

2023

Collegiate Science & Technology Entry Program (CSTEP)



2023 CSTEP Research Interns at Roswell Park Comprehensive Cancer Center- Education Building

SUMMER RESEARCH PROGRAM

RESEARCH SYMPOSIUM & LUNCHEON



Thursday, July 27, 2023
11:00 am – 1:30 pm
University at Buffalo
Jacobs School of Medicine
& Biomedical Sciences

PROGRAM ORDER



WELCOME

SHANNA CRUMP-OWENS

Director, Collegiate Science & Technology Entry Program (CSTEP)

OPENING REMARKS

DR. GRAHAM HAMMILL

Vice Provost for Academic Affairs, Dean of the Graduate School

LUNCHEON & SLIDESHOW NARRATIVE

NELSON RIVERA

CSTEP Alumni

STUDENT PERSPECTIVES

MARIADELA DEMOURA, Biological Sciences (Cohort Leader)

DANIEL FAKAYODE, Public Health (Cohort Leader)

AXEL BERMUDEZ, Biological Sciences

JELYSE WILLIAMS, Biomedical Engineering

POSTER COMPETITION & JUDGES PRESENTATION

DR. LAVONE RODOLPH

Post-Doctoral Researcher, Computer Science & Engineering

FACULTY MENTOR & STUDENT AWARD PRESENTATION

SHANNA CRUMP-OWENS

Director, Collegiate Science & Technology Entry Program (CSTEP)

CLOSING REMARKS

SHANNA CRUMP-OWENS

Director, Collegiate Science & Technology Entry Program (CSTEP)



University at Buffalo

Collegiate Science and
Technology Entry Program

Undergraduate Education

CSTEP MOTTO: "TO WHOM MUCH IS GIVEN, MUCH IS EXPECTED"

CSTEP DIRECTOR'S MESSAGE



Welcome to the 17th Annual CSTEP Summer Research Symposium! Our 8.5-week Summer Research Program enhances the competitiveness of talented underrepresented students pursuing STEM and the allied health professions. I congratulate their dedication to excellence and research – they are exemplars among their peers. Today, we celebrate the fruition of their hard work as they present their research to peers, faculty and staff; they can look back on their efforts with pride.

Our goal was to structure a holistic, engaging, and transformative experience which provided our students with a fundamental understanding of how research plays an important role in tackling complex societal challenges. I am confident that the structure of our program deepened their understanding of research and how much their respective fields will gain from their knowledge, skills, and experiences.

A significant and effective tool in increasing the enrollment of underrepresented students in graduate programs is to provide them with opportunities to conduct research early in their undergraduate careers. Our research interns have broadened their knowledge and gained insight into critical issues, while developing analytic, leadership, and problem solving skills. In addition, this summer experience allowed them to gain a better perspective of research and its role in society. They also learned the value of teamwork and collaboration which are both essential in today's research and work environments.

To our faculty research mentors, workshop facilitators, judges, alumni and research methods seminar instructor which number 50 – thank you for your time, and expertise. We could not successfully execute the summer research program and create community among this diverse group of talented students without the contributions from UB faculty and staff. We value our collaborations with you and look forward to continued collaborations.

We are confident that the research experience, research methods course, seminars, and fieldtrips fostered a sense of community while enhancing undergraduate experiences. I encourage each CSTEP Scholar to continue taking advantage of the resources, opportunities, and services offered by CSTEP to make your UB experience more robust. We hope you found the support, guidance, and nurturing environment we provided to be beneficial. Also, remember the CSTEP motto: "To whom much is given, much is required." It is a pleasure to work with you!

SHANNA CRUMP-OWENS
CSTEP Director

WHAT'S IN IT FOR ME? THE PERKS OF JOINING UB CSTEP

CSTEP offers valuable tools: advisement, tutoring, paid research internships, scholarships, service learning, specialized courses and travel to conferences and workshops, which empower students to become successful in their chosen profession. Our alumni have made major contributions in both their careers and communities. Many of these same graduates report that CSTEP played a key role in helping to develop the confidence and skills necessary to navigate through their college years and into the profession of their dreams.

UB CSTEP offers the following programs and services for our students:

PAID RESEARCH & INTERNSHIP OPPORTUNITIES

Paid research and internships are an integral part of CSTEP - to introduce talented underrepresented students to the culture of research, provide insight related to their major and expose students to the rigors of graduate study. The CSTEP Research Internship Program exposes selected students to research and career opportunities in their major. CSTEP works with students to identify faculty research mentors or internship supervisors.

ACADEMIC YEAR RESEARCH/INTERNSHIP PROGRAM

During the academic year, interns work for 10 weeks per semester under the guidance of a research mentor or internship supervisor. Students are assigned a research project for up to 10 hours per week, at the discretion of the research or internship supervisor. Students are awarded a research stipend from CSTEP during their research or internship experience.

SUMMER RESEARCH PROGRAM

The CSTEP Summer Research Program is an intensive 8.5-week program designed to enhance the competitiveness of talented underrepresented students pursuing STEM and the allied health professions. The program strengthens participants' research skills and exposes them to the rigors of graduate study. Students are matched with faculty to conduct research for 30 hours per week. In addition to gaining research experience, students participate in a research methods course, seminars, and field trips. As a capstone, at the end of the program, students present their research to their peers, faculty and the University community during our Annual Research Symposium. The summer program takes place from the beginning of June through the end of July. Applications are due in March of each year.

ALUMNI CONNECTIONS

CSTEP students have access to a network of engaged alumni through CSTEP Connect and our Alumni Insights Series. CSTEP Connect occurs during UB's winter session and CSTEP students can connect with CSTEP alumni who have committed their support in the following areas: career advice, mock interviews, resume review, job shadowing and help with applying to graduate or professional school. CSTEP Alumni Insights is a monthly series for our CSTEP alumni to connect with and empower our CSTEP students at their alma mater. Alumni are invited to share insights with CSTEP students during a 1-hour workshop inspired by their careers, personal journeys, and expertise.

FUNDING OPPORTUNITIES FOR CONFERENCES

CSTEP covers travel expenses for selected academic, career, and graduate school conferences and enrichment programs. These opportunities boost students' leadership skills, while building their resumes.

GRADUATE SCHOOL PREPARATION

CSTEP awards scholarships to students for Kaplan Review Courses, which provide preparation for standardized graduate entrance exams, including the GRE, MCAT, LSAT, GMAT, and PCAT exams. Our staff also assists with personal statement preparation and review, and provides mock interviews for students applying to graduate/professional schools. CSTEP also offers a Graduate School Fee Waiver for current CSTEP students applying to graduate or professional school. More details can be found on our website: <https://www.buffalo.edu/cpmc/cstep/signature-offerings/graduate-school-preparation/fee-waivers.html>

SERVICE LEARNING CLASS

A cohort of 20-25 students is selected to engage in a semester-long structured service learning project, becoming a Campus Health Educator (CHE). The goal of CHE is to increase the number of individuals participating with the organ donor registry. This goal is achieved by engaging students pursuing allied health majors in service learning, and training them to conduct educational workshops for UB students, and facilitating a campus-wide organ donor registry drive. Our partner for the CHE Service Learning Class is ConnectLife.

CSTEP SHADOW DAY

CSTEP students serve as mentors to high school students enrolled in the Science Technology Entry Program (STEP). As mentors, CSTEP students allow STEP students to “shadow” them by attending classes with them to get a glimpse of what college classes are like.

CSTEP DAY OF SERVICE

CSTEP students visit local high schools in the Buffalo Public School System to share their collegiate experiences with students in their classrooms. This serves as a vehicle to give students from targeted high schools “college knowledge” while also introducing them to STEM fields and the licensed professions. This year we visited Health Sciences Charter School.

HABITAT FOR HUMANITY AND BLACK MUSIC CONFERENCE AWARDS

CSTEP students team up with Habitat for Humanity Buffalo, a non-profit charitable organization seeking to alleviate the shortage of affordable housing both within the U.S. and abroad. Through volunteer labor and donations, Habitat for Humanity Buffalo has built and rehabilitated over 225 homes for families who have difficulty obtaining a home through other means. This year the 2023 Summer Research Program interns volunteered for WUFO- Black Radio History Collective-Black Music Conference Awards at the Millennium Hotel.

SUPPORT FROM THE CSTEP NETWORK OF STAFF, STUDENTS, AND ALUMNI

We offer academic, career, and personal counseling to assist students in overcoming difficulties, finding solutions, and establishing their priorities. The CSTEP Billboard, website, and Student Recognition Dinner recognize the achievements of our students and help build the camaraderie that our students have come to rely on.

MONTHLY EVENTS, WORKSHOPS, AND ENRICHMENT ACTIVITIES

Monthly meetings help build the community our students have come to rely upon. Students who attend our monthly meetings gain invaluable advice as they have the opportunity to learn from each other's experiences and receive professional advice from alumni and guest speakers. Below is a list of several of this year's workshops and enrichment activities:

CSTEP Welcome Back BBQ
Preparing for Graduate School
Alumni Insights: Overcoming Procrastination
Pathways to Pharmacy School
Rx for Success (Medical School)
Insights for Engineering: Panel of Engineers
What's Next: Gap Year Pathways
Pathways to Public Health
Alumni Insights: Demystifying Military
Medicine Explore Law Panel

Alumni Insights: Licensure in Engineering
Level Up: Resume Review
Alumni Insights: Debt Free Like Me
Diverse Women Alumni in STEM
Law School for a Day
Medical School Mock Interview Day
Alumni Insights: The Art of Negotiation
Statewide Student Conference
Student Recognition Dinner
Student Research Luncheons

CSTEP CAREERS

Architect • Audiologist • Biologist • Dietitian • Certified Public Accountant • Chemist • Chiropractor • Computer Scientist • Dentist • Geologist • Engineer • Lawyer • Mathematician • Medical Doctor • Midwife • Nurse Practitioner • Occupational Therapist • Occupational Therapy Assistant • Optometrist • Pharmacist • Physical Therapist • Physicist • Podiatrist • Psychologist • Physician Assistant • Registered Nurse • Respiratory Therapist • Social Worker • Speech-Language Pathologist • Veterinarian

MAKING A DIFFERENCE IN WNY: UB CSTEP HIGHLIGHTS

CSTEP addresses the shortages of underrepresented students both in the Science, Technology, Engineering, Mathematics (STEM) and the licensed professions. Resources available to CSTEP students include: paid research with faculty, internships, graduate school preparation, scholarships, standardized test preparation, application fee waivers and academic and career guidance, monthly seminars, travel to professional conferences, and a support network to assist promising students in achieving their academic and professional goals.

