization about PPD, maternal mental health, interventions and lifestyle practices that can improve mental wellbeing. The impact of the project will be the increased knowledge and awareness about PPD for women at the shelter and in the community. It will promote engagement in occupations for mothers and women, while being sensitive to mental health. Sustained access to resources and therapeutic activities allow for increased mental wellbeing.

Workplace Violence in Nursing: The Critical Role of Leadership in Prevention and Advocacy

Student Presenters: Mark Odato, Elizabeth James, Alby Joy, Mark Odato, Miriam Ibrahim
Faculty Mentor: Jessica Varghese
School/College: Health Professions

This abstract explores the complex issue of workplace violence in nursing, emphasizing the critical role of leadership in implementing preventive strategies, advocating for stronger legal protections, and fostering a secure healthcare environment that prioritizes the well-being of both providers and patients. Workplace violence in nursing has become a critical issue, particularly in high-stress healthcare environments such as those in New York City. Studies indicate that nearly 60% of nurses have experienced physical or verbal violence from patients, visitors, or even colleagues, leading to significant physical, emotional, and psychological consequences. This increasing prevalence of violence not only endangers nurses' safety but also impacts their mental health, contributes to burnout, and diminishes the overall quality of patient care. The nursing profession is already facing staffing shortages, and is further burdened by the high turnover rates associated with workplace violence.

This research employs a descriptive research approach to analyze workplace violence in nursing, focusing on the characteristics, frequency, and impact of violent incidents. By reviewing existing literature and policy frameworks, this study examines leadership strategies that mitigate risks and improve workplace safety.

ZARA - Leading in Style BUT Lagging in Digital Experience !!!

Student Presenter: Vaishnavi Newaskar
Faculty Mentor: Kevin Park
School/College: Architecture & Design

Zara is a fashion retail subsidiary of the Spanish multinational fashion design, manufacturing, and retailing group. In September 2010, Zara launched its online boutique. The website began in Jordan, and online stores began operating in the United States in 2011. The website aims to provide a seamless online shopping experience, offering the latest fashion trends while promoting sustainability through its collections for women, men, and children. But in an era where online presence is paramount, Zara's digital interface has come under scrutiny for its failure to provide an optimal user experience (UX).

Zara, a leading global fashion brand and one of the largest retailers worldwide, yet lurks a less glamorous reality: a website that fails to meet the high standards of today's digital consumer.

My UX research aims to understand the needs, preferences, and behaviours of targeted users, Identify the challenges faced by them & Examine the existing gaps and opportunities. This research helped me to identify the most important problem & redesign it.