During a previous grant cycle, CSTEP received the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring (PAESMEM). This award, administered by the National Science Foundation, recognizes individuals and organizations that have demonstrated a commitment to mentoring students and increasing the participation of minorities and women in Science, Technology, Engineering, and Mathematics (STEM). Awardees serve as exemplars to their colleagues in the national effort to develop the nation's human resources in the STEM professions.

Did You Know...?

- More than 90% of UB CSTEP students have entered into the CSTEP targeted professions or attended graduate school after obtaining their bachelor's degree.
- More than half, 60% of all CSTEP Students possess overall GPA's above 3.0.
- Our current enrollment is **377** students.
- Since the program's inception, UB CSTEP has awarded over 194 CSTEP/Kaplan scholarships to students in preparation for standardized graduate school exams (PCAT, MCAT, GMAT, LSAT, and GRE).
- This year, **42** CSTEP students were placed in funded research internships and completed over **13,320** hours.
- To help provide service to our students, CSTEP has hired, since the late 90's, a cadre of approximately **177** Graduate and Student Assistants to work within our office. This provides funding for the staff during their time as graduate and undergraduate students at UB.

WHY DO RESEARCH? STUDENT PERSPECTIVES

Written by the 2023 Summer Research Cohort

Research exists in many forms. For many students, it is an essential part of the undergraduate experience. The Collegiate Science and Technology Entry Program (CSTEP) Summer Research Program (SRP) is a comprehensive experience that provides students with an opportunity to learn from experts in their fields. For eight weeks, we worked closely under the mentorship of a faculty mentor while also engaging in professional development. The program prepares students for the laboratory environment and serves as a catalyst for their future endeavors.

Students applied to CSTEP for a medley of reasons. Many saw it as an invaluable learning experience to co-create knowledge and a nesting ground of innovation. **Mohamed Enaitalla**, a senior in Electrical Engineering, indicated, "It is a very good learning opportunity, especially if you are interested in going to graduate school. It teaches you how to work as a team professionally, how to communicate effectively and it's very fun!" For **Maymuna Akter**, a sophomore Biomedical Sciences major, "Undergraduate research provides students with a unique opportunity to develop critical thinking and problem-solving skills, and gain hands-on experience with work relevant to their field of study. It also allows students to apply classroom knowledge to solve real-world problems. Furthermore, undergraduate research provides networking opportunities." **Cara Michno**, a junior in Psychology, sees research as a way of finding answers to questions. She writes, "Have you ever found yourself asking, 'why?' Research is the way we discover the answers. And the amazing thing is, there are little to no limits to research. You can find a way to answer your question, whether it be through literature reviews, experiments, or simply connecting sources. And research never ends; There's always something to learn, something to discover, around the corner." Similarly, **Kwabena Atim**, a freshman in Civil Engineering, shared that "Summer research will expose you to facts you may not know. With interests often building off of surprises, discoveries during research may deepen your interest in major, and even give an answer to questions students typically have about class lessons like, 'why am I doing this math?' During my research I have found some answers to a few of these questions."

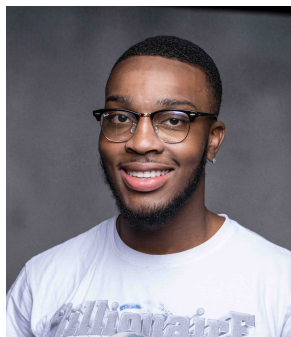
The immersion of students in research has provided an opportunity to catch a glimpse of the day-to-day workings of experts in their fields and provided insights into their desired field and career pathways. **Trinity Martin**, a senior in Psychology, acknowledged that "Engaging in undergraduate research allows you to develop technical skills you may not have had otherwise. If you are interested in research it's perfect for testing the waters and getting familiar with what may be in store for you." **Daniel Fakayode**, a junior in Public Health, echoes similar perspectives, "I think students should engage in summer research because it is a great experience. One can also use it as a stepping stone to better understand what they really want to do as they are subjected to an intense research program."

Networking and collaboration remain critical across disciplines. The ability to engage in research this summer for many of the students meant building connections with mentors and experts in their disciplines. **Mariadela Demoura**, a sophomore in Biological Sciences, indicated, "Undergraduate research during the summer, gives you a jump start towards your professional career. It is a great guide towards the questions that you may have about the research field you are interested in. You will learn so much you did not know about research, network with many individuals both in the field and in undergraduate studies." Similarly, **Nosakhare Adodo**, a sophomore Public Health major noted "Students should engage in undergraduate research to gain the mentorship to enhance skills in the field that they are interested in. This is a great opportunity to stand out from the rest of your peers if you aspire to go to graduate school."

In addition to students being able to apply classroom knowledge to research, they are inspired by the ability to make an impact in the world through their work. **Jelyse Williams**, a sophomore majoring in Biomedical Engineering indicated, "With the CSTEP Summer Research Program I was able to grasp a deeper understanding of my interests in Biomedical Engineering, network with people who have diverse experiences, and find ways to constructively help my community."

Our research interns would like undergraduates to know that taking research opportunities is an opportunity like no other and provides critical transferable skills. **Shayonna Oaks**, a senior majoring in Legal Studies and History, articulates this by stating, "The experience, skills, and knowledge that a student gains from internships and research is very helpful in making a student a more well-rounded individual. The skills and knowledge that you gain from performing undergraduate research can be applied in a student's academic work and they can follow a student onto their graduate and professional work as well." Another intern, **Chigozie Eke**, a junior majoring in Engineering Science mentions, "Students should engage in undergraduate research during the summer because it allows you to utilize your free time more productively. Summer research also teaches students skills that are useful and highly applicable in their respective fields. Not only this, but the connections you make with other researchers in all stages of education, whether it be post-doctoral or other fellow undergraduate researchers, within your respective labs are also extremely valuable."

Each student has their own reasons for conducting research. For some, it presents an opportunity to gain invaluable career experience. Others see it as a chance to gain recognition as innovators. Nonetheless, research is an integral part of the undergraduate experience. Through the the CSTEP Summer Research Program, our students learn the importance of research and gain invaluable skills to use in education, the workforce, and beyond. **-2023 CSTEP Summer Research Cohort**



Nosakhare Adodo

HOMETOWN: Queens, NY

MAJOR: Public Health

INTERNSHIP PLACEMENT: School of Dental Medicine

SUMMER MENTOR: Dr. Ashu Sharma

SUMMER MENTOR TITLE: Professor

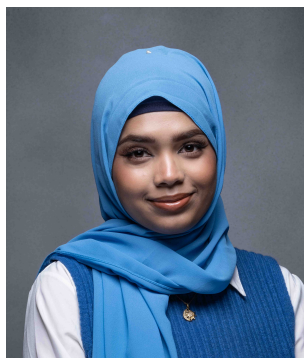
DEPARTMENT: Oral Biology

SUMMER PROJECT: *Role of Tannerella forsythia in Dental Plaque Formation*

ABSTRACT: Dental plaque formed on the teeth is comprised of numerous bacteria. *Tannerella forsythia* is a major gram-negative anaerobic bacterium that is implicated in the development of periodontitis, a progressive gum disease that leads to tooth loss. *Tannerella forsythia* produces the enzyme beta-glucanase which degrades dietary beta glucans found in grains (oats, cereals etc.) into glucose. Glucose from beta glucan degradation can become an energy source for dental plaque bacteria, thereby intensifying the disease progression. My study aims to understand the mechanism of catalysis and kinetics of this enzyme. Our research team will be involved in recombinantly expressing the *Tannerella forsythia* beta-glucanase enzyme in *E. coli*. We will also purify the recombinant enzyme in large amounts from *E. coli* cultures to study the enzyme in detail. The enzyme activity will be displayed through a technique called lichenin zymography that involves electrophoresis of the enzyme on lichenin containing electrophoretic gels followed by the staining of gels. Our next steps will be to purify the enzyme from *E. coli* cultures and perform catalytic studies. The characterization of the recombinant enzyme's catalytic activity will help the long-term goal of developing small molecule enzyme inhibitors targeting beta-glucans activity as therapeutic drugs against dental plaque formation.

ACADEMIC AND CAREER GOALS: My career goal is to attend UB dental school and ultimately open a dental practice to help people in lower income communities.

WORDS TO LIVE BY: "The more you do in life, the more you'll get out of life"



Maymuna Akter

HOMETOWN: Buffalo, NY

MAJOR: Biomedical Sciences

INTERNSHIP PLACEMENT: Jacobs School of Medicine and Biomedical Sciences

SUMMER MENTOR: Dr. Stewart Clark

SUMMER MENTOR TITLE: Associate Professor

DEPARTMENT: Pharmacology and Toxicology

SUMMER PROJECT: *Progress Towards the First Preclinical Model of Progressive Supranuclear Palsy*

ABSTRACT: Progressive Supranuclear Palsy (PSP) is the most common form of atypical Parkinsonism, characterized by motor function impairment and dysexecutive dementia. Its hallmark pathology includes tau aggregation, extensive loss of cholinergic neurons in the pedunculopontine tegmentum (PPTg) and loss of dopaminergic neurons in the substantia nigra (SN). Unfortunately, the development of pharmacological treatments is hindered by the lack of suitable animal models. Previously, our lab examined the PPTg cholinergic neurons by selectively expressing human wildtype Tau (hTau) in the cholinergic neurons. This resulted in motor deficits, significant reduction in PPTg cholinergic and dopaminergic SN neurons and abnormal tau deposits, consistent with PSP symptomology and pathology. However, the integrity of non-cholinergic PPTg neurons has not been analyzed. Consequently, we induced hTau generally in the PPTg cholinergic, GABAergic and glutamatergic neurons, via stereotaxic surgery, followed by a series of behavioral tests, and immunohistochemistry analysis to determine the effects caused by this non-selective overexpression of tau. Although we cannot form any conclusion at this point due to the lack of data, we expect to see PSP-like behavioral deficits, abnormal tau accumulation within the PPTg, as well as an extensive loss of cholinergic neurons. This research will further our understanding of the development of PSP.

ACADEMIC AND CAREER GOALS: To pursue a Master of Science in Physician Assistant Studies, and become a Dermatology PA.

WORDS TO LIVE BY: "Every act of kindness is charity."



Saviour Ameyaa

HOMETOWN: Bronx, NY

MAJOR: Biomedical Sciences

INTERNSHIP PLACEMENT: Exercise and Nutrition Sciences

SUMMER MENTOR: Dr. Elizabeth Baase

SUMMER MENTOR TITLE: Assistant Professor

DEPARTMENT: Exercise and Nutrition Sciences

SUMMER PROJECT: *The Effects of Estrogens and Diet on Amylin Receptor in the Ventral Tegmental Area*

ABSTRACT: The ingestion of foods high in fat and sugar influences the expression of amylin receptors in specific brain regions. Amylin, a pancreatic peptide, has been implicated in feeding and reward. AmyRs contain a calcitonin receptor (CTR-A or CTR-B) and a receptor activity-modifying protein (RAMP1, RAMP2, RAMP3), different combinations of which determine selectivity and affinity for amylin. Little is known about amylin signaling in females and how estrogens might interact with amylin to control feeding. By investigating how diet changes amylin receptors, we can gain a better understanding of the brain processes that drive reward-based eating habits. This can help with the development of potential therapeutic strategies for hyperphagia and related illnesses. We examined AmyR expression in the ventral tegmental area (VTA), a mesolimbic nucleus, via qPCR in ovariectomized female rats with high or low estradiol status on different diets (palatable high-fat or high-carbohydrate, or chow control). Two-way ANOVA revealed significant main effects of diet and estrogen status ($p < 0.05$) and a trend for an interaction between diet and estrogen ($p = 0.094$) on VTA RAMP1. A trend for a main effect of estrogen was also seen for RAMP2 ($p = 0.088$). This suggests that diet and estrogen impact the expression of VTA AmyR components.

ACADEMIC AND CAREER GOALS: To gain entry into an MD/PHD program with shared research between reward systems in the brain and heritable disease.

WORDS TO LIVE BY: "Hard work and determination will only bring success to a child who was born in impecunious state such as I." - my Dad (Joseph Danquah)



Kwabena Atim

HOMETOWN: Brooklyn, NY

MAJOR: Civil Engineering

INTERNSHIP PLACEMENT: School of Engineering and Applied Sciences

SUMMER MENTOR: Dr. Teng Wu

SUMMER MENTOR TITLE: Associate Professor

DEPARTMENT: Structural and Civil engineering

SUMMER PROJECT: *Mitigating Oscillations on Suspension Bridge using Golf Technology*

ABSTRACT: Modern Suspension bridges utilize inverted airfoil decks to stabilize the bridge at high wind speeds. With a shallow bottom surface and a wider upper surface (the surfaces parallel to the ground), wind running normal to the bridge generally places greater pressure at the upper surface than lower surface creating oscillatory movement. Various bridges that utilize inverted-airfoil shape decks approach the oscillatory movement at different critical speeds; 60-mph for the Verrazano bridge, 47-mph for the Kessock Bridge, 37.2 mph for the Great Belt bridge, etc. It is hypothesized that high wind speeds stretch the suspensions as the inverted airfoil-shaped deck moves downwards. The elastic energy stored in the suspension releases, which pulls the bridge deck back up creating oscillation. Flow dynamics in relation to Karman Street Vortex (KSV), which is known to induce vibration on bluff bodies (e.g., Bridge decks) is not considered in this research. Dents typically generate a lift force that offset the downward force placed on the bridge. This research investigates the use of three different patterns of curved indentations that are modelled after golf ball's technology. Analysis of the various dents' curvature dampening effects on the pressure on the upper surface of the bridge deck will also be studied.

ACADEMIC AND CAREER GOALS: To obtain my masters and enter the field.

WORDS TO LIVE BY: "The best lessons often times come from failure."



Kinja Bagalwa

HOMETOWN: Buffalo, NY

MAJOR: Speech and Hearing Sciences

INTERNSHIP PLACEMENT: Department of Communicative Disorders and Sciences

SUMMER MENTOR: Dr. Alison E. Hendricks

SUMMER MENTOR TITLE: Assistant Professor

DEPARTMENT: Communicative Disorders and Sciences

SUMMER PROJECT: *Enhancing Therapeutic Support for students with Speech Sound Difficulties Using Artificial Intelligence*

ABSTRACT: The shortage of speech language pathologists (SLPs) relative to students with speech and language difficulties harms education, risking academic, social, and emotional setbacks. Artificial intelligence (AI) offers promising solutions. Our research focuses on two AI approaches: bridging the research-to-practice gap through a knowledge base of interventions and personalized AI-adapted texts for students with speech sound difficulties. This collaborative project involves communication sciences and disorders researchers and computer scientists. To address clinician time constraints, we extract relevant information from research articles and compare it with AI-extracted data to create accessible and time efficient research knowledge for natural language summaries. The AI text augmentation, we will modify different math and science curriculum to be individualized to a student based on vocabulary, syntax, and decodability. With this on-going project, we expect clinicians in reaching more students and providing effective interventions. Specifically, we expect to use AI to generate natural language summaries and suggest appropriate interventions based on student's individual needs, as well as creating individualized texts with varying linguistic complexity to enhance students' math and science knowledge. With these results, we hope to increase early detection of speech language difficulties and facilitating early intervention while empower at-risk students socially, emotionally, and academically.

ACADEMIC AND CAREER GOALS: To obtain a Masters and possibly a PHD to educate to help others.

WORDS TO LIVE BY: "God, guide me in this world, so I can do you will and only your will."



Djaliatou Barry

HOMETOWN: Bronx, NY

MAJOR: Biological Sciences

INTERNSHIP PLACEMENT: Meyer's Lab

SUMMER MENTOR: Dr. Paul Meyer

SUMMER MENTOR TITLE: Associate Professor

DEPARTMENT: Psychology

SUMMER PROJECT: *The Effects of Psilocybin in an Animal Model of Nicotine Relapse*

ABSTRACT: Nicotine addiction contributes to severe and preventable health complications. While treatment options are available, individuals often relapse despite extended periods of abstinence. Studies exploring psilocybin treatment, a psychedelic drug known for activating serotonin 5-HT_{2A} receptors, have unveiled potential immediate and long-lasting effects in treating depression and drug addiction. In our experiment, male and female Sprague Dawley rats were trained to self-administer nicotine (0.3mg/kg IV) via nose-poke manipulandum. After self-administration, rats were separated into three groups where they were given either saline (0.9% NaCl), 1mg/kg psilocybin, or 4mg/kg psilocybin, to examine the impact of psilocybin treatment on both extinction and cue-induced reinstatement (CIR). Extinction refers to the process of uncoupling nicotine from associated stimuli (i.e. cues and nicotine infusions withheld). During extinction, nose-poking decreased similarly across all groups. After extinction, we tested CIR, where the cues but not nicotine were available via nose-pokes. We found females responded more than males during CIR regardless of treatment, and no differences in responding between females. However, there was a trend toward higher responding in males receiving the 1mg/kg dose. We plan to test psilocybin treatment during extinction which may change patterns of responding during CIR.

ACADEMIC AND CAREER GOALS: To obtain a medical degree and become a hematologist and possibly obtain a MD/PhD to conduct research on sickle in the future.

WORDS TO LIVE BY: "Education is the most powerful weapon which you can use to change the world."-Nelson Mandela



Axel Bermudez

HOMETOWN: Bronx, NY

MAJOR: Biological Sciences

INTERSHIP PLACEMENT: Gunawardena Lab

SUMMER MENTOR: Dr. Shermali Gunawardena

SUMMER MENTOR TITLE: Associate Professor

DEPARTMENT: Biological Sciences

SUMMER PROJECT: *Does reduction or loss of Drosophila Huntingtin (HTT) cause larval crawling and sensory defects?*

ABSTRACT: Previously we showed that larvae expressing polyQ HTT had crawling and body contraction defects (White et al., 2020). However, it remains unclear whether these deficits result from HTT loss or polyQ expansion. Here we will test the hypothesis that reduction or loss of Drosophila HTT effects motor and sensory function, and chemosensation/mechanosensation. To address this question, three genotypes will be tested: wild type (App¹Gal4), a Drosophila HTT deficiency line, and a line expressing expanded polyQ repeats in all neurons App¹GAL4;UAS-127Q. Four experiments were conducted. Experiment 1 involved assessing larval crawling behaviors by measuring distance, speed, and contraction, and quantifying the tail flipping phenotype. Experiment 2 evaluated chemosensation by observing how larvae respond to attractants and repellents. Experiment 3 examined mechanosensation by assessing how larvae respond to heat. Finally, experiment 4 investigated potential axonal transport and synaptic defects through dissecting, staining, and imaging of larval segmental nerves. Data analysis and statistical tests are currently being performed to quantify the observed phenotypes across genotypes. Our study will shed light on how HTT functions in neurons, especially if HTT has a role in sensory pathways, which will expand our understanding of how loss /defective HTT function can contribute to disease.

ACADEMIC AND CAREER GOALS: To graduate from Medical School, become a surgeon, and establish medical centers/clinics in underserved communities.

WORDS TO LIVE BY: "When writing the story of your life, don't let anyone else hold the pen."



Olivia Cannizzaro

HOMETOWN: Amherst, NY

MAJOR: Neuroscience

INTERSHIP PLACEMENT: POP Biotechnologies Lab

SUMMER MENTOR: Dr. Hilliard Kutscher

SUMMER MENTOR TITLE: Research Assistant Professor

DEPARTMENT: Medicine

SUMMER PROJECT: *Quantification of NP01 using HPLC with UV-Vis and CAD*

ABSTRACT: Our goal is to quantify the liposomal composition of NP-01, a chemophototherapeutic being developed for liver and breast cancers. We are developing a method for GLP validation using HPLC (High Performance Liquid Chromatography) coupled to UV-Vis and CAD (Charged Aerosol Detector) detectors. The advantage of NP-01 over the commercial agent Doxil, is the ability to use light to trigger the release of doxorubicin localized to the tumor. NP-01 coupled with light therapy is able to reduce tumors in an advanced woodchuck model of liver cancer. NP-01 is a liposome produced by extrusion. HPLC method is a gradient method comprised of water, acetonitrile, methanol, isopropanol, and trifluoroacetic acid using a phenyl-hexyl column. Our method development is ongoing. Current issues are: 1) carry-over between analytical samples, 2) good separation of all liposome constituents. Our current ability to measure the concentration of doxorubicin and porphyrin-phospholipid utilizes fluorescence measurement and is unable to detect lipids. Lipids are difficult to quantify and require the development of advanced chromatography separation to be detected and quantified by CAD. Currently we have several batches of NP-01 prepared which have been tested in woodchucks with liver tumors. Our characterization results await the finalization of our HPLC method.

ACADEMIC AND CAREER GOALS: To obtain a PhD in Emergency medicine and work in clinical settings. After doing my first research experience, I have fallen in love with the atmosphere and ways of the lab. I wish to continue my academic and career down the path of clinical research.

WORDS TO LIVE BY: "I'm just vibing and making my way along, and I'm okay with that."



Serenity Capella

HOMETOWN: Newburgh, NY

MAJOR: Public Health

INTERNSHIP PLACEMENT: UB Child Health Program

SUMMER MENTOR: Dr. Xiaozhong Wen

SUMMER MENTOR TITLE: Associate Professor

DEPARTMENT: Pediatrics

SUMMER PROJECT: *The Effects of Maternal Dietary Pulse Consumption During Pregnancy on Child Health*

ABSTRACT: Pulses are dry seeds of specific legumes (beans, chickpeas, peas, and lentils). Maternal diet before and after conception is essential to the health of a fetus in utero, and for years postpartum. Examination of the associations of maternal pulse consumption during pregnancy is needed to determine child growth and health at birth. This research can aid in assessing a potentially protective role that dietary pulses may have on maternal and childhood health. We will use secondary data from a U.S. longitudinal birth cohort study that tracked mother-child pairs from pregnancy to toddlerhood: Infant Feeding Practices Study II (IFPS II, 2005-2012, N=3,033 newborns). This data includes measurements of birth/pregnancy outcomes and exposure to pulses (dried beans, chili, and bean soup). We will conduct a longitudinal data analysis on child health outcomes at birth. This research will help further our understanding of what form of pulses yield the most health benefits on maternal and child health. We anticipate finding that high pulse consumption will lead to more favorable birth outcomes. If our anticipated results are correct, pulses should be frequently consumed by expecting mothers and young children to reduce risk of disease and promote overall well-being.

ACADEMIC AND CAREER GOALS: To obtain a master's degree in public health and become a healthcare administrator, focusing in women's health.

WORDS TO LIVE BY: "You cannot change the past, but you can change the future."



Sulayman Ceesay

HOMETOWN: Beacon, NY

MAJOR: Computer Science

INTERNSHIP PLACEMENT: Computational Ethics Lab

SUMMER MENTOR: Dr. Kenneth Joseph

SUMMER MENTOR TITLE: Assistant Professor

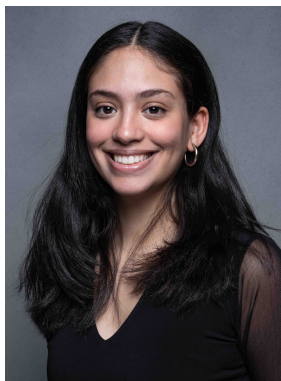
DEPARTMENT: Computer Science & Engineering

SUMMER PROJECT: *Identifying Political Content On Twitter With A Classifier On A Machine Learning Model*

ABSTRACT: Despite claims in popular media that social media is the predominant factor in political polarization and the means through which political misinformation spreads, recent scholars have suggested the majority of Americans don't actually engage with politics online [1,2,3]. However, existing work has focused on narrow definitions of "political content," and may underestimate engagement with politics, and of forms of political engagement outside of traditional politics. To address this potential limitation, our work aims to construct and validate a broader measure of political talk on social media, with a focus on Twitter. We aim to apply our method to a dataset of what a representative sample of American Twitter users see online. Using a two-part methodology, we first use a grounded theory approach to define a political tweet using data from widely-followed accounts on Twitter during 2020. We then develop a few-shot machine learning model to perform classification at scale using a Large Language Model (e.g. ChatGPT). The development of this tool can prospectively be applied to identify political conversation spaces on other social media platforms and users who view that content, in order to minimize the spread of political misinformation and to potentially share accurate political information.

ACADEMIC AND CAREER GOALS: To obtain a PhD in Computer Science for Data Science and Machine Learning

WORDS TO LIVE BY: "It's not the note you play that's the wrong note – it's the note you play afterwards that makes it right or wrong."-Miles Davis



Mariadela Demoura

HOMETOWN: Rockland, NY

MAJOR: Biological Sciences

INTERNSHIP PLACEMENT: Ikonomou Lab

SUMMER MENTOR: Dr. Laertis Ikonomou

SUMMER MENTOR TITLE: Associate Professor

DEPARTMENT: Oral Biology

SUMMER PROJECT: *Identifying putative regulators in embryonic mice Lung epithelial development*

ABSTRACT: Mds1 is a transcription factor important to hematopoietic development, but little is known about its role in lung development. We will use a conditional Mds1Cre mouse to identify the competence of Mds1+ respiratory progenitors at various stages of lung development, such as embryonic and pseudoglandular. Our data will consist of using Mds1 lineage-labelled, cryo-embedded lungs at various developmental stages, that begin after tamoxifen injection before specification. Then we will apply immunohistochemistry staining techniques on the lineage-labelled lungs to identify various markers of proximal and distal lung fate. Finally stained lung sections will be imaged using an epifluorescence microscope and image tiling. Results of our immunostaining so far have indicated that use of an Mds1Cre mouse does show positive epithelial lineage tracing following a tamoxifen pulse at E9.0. Distinct staining patterns for proteins related to lung epithelial development such as NKX2-1, EPCAM, SOX2, and was seen in anatomical areas of the lung such as the airways and distal tips. These immunostaining images of lineage-traced lungs provide the first piece of evidence on multipotency of early Mds1+ lung progenitors during embryonic development. Extended lineage tracing studies will be conducted to track the developmental fates of such progenitors, and their competency at various stages.

ACADEMIC AND CAREER GOALS: My career and academic goals are to obtain a PhD in a specified field of biology, and become a cancer researcher, as well become a PI, and open my own lab.

WORDS TO LIVE BY: "I believe that fortitude is key. More than anything, be consistent. Go at it. Go at it. Go at it. When you succeed, don't forget the responsibility of making somebody else succeed with you." – Antonia Novello



Chigozie Eke

HOMETOWN: Bronx, NY

MAJOR: Engineering Science (Robotics)

INTERNSHIP PLACEMENT: School of Engineering & Applied Sciences

SUMMER MENTOR: Dr. Diana Ramirez-Rios

SUMMER MENTOR TITLE: Assistant Professor

DEPARTMENT: Industrial and Systems Engineering

SUMMER PROJECT: *Analyzing the impacts Hurricane Fiona have had on socially vulnerable communities in order to optimize the disaster response process within these areas*

ABSTRACT: Natural disasters, particularly hurricanes, can have a devastating impact on socially vulnerable communities. This research project conducts a multidisciplinary analysis to assess the impacts of Hurricane Fiona on socially vulnerable communities in Puerto Rico. The study utilizes various methods such as data extraction from news articles using JSON format, map analysis, and timeline creation. The primary objectives are to identify the specific challenges faced by these communities, develop strategies to improve disaster response and recovery efforts, and examine the effects on the electric grid and transportation systems. Through regression analysis and correlation assessments using t-scores, the study aims to determine the level of association between different datasets. This work anticipates that hurricanes can exacerbate resource shortages in these communities, hindering their recovery process. Moreover, it recognizes the significant influence of hurricanes on the electric grid and transportation, thereby impeding access to necessary aid and support. The findings of the research will provide valuable insights for Puerto Rico municipalities with limited resources, aiding them in enhancing their disaster response protocols. By leveraging data extraction, geographic mapping, and timeline creation, stakeholders can allocate resources more effectively and implement targeted initiatives to mitigate the impact of hurricanes on vulnerable populations.

ACADEMIC AND CAREER GOALS: To work in the industry and pursue my Masters degree and to create a company that produces electric vehicles and drones.

WORDS TO LIVE BY: "Do not let your dreams become your master, become the master of your dreams"



Mohamed Enaitalla

HOMETOWN: New York, NY

MAJOR: Electrical Engineering

INTERNSHIP PLACEMENT: Department of Electrical Engineering

SUMMER MENTOR: Dr. Huamin Li

SUMMER MENTOR TITLE: Assistant Professor

DEPARTMENT: Electrical Engineering

SUMMER PROJECT: *Synthesis of Two-dimensional Semiconductors using Chemical Vapor Deposition*

ABSTRACT: Two-dimensional (2D) materials, which are materials that have a few layers of atoms as their thickness, hold immense potential for transistor fabrication. To meet the demand for smaller and more efficient transistors, our research focuses on using chemical vapor deposition (CVD) to create concave 2D triangular structures. These structures serve as the basis for high-performance transistors by integrating a gate, drain and source. The advantages of 2D materials include precise atomic-level property tuning, wide electronic properties, and excellent electronic performance. CVD offers scalability, controllability, and reasonable cost for growing large-area, high-quality 2D materials. In our experiment, we used CVD to grow MoS₂ triangular structures by thoroughly cleaning a silicon wafer, spin-coating the wafer with MoS₂ concentrate, and finally placing it in a furnace with sulfur. While CVD is promising, further optimization of the process is needed for widespread use in creating 2D semiconductors, including developing a strategy for transferring the concave triangles onto another material.

ACADEMIC AND CAREER GOALS: To obtain a bachelors in Electrical Engineering, then go on to work on the industry side.

WORDS TO LIVE BY: "To whom much is given, much is expected."



Daniel Fakayode

HOMETOWN: Brooklyn, NY

MAJOR: Public Health

INTERNSHIP PLACEMENT: Nutrition and Health Research Lab

SUMMER MENTOR: Dr. Jennifer L. Temple

SUMMER MENTOR TITLE: Associate Professor

DEPARTMENT: Exercise & Nutrition Sciences

SUMMER PROJECT: *The Effect of Built Environment on Adolescent Nutrition*

ABSTRACT: Overweight and obesity pose significant public health challenges, particularly affecting individuals with lower income and education levels, as well as those from racial and ethnic minority backgrounds. Various factors contribute to this disparity such as access to grocery stores and recreational facilities. The primary outcome of this research is to evaluate the built environment of the home addresses for participants in the UB-EATS study. Geospatial mapping will be used to assess the built environment's impact on adolescent nutrition in a subset of UB-EATS study participants. The built environment around participants' homes contains far more access to convenience stores than grocery stores. Typically, convenience stores have more high-energy dense (HED) and/or processed foods while grocery stores have a larger selection of fresh food (e.g., fresh produce, fresh meats, etc.) Current literature indicates that consuming HED can increase obesity rates within the community. By understanding the built environment, along with behavioral profiles among high-risk groups, tailored interventions can be developed that address the unique factors contributing to overweight and obesity in these communities.

ACADEMIC AND CAREER GOALS: To obtain a Masters' Degree in Healthcare Administration and become a Hospital Administrator.

WORDS TO LIVE BY: "Confidence is having myself as validation."



Matthew Gonzalez

HOMETOWN: Staten Island, NY

MAJOR: Civil Engineering

INTERNSHIP PLACEMENT: Structural Engineering and Earthquake Simulation Laboratory

SUMMER MENTOR: Dr. Ravi Ranade

SUMMER MENTOR TITLE: Associate Professor

DEPARTMENT: Civil Engineering

SUMMER PROJECT: *Investigating the Influence of Micro-Fiber Reinforcements on the Mechanical Behavior of Concrete*

ABSTRACT: In unreinforced concrete, cracks are likely to develop quickly under tension, as concrete has a relatively low capacity to resist tension and deformation. Researchers have developed high-performance, fiber-reinforced, and self-compacting concrete to enhance the mechanical properties of the material. This research will incorporate microfibers into concrete, to increase strength, crack resistance, and overall durability. This will result in increased structural safety, reduced maintenance costs, and enhanced flexibility. Concrete mix proportions and aggregates were provided by two companies, allowing for the production of test specimens. Four-point bending, three-point bending, and compression tests were conducted to determine flexural strength, fracture toughness, and compressive strength respectively. The stress tests revealed up to a 50% increase in flexural strength, a 30% increase in fracture toughness, and a 40% increase in compressive strength. The load-bearing capacity of the reinforced concrete towered over that of the unreinforced specimens which can be attributed to the bridging effect provided by the micro-fibers. The incorporation of microfibers led to an average of 40% improvement in the mechanical properties of the concrete specimens. However, further research is warranted to explore the long-term performance of reinforced concrete structures and investigations into the influence of other parameters.

ACADEMIC AND CAREER GOALS: To obtain a PhD in Civil Engineering and own and run an engineering firm in NYC

WORDS TO LIVE BY: "Difficulties strengthen the mind as labor does the body."-Seneca the Younger, a Stoic Philosopher



Rachel Kyaw

HOMETOWN: Buffalo, NY

MAJOR: Biological Sciences

INTERNSHIP PLACEMENT: Biological Sciences

SUMMER MENTOR: Dr. Kathryn Medler

SUMMER MENTOR TITLE: Professor

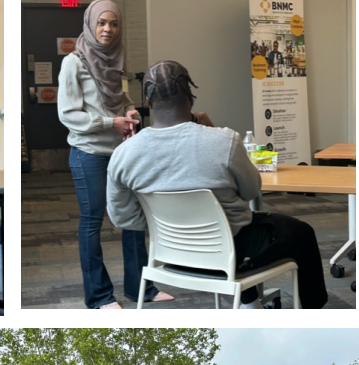
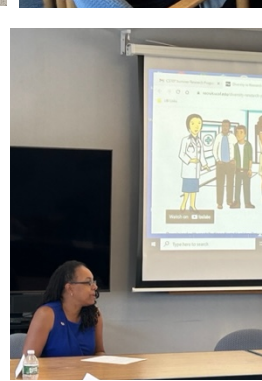
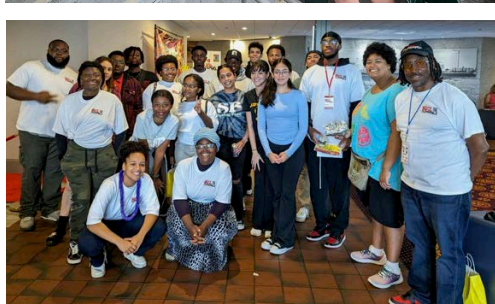
DEPARTMENT: Biological Sciences

SUMMER PROJECT: *Investigating Taste Cell Signaling using Transgenic Mouse Strains*

ABSTRACT: The sense of taste is used to determine if potential food items will be ingested or rejected. The ability to accurately identify environmental chemicals is critical for survival and this sensory system is used by all organisms. Taste receptor cells are primarily located on the tongue and can differentiate taste qualities such as sweet, salty, sour, bitter, and umami. Due to the structural diversity of these different taste stimuli, taste receptor cells have evolved multiple signaling pathways to detect and transmit this chemical information to the brain. Consequently, peripheral taste cell signaling is quite complex. To effectively study the signaling pathways in taste cells, our lab uses different transgenic mouse strains in which a particular gene of interest has been removed. Genomic DNA is collected from each mouse and then analyzed using the polymerase chain reaction (PCR) to identify the mouse's genotype. The process of PCR amplifies small, but specific, sections of DNA to determine the genotype of each mouse sample. Once the samples are analyzed, then the mice can be used for experimentation to evaluate the role of the target gene in taste cell signaling.

ACADEMIC AND CAREER GOALS: To become a Doctor with a surgical specialty, and to travel the world helping less fortunate communities attain healthcare.

WORDS TO LIVE BY: "If your dreams don't scare you, they aren't big enough."





Trinity Martin

HOMETOWN: Rochester, NY

MAJOR: Psychology

INTERNSHIP PLACEMENT: Child Health and Behavior Lab

SUMMER MENTOR: Dr. Stephanie Anzman-Frasca

SUMMER MENTOR TITLE: Associate Professor

DEPARTMENT: Pediatrics

SUMMER PROJECT: *Parent Perspectives on a Play-based Associative Conditioning Intervention to Increase Vegetable Intake among Preschoolers*

ABSTRACT: Children from lower-income and racial/ethnic minority backgrounds face greater risk of poor diet quality.

Associative conditioning, a strategy pairing a target food with a well-liked stimulus has been shown to increase acceptance of healthier foods among young children. Less is known regarding the potential to utilize positive parent-child interactions within this paradigm, and acceptability among underrepresented families. This study examined parent perspectives on a novel associative conditioning intervention pairing target vegetables with positive parent-child interactions during play. Participants were 13 parent-preschooler dyads from low-income and/or racial/ethnic minority backgrounds. Families completed 1 lab visit where parents reported demographics and child food fussiness, and child vegetable liking/preference and anthropometrics were assessed. Families then completed a 1-week pilot intervention that included 3 activities pairing a non-preferred (i.e., ranked 4 of 5) vegetable with positive parent-child interactions during play, and a phone feedback interview assessing intervention acceptability. Descriptive statistics were calculated and qualitative data was analyzed using rapid thematic content analysis. Analysis is ongoing. Themes from qualitative interviews will be presented overall and by level of child food fussiness. Results will inform a subsequent randomized controlled trial examining intervention effects on child vegetable intake, and future health promotion efforts.

ACADEMIC AND CAREER GOALS: To obtain a PhD in counseling/school or clinical psychology and to start my own therapy and mental health clinic.

WORDS TO LIVE BY: "If you do your best and give your all, you'll never truly fail."



Cara Michno

HOMETOWN: Tonawanda, NY

MAJOR: Psychology

INTERNSHIP PLACEMENT: Department of Psychology

SUMMER MENTOR: Dr. Shira Gabriel

SUMMER MENTOR TITLE: Professor

DEPARTMENT: Psychology

SUMMER PROJECT: *Satisfying Our Fundamental Need: How Weak Versus Strong Ties Influence Belongingness*

ABSTRACT: The vast majority of research on belongingness has examined strong-tie relationships, characterized by high-

intimacy connections. Recent research has been investigating weak-tie relationships, characterized by low-intimacy connections with people including strangers and acquaintances. Studies have explored these ties in isolation, but this study directly compares these ties. We utilized a mixed-model factorial design, in which participants completed a questionnaire measuring baseline levels of belonging. Afterwards, they completed social activities over one week with strong or weak ties, and concluded with a final questionnaire. Given that our study is currently in progress, we expect that strong ties will affect belongingness with close others, whereas weak ties will affect belongingness with broader society. Thus, we challenge researchers to examine how strong versus weak ties affect two distinct types of belongingness: with broader society, and with close others.

ACADEMIC AND CAREER GOALS: To obtain a PhD in Psychology and enhance my curiosity through research

WORDS TO LIVE BY: "Nothing is a waste of time if you learned something from it."



Laibah Mir

HOMETOWN: Buffalo, NY

MAJOR: Political Science

INTERNSHIP PLACEMENT: Legal Aid Bureau of Buffalo Inc.

SUMMER MENTOR: Nadine Patterson, Esq.

SUMMER MENTOR TITLE: Civil Deputy Executive Director - Civil

DEPARTMENT: Law

SUMMER PROJECT: *The Mission & Practices of a Leading Buffalo Non-Profit for Legal Services*

ABSTRACT: The Legal Aid Bureau of Buffalo (Inc.) is a group of non-profit attorneys, social workers, and justice advocates collectively committed to providing greater access to justice and due process. To fulfill this mission, the non-profit law firm provides free legal assistance and representation for low-income, immigrant, and/or re-entering individuals and families in Western New York. This research examines the Legal Aid Bureau of Buffalo's practice of this mission through the learning experiences amongst undergraduate interns. Throughout the summer, interns closely work with attorneys and justice advocates within the Civil Legal Services department (CLS) and Criminal Defense Unit to explore the representation, trial, and policy-evaluation processes. Within CLS, interns may assist attorneys with landlord-tenant cases to clarify one's history in rent-payments. Interns may shadow attorneys during their landlord-tenant and code violation court appearances, in addition to independently sitting in on homicide trials. Interns may also assist attorneys with policy work and advocacy by identifying issues of clarity and potential dispute in proposed bills, as well as how to both enhance and expand the bill's impact. With the Legal Aid Bureau of Buffalo, undergraduate interns have a multitude of opportunities to learn more from experienced professionals and mentoring law school interns.

ACADEMIC AND CAREER GOALS: To obtain a Juris Doctorate to work in human rights law and non-profit work, and advocate for public policy reform.

WORDS TO LIVE BY: "Whosoever of you sees an evil, let him change it with his hand; and if he is not able to do so, then [let him change it] with his tongue; and if he is not able to do so, then with his heart — and that is the weakest of faith."



Kingsley Mitchell

HOMETOWN: Buffalo, NY

MAJOR: Biological Sciences

INTERNSHIP PLACEMENT: Eating Behaviors Lab

SUMMER MENTOR: Dr. Katherine, N, Balantekin

SUMMER MENTOR TITLE: Assistant Professor

DEPARTMENT: Exercise and Nutrition Sciences

SUMMER PROJECT: *Food-ittude- Children 8-11 and how their parents eating habits affect them*

ABSTRACT: The UB Food-ittude Study assesses how loss of control eating (LOC), restrictive parent feeding practices, and relative related value (RRV) of snack food affect weight status in children over one year. To test the hypotheses children ages 8-11 attend seven visits over a year. Visits 1, 5, and 7 consist of gathering heights and weights, conducting a dietary recall, completing surveys, a delayed discounting task (DDT), and RRV game. Visits 2, 3, and 4 consist of conducting a dietary recall, completing surveys, and eating a buffet. We conduct a paradigm of two conditions between visit 2 and visit 4. During the restriction condition, we ask the child to avoid their High Energy Dense (HED) snack food. During the consumption condition, we provide portions of, and ask the child to, consume their HED snack food. Each condition spans two weeks where they record any consumption. We are interested in how the paradigm conditions affect eating behaviors during the buffet. We are actively recruiting and aim to schedule 110 participants. Currently 68% of the final number of participants are scheduled, 64% completed a visit 1, 59% completed a baseline, 49% completed their 6 month follow up, and 36% have completed the study.

ACADEMIC AND CAREER GOALS: To become a medical Doctor, and eventually start my own practice.

WORDS TO LIVE BY: "Never give up you can do anything you set your mind too."



Rihta Munguyupo

HOMETOWN: Syracuse, NY

MAJOR: Psychology

INTERNSHIP PLACEMENT: Laboratory for the study of Ingestive Behavior

SUMMER MENTOR: Dr. Derek Daniels

SUMMER MENTOR TITLE: Professor and Chair

DEPARTMENT: Biological Sciences

SUMMER PROJECT: *Identifying brain regions that respond to feeding and drinking*

ABSTRACT: Thirst is a physiological response to dehydration, food, and diabetes. Neural activity related to ingestion includes cells activated by food or water intake, or both. By measuring neural activation with Fos, we can determine which cells are activated during drinking and feeding. Mice were food-deprived for 18 hours and then given a 4-Hydroxytamoxifen injection. After one hour, they were allowed to refeed, and their food intake was measured six hours later. Half of the mice were food-deprived, while the other half were water-deprived. The mice were perfused, and their brains were collected for immunohistochemistry. Microscopy and data analysis were used to examine the effects of Fos, which allowed us to investigate the neural mechanisms underlying thirst and feeding. Data collection is in process. By labeling cells that respond to drinking and cells that respond to feeding, we can identify sites of overlap/divergence of activity in the pathways that are associated with two types of ingestive behavior. Our results are likely to show that there are separate, but overlapping, neural pathways for thirst and for feeding. Understanding these circuits will improve our understanding of a variety of health conditions related to fluid and energy balance

ACADEMIC AND CAREER GOALS: To attend medical school and become a psychiatrist. I am excited to pursue my long-term goal of opening a mental health clinic in the United States and the Democratic Republic of the Congo.

WORDS TO LIVE BY: "Trust in the Lord with all your heart, and do not lean on your own understanding. In all your ways acknowledge Him, and He will make straight your path."-Proverbs 3:5-6



Shayonna Oaks

HOMETOWN: Cheektowaga, NY

MAJOR: Legal Studies and History

INTERNSHIP PLACEMENT: Erie County Bar Association's Volunteer Lawyers Project

SUMMER MENTOR: Mrs. Christine McMenamin Esq. and Mr. Kristopher Sigeti Esq.

SUMMER MENTOR TITLE: Supervising Attorneys of Housing and Family Law

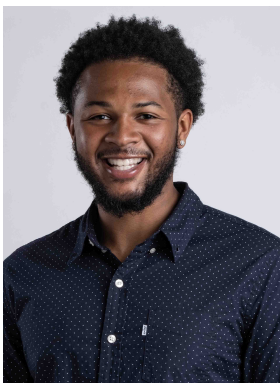
DEPARTMENT: Law

SUMMER PROJECT: *Exploring the Practice of Civil Law*

ABSTRACT: For my Summer Internship I am working as an Undergraduate Legal intern in the Eviction Defense and Family Law departments at Erie County Bar Associations Volunteer Lawyers Project. The Volunteers Lawyers Project is a not-for-profit Civil Law firm that handles a variety of civil law matters such as Family Law, Eviction Defense, Immigration, Estates and Wills, and Bankruptcy. VLP provides legal services for free to income eligible individuals. Throughout the course of my placement at VLP I am assisting my supervising attorneys and paralegals in completing legal drafts and legal research and I go to court each day and intake and sign in prospective clients at Attorney of The Morning for Eviction Defense and Family Court Help Desk for Family Law. Throughout the week I also accompany my supervising attorneys to court to observe hearings and trials. The overall goal of my internship placement is to learn about the different areas of law that can be practiced and to learn about day-to-day legal practices.

ACADEMIC AND CAREER GOALS: To Obtain a Juris Doctorate and become an Attorney.

WORDS TO LIVE BY: "Positivity Prevails." -Quote by Linda Gregorie



Tyshawn Searight

HOMETOWN: Rochester, NY

MAJOR: Mechanical Engineering

INTERNSHIP PLACEMENT: Sounds and Vibrations Laboratory

SUMMER MENTOR: Dr. Mostafa Nouh

SUMMER MENTOR TITLE: Associate Professor

DEPARTMENT: Mechanical & Aerospace Engineering

SUMMER PROJECT: *Examining the effect of resonator number, location and distribution on the vibration attenuation profiles of a locally resonant acoustic metamaterial beam.*

ABSTRACT: Acoustic metamaterials are artificially engineered materials that have been structured to exhibit unique wave propagation properties. The main function of metamaterials is to manipulate sound waves through the creation of 'frequency band gaps.' Within these band gaps, waves are prevented from propagating and heavily attenuated. This allows the metamaterial to absorb incident vibrations and excitations which can damage the structure. An acoustic metamaterial consists of a host structure and an array of local resonators. A 2-D locally resonant beam has been designed to model metamaterial behavior. This beam will be tested using a Scanning Laser Doppler Vibrometer (SLDV) which can measure and extract small deformations at any spatial location. Generally, the resonators will be equidistant and distributed uniformly along the length of the beam. This uniformity, along with other variables such as the number of resonators and tip mass ratio, will be varied to evaluate their effect on band gap location. The experimental setup and obtained data will provide support behind the theory of needing more resonators to achieve a stronger band gap. Examining the effects of resonator quantity, location and tip mass ratio will help demonstrate how different design parameters can be used to exhibit specific mechanical properties.

ACADEMIC AND CAREER GOALS: I plan on obtaining my master's degree in mechanical engineering and MBA. After, I'm looking forward to working with a design engineering firm and acquiring a management-level position. The end goal is to create my own design engineering firm (CEO) and transfer to real estate investing.

WORDS TO LIVE BY: "Trust in the Lord with all your heart and lean not on your own understanding; in all your ways submit to him, and he will make your paths straight." -Proverbs 3:5-6



LadieJocelynn Shabazz

HOMETOWN: Endicott, NY

MAJOR: Medicinal Chemistry

INTERNSHIP PLACEMENT: Zhang Lab at Jacobs School of Medicine and Biological Sciences

SUMMER MENTOR: Dr. Joshua J. Wang

SUMMER MENTOR TITLE: Associate Professor of Research

DEPARTMENT: Ophthalmology

SUMMER PROJECT: *Loss of X-Box Binding Protein 1 Contributes to Abnormal Retinal Morphology: Potential Role in Diabetic Retinopathy*

ABSTRACT: The retina of the eye contains photoreceptor cells which are neurons that serve to convert light into our ability to see. These cells are also highly active in glucose metabolism. Many retinal degenerative diseases, such as diabetic retinopathy, are characterized by the loss of photoreceptors. X-box binding protein 1 (XBP1) is known to regulate genes involved in various cellular functions, most importantly, glucose metabolism. We will further investigate how XBP1 regulates rod photoreceptor integrity and glucose metabolism. Wild-type (WT) and XBP1 conditional knockout (cKO) mice were collected at 1-, 3-, 6-, and 9- months of age. Optical coherence tomography (OCT) images, Image J, and Mitochondrial/Glycolysis Stress tests were used to assess the structural and functional effects of XBP1 deletion. At 1-month of age, no difference was observed between WT and cKO mouse retinas in thickness nor glycolytic measurements. There was a significant decrease in outer nuclear layer thickness of 9-month-old retina of XBP1 cKO mice compared to age-matched WT. This research will help to further the understanding of the role of XBP1 in regulation of glucose metabolism in rod photoreceptors, and therefore provide more insight on neurodegenerative diseases.

ACADEMIC AND CAREER GOALS: To obtain a PhD in medicinal or pharmaceutical chemistry and become involved in drug synthesis research.

WORDS TO LIVE BY: "If you wait until you're ready, you'll be waiting for the rest of your life." -Lemmy Snicket



Jelyse Williams

HOMETOWN: Brooklyn, NY

MAJOR: Biomedical Engineering

INTERNSHIP PLACEMENT: Biomedical Engineering

SUMMER MENTOR: Dr. Jonathan Lovell

SUMMER MENTOR TITLE: SUNY Empire Innovation Associate Professor

DEPARTMENT: Biomedical Engineering

SUMMER PROJECT: *Investigating Protein binding affinity in nano-particles for Effective Tuberculosis vaccine formulation*

ABSTRACT: Tuberculosis (TB) is the world's deadliest infectious disease, killing 1.6 million people every year. TB primarily affects the lungs, but can also affect the kidneys and the central nervous system. Today's clinical remedies burden patients due to their extensive nature, currently, there is no effective TB vaccine. This research will focus on developing next-generation TB vaccine candidates. To form our vaccines, candidate antigens (proteins) can be mixed with pre-formed liposomes containing cobalt porphyrin-phospholipid (CoPoP), resulting in spontaneous nanoliposome antigen particleization (SNAP). In addition to this, we screen the TB antigens to see which candidate induces a better immunal response. When binding the proteins to CoPoP to create nanoparticles; we then screen them to see how well they bind to each other. This is important because a strong binding leads to antibody production, fighting off TB antigens for the ideal immune response. We experiment by comparing the mixture to itself using CoPoP vs. control liposomes and to different ratios of liposome: antigen (4:1 v. 5:1), in order to test which will get us a binding percentage of 100%. Our results showed that protein antigens were successfully displayed onto immunogenic nanoliposomes as confirmed by biochemical characterization.

ACADEMIC AND CAREER GOALS: To obtain my MD & PhD in Biomedical Engineering specifically in Gynecology and become a doctor/entrepreneur.

WORDS TO LIVE BY: "Repay no one evil for evil, but give thought to do what is honorable in the sight of all."-Romans 12:17

The 2023 CSTEP Summer Research Program expresses thanks & appreciation to the following workshop & tour facilitators for their contributions & support:

DR. KEVIN AHUNA

Director, Intercultural Diversity Center

DR. JESSY ALEXANDER

Professor,
Jacobs School of Medicine &
Biomedical Sciences

DR. HANS BOATENG

Investment 101, Tutor

HADAR BORDEN

Director,
Blackstone LaunchPad

ED BRODKA

Career Counselor,
UB Career Design Center

DR. KEVIN BURKE

Co-Director, Undergraduate Education,
Assistant Professor of Teaching,
Electrical Engineering

JUDE BUTCH

Senior Associate Director, Student
Engagement

DR. SHERRY CHEMLER

Professor of Chemistry

DR. DIANNA CIHOCKI

Clinical Associate Professor, School of
Management

DR. STEWART CLARK

Associate Professor Pharmacology &
Toxicology

DR. PAUL CULLEN

Professor, Biological Sciences

JAMIL CREWS

Digital Communications Manager, Say
Yes Buffalo

DAMANTE CURRY

Special Projects Coordinator,
TechBuffalo

JUWERIA DAHIR

Director of Innovation &
Entrepreneurship, Buffalo Niagara
Medical Corridor

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Project Manager, GHD

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Assistant Director, Community & Civic
Engagement

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Blackstone LaunchPad

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ATA Practitioner

JACQUI HOLLINS

Vice Provost of Inclusive Excellence

DR. KEVIN HULME

Assistant Professor of Mechanical &
Aerospace Engineering, Director of the
Motion Simulation Lab

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Inclusion Coordinator

NASIAH JOHNSON

Systems Engineer, Lockheed Martin

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Development and Academic
Enhancement

DR. ADAM KISAILUS

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Educational Affairs, Roswell Park
Comprehensive Cancer Center

DR. NZINGA MACK

Post-Doctoral Research Fellow, John
Hopkins University, Whiting School of
Engineering

DR. AMY MARSCHIOK

Associate Professor, Chemistry,
Stony Brook University

TOM MURDOCK, MBA

Clinical Assistant Professor, School
of Management

DR. MOSTAFA NOUH

Associate Professor, Mechanical &
Aerospace Engineering

SARAH NORDLAND

LEAD Coordinator, Leadership
Education, Office of Student
Engagement

DR. BARNARD ONYENUCHEYA

Post-Doctoral Researcher,
Department of Electrical
Engineering

SUSAN O'ROURKE

Assistant Director, Mentorship
Initiatives

DR. MATTHEW PAUL

Associate Professor of Psychology

DR. JAMES RAMSEY

Director, AJR Services

NELSON RIVERA

Elementary School Teacher at
Frank A. Sedita Academy

Dr. LAVONE RODOLPH

Post-Doctoral Researcher,
Department of Computer Sciences

DR. KEBA ROGERS

Psychologist, Mental Health
Counselor at Grace, Growth and
Greatness Psychological Services

ERIN ROWLEY

Head Librarian, Science and
Engineering Library Services/
Engineering Library

EDUVIJEZ SANCHEZ

Assistant Director of Graduate
Recruitment, Graduate School of
Education

DR. VICKI SAPP

Chief Diversity, Equity & Inclusion
Officer, SUNY Fredonia

DR. DOROTHY SIAW- ASAMOAH

Clinical Assistant Professor,
Organization and Human Resources
Department, School of Management

DR. CHAVIS STACKHOUSE

Post-Doctoral Scholar, Chemistry,
Texas A&M University

DR. CLAYTON STEEN

Associate Vice President, Enrollment
Strategy & Online Education, Penn
State University

CAROL SCHMEIDLER

Manager of Safety & IH, Environmental
Health & Safety

RYAN TAUGHRIN

Assistant Dean for Enrollment
Management, Graduate School of
Education

DR. CHRISTINE TINNESZ

Clinical Assistant Professor,
Department of Communication

TOM VANE

Assistant Director, Student
Engagement for Student
Governance & Organizations

KELSEY WAGNER

Entrepreneurial Training
Coordinator, BlackstoneLaunchPad

OLIVIA WEST

Founder & Educational Instructor, West
Advisory Group, and Acting Executive
Director of Champions of Change

MEGHAN WOOD

Director of Recruitment & Admissions,
School of Management

THANK YOU to our 2023 CSTEP Summer Symposium Judges!

<u>NAME</u>	<u>DEPARTMENT</u>
DR. KAFULI AGBEMENU	School of Nursing
DR. NASRIN AKHTER	Dept. of Computer Science & Engineering
DR. SUSAN BAKER	Dept. of Pediatrics
DR. ANN BISANTZ	Dean Undergraduate Education, Dept. of Industrial &
DR. ELEONORA BOTTA	Systems Engineering Dept. of Mechanical & Aerospace
DR. SHERRY CHEMLER	Engineering Dept. of Chemistry
DR. STEWART CLARK	Dept. of Pharmacology and Toxicology
DR. SAMUEL CRICKENBERGER	Dept. of Biological Sciences
DR. DEREK DANIELS	Dept. of Biological Sciences
DR. KARTHIK DANTU	Dept. of Computer Science and Engineering
DR. MARGARITA DUBOCOVICH	Dept. of Pharmacology and Toxicology
DR. ARTHUR EDELMAN	Dept. of Pharmacology and Toxicology
DR. ADEBAYO FADEYI	Dept. of Industrial & Systems
DR. MACKENZIE FERRANTE	Dept. of Pediatrics- Division of Behavioral Medicine
DR. STEVEN FLIESLER	Dept. of Ophthalmology
DR. TRACEY IGNAGTOWSKI	Dept. Pathology and Anatomical Sciences
DR. HILLIARD KUTSCHER	Dept. of Medicine
DR. JOYCE LACY	Dept. of Psychology
DR. SUZANNE LAYCHOCK	Dept. of Pharmacology and Toxicology
DR. FILIPPO MALANDRA	Dept. of Electrical Engineering
DR. TEGAN MANSOURI	Dept. of Exercise & Nutrition Sciences
DR. PAUL MEYER	Dept. of Psychology/Behavioral Neuroscience
DR. ELIZABETH MIETLICKI-BAASE	Dept. of Exercise and Nutrition Sciences
DR. YUNGKI PARK	Dept. of Biochemistry
DR. SHAMSAD PARVIN	Dept. of Computer Science & Engineering
DR. CHRISTINE SCHANER TOOLEY	Dept. of Biochemistry
DR. NITASHA SEHGAL	Dept. of Biological Sciences
DR. SPYRIDAM STAVROU	Dept. of Microbiology and Immunology
DR. JACK SULLIVAN	Dept. of Ophthalmology
DR. ROBERT TAYLOR	Dept. of Obstetrics and Gynecology
DR. ALBERT TITUS	Dept. of Biomedical Engineering
DR. ZHEN WANG	Dept. of Biological Sciences
DR. CARLEARA WEISS	School of Nursing
DR. JUNZHE XU	Dept. of Psychiatry
DR. FEI YAO	Dept. of Materials Design and Innovation
DR. SARAH ZHANG	Dept. of Ophthalmology

WHERE ARE THEY NOW?

An Update On Previous CSTEP Summer Research Interns

First Name	Last Name	Summer Research Program Year	UB Major(s)	Where are they now?	What's their title?
Brianna	Acheampong	2007	Electrical Engineering	City of Monroe (North Carolina)	Engineer
Frank	Acheampong	2007	Pharmacy	UMass Memorial Medical Center	Clinical Pharmacist - Informatics
Geraldene	Agbasionwe	2007	Pre-Pharmacy	Live Good Pharmacy INC	Supervising Pharmacist
Ernestine	Brown	2007	Nursing	University of Rochester Medical Center	Nurse Practitioner
Dr. Corie	Ellison	2007	Pharmacology & Toxicology	Procter & Gamble	Toxicologist
Moses	Farley	2007		PPL Corporation	Engineer
Mark	Glasgow	2007	Biotechnology	Univera Healthcare	Business Process Intelligence Analyst
Dr. Richard	Linares	2007	Mechanical & Aerospace Engineering	MIT	Boeing Assistant Professor
David	Louis	2007	Psychology	Canarsie Recovery Coalition	Project Director
Shiny	Thomas	2007	Pharmacy	CVS Pharmacy; Touro College	PharmD
Kevin	Bryant	2008	Electrical Engineering	Bechtel Plant Machinery, Inc	Electrical Engineering Project Manager
Toni-Shay	Chandon	2008	Pharmacy		PharmD
Dr. Daivon	Garrick	2008	Pharmacology & Toxicology	M&T Bank	VP Credit Risk Analyst
Marda	Hailu	2008	Biological Sciences	Western New England University College of Pharmacy	
Dr. Jessica	Isaac	2008	Pharmacy		PharmD
Dr. Aggrey	Jacobs	2008		UB school of engineering	Doctoral Student
Anthony	Jones	2008	Biomedical Sciences	UB Jacobs School of Medicine and Biomedical Science	Doctoral Student
Micah	McCurty	2008	Exercise Science	Owner, Therapy Unlimited	DPT
Hieu	Nguyen	2008	Biochemistry	UB Dental School	Dental Student
Wilberforce	Osei	2008	Chemistry/ Pharmacology	Bowie, Maryland	PharmD
Francis	Perez	2008	Chemical & Biological Engineering	Completed MS in Chemical Engineering from SUNY at Buffalo	Chemical Engineer
Souleymane	Sow	2008	Aerospace Engineering	Completed MS in Aerospace Engineering from Purdue University	Aerospace Engineer

Dr. Franklin	Yeboah	2008	Medical Technology	Massachusetts College of Pharmacy and Health Sciences	PharmD
Dr. Hans	Boateng	2009	Biomedical Sciences	The Investing Tutor	PharmD/MBA
Corinna	Joseph	2009	Engineering	Bechtel Marine Propulsion Corporation (Bechtel Plant Machinery Inc.)	Engineer
Dr. Jean	Mandat	2009	Psychology	New York College of Osteopathic Medicine	Medical Doctor
Dr. Jasmine	May	2009	Biological Sciences	Completed MD/PhD at Northwestern University	Medical Student
Christopher	Williams	2009	Engineering	Lam Research Corp./ IBM Corp.	Field Service Engineer II, (FSE)
Bruck	Adam	2010	Mathematics	IPRO, NYS Department of Health, Office of Quality and Patient Safety, Bureau of Health Informatics	Data Analyst
Dr. Priscilla	Adjei-Baffour	2010	Pharmacy	Marshall University School of Pharmacy	PharmD
Chiamaka	Agbasionwe	2010	Biological Sciences	Biological Department	PharmD
Derek	Brim	2010	Engineering	NRD, LLC	Electrical Engineer
Joseph	Diehl	2010	Civil Engineering	MS Department of Civil, Structural, and Environmental Engineering, SUNY at Buffalo	Engineer
Ian	Duncan	2010	Mechanical Engineering	Suspension & Steering Dynamics at Honda R&D	Engineer
Christina	Garcia	2010	Biomedical Sciences	Ross University	Medical Student
David	Molina	2010	Finance, Cell & Gene Therapy	Catalent Pharma Solutions	Associate Director
Thao	Nguyen	2010	Engineering	University of Rochester	Engineer with Panasonic
Dr. Adonis	Pimienta-Penalver	2010	Aerospace Engineering	Completed doctoral studies at UB	Doctoral Student
Antonio	Upia	2010	Completed MS Engineering	Mass Electric Construction Co.	Electrical Field Engineer
Keelan	Chu For	2011	Mechanical and Aerospace Engineering	University at Buffalo	Engineer with Moog
Hector	Coco	2011	Mathematics	City of Buffalo Police Dept., JetBlue	Police Officer, Engineer
Belle	Cunningham	2011	Engineering	Pepsi	Project Supervisor
Jonathan	Feliciano	2011	Psychology	NBC Universal, Inc.	Research Analyst
Dr. Tavia	Garvey	2011	Pharmacy	Wegman Food Market	PharmD
Paul	Glenn	2011	Physics	Brooklyn Technical High School	Physics Teacher

Isabel	Gonzalez	2011	Civil Engineering	Completed MS Engineering	Civil Engineer
Dr. Richard	Hunte	2011	Biomedical Sciences	Regeneron	Scientist
Jordan	Jorgensen	2011	Engineering	Knightvest Management	Leasing Professional
Gael	Lamothe	2011	Engineering	SCCS Group	Senior Project Manager
Millicent	Nwankwo	2011	Biological Sciences	Shire Pharmaceuticals	R&D Global Health Economic, Outcomes Research, Epidemiology
Damian	Ogbonna	2011	Computer Engineering	Utilant	Web App Developer
Gino	An	2012	Biological Sciences	UB Dental School	DDS Student
Barinaepkee	Banuna	2012	Pre-Med/Biomedical Sciences	Hofstra Medical School	Medical Student
Sharece	Blake	2012	Electrical Engineering	Catalyst Fitness	Personal Trainer
Nuris	De La Cruz	2012	Completed MS program	Columbia Presbyterian	Psychological Counseling
Dr. Keith	Dolcy	2012	Pharmacy	UNC/Nuventra Pharma Sciences Innovation	Fellow
Brandon	Durant	2012	Engineering	University at Buffalo	Graduate Student
Dr. Ashley	Narain	2012	Biological Sciences	University of Bridgeport College of Chiropractic	Doctor of Chiropractic
Dr. Khalif	Osson	2012	Pharmacy	CVS Pharmacy	Clinical Pharmacy Specialist
Frank	Segui	2012	Engineering	Western Michigan University	Graduate Student, Electrical Engineering
Theresa	Yera	2012	Anthropology, Pre-Med	Liberty Resources	Electronic Records Specialist
Yun	Zheng	2012	Biological Sciences	Bristol Myers Squibb	Senior Associate Scientist
Jonathan	Ahmedu	2013	Mechanical & Aero-space Engineering	Momentive Technologies	Senior Process Engineer
Dr. Summar	Amin	2013	Biomedical Sciences	Anaheim Hills Dental Group and Orthodontics	General Dentist
John	Brito	2013	Biological Sciences	BioReference Laboratories	Medical Technologist
Dr. Nicholas	Costable	2013	Biological Sciences	Montefiore Medical Center	Gastroenterology Fellow
Akeem	Francis	2013	Electrical Engineering	MAHLE	Project Engineer

Johnathan	Goodrum	2013	Electrical Engineering	Google	Software Engineer
John	Habert	2013	Biological Sciences	United States Marine Corps	
Dr. Christ Ange	Katche	2013	Pharmacy/MBA	Cambridge Health Alliance	Pharmacy Resident
Muhammad	Khan	2013	Mechanical & Aero-space Engineering	Northrop Grumman	Reliability Engineer (Florida)
James	Lopez	2013	Psychology	Power U Center for Social Change (Miami, Fla)	Executive Director
Dr. Ayo	McKenzie	2013	Chemistry	Temple University	PharmD
Dr. Andrews	Obeng-Ayarkwah	2013	Pharmaceutical Sciences	Completed University at Buffalo School of Pharmacy	Pharmacy Student
Michael	Singletary	2013	Electrical Engineering (Mathematics-minor)	United States Army	Officer/ Helicopter Pilot
Alexandria	Trujillo	2013	Biological Sciences	University at Buffalo	PhD Student - Pharmacology & Toxicology
Dr. Uzoamaka	Aniagba	2014	Biological Sciences	Indiana University School of Medicine	Medical Resident
Warren	Barrett	2014	Chemistry	D'Youville School of Pharmacy	PharmD Candidate
Leatrice	Bennett	2014	Biological Sciences	Swedish Neuroscience Institute	Coordinator, MPH
David	Bratton	2014	Biological Sciences	Jacobs School of Medicine & Biomedical School	Medical Doctor
Kevin	Carpio	2014	Mechanical & Aero-space Engineering	Northrop Grumman (California)	Aerospace Engineer (Palmdale, California)
Kemji	Eke	2014	Biology	Huron	Salesforce Consultant
Robert	Ferguson	2014	Biology	University at Buffalo Dental School	Dentist
Akunne	Kanu	2014	Public Health	Bartow Ophthalmology, LLC	Assistant & Technician
Jacob	Milling	2014	Biology	University of Florida, Dept of Emergency Medicine	Medical Doctor
Abas	Omar	2014	Biology	UBMD Orthopaedics & Sports Medicine	Hand & Upper Extremity PA
Austin	Price	2014	Biology	UB Jacobs School of Medicine & Biomedical Science	Medical Doctor
Timothy	Semon	2014	Anthropology	Marquette University	Doctor of Dental Surgery
Hamlet	Spencer	2014	Mechanical Engineering	Ingersoll Rand	Design Engineer

Bethany	Walton	2014	English	ECMC Hospital	Social Worker
Christina	Aponte	2015	Biomedical Sciences	Meharry Medical College School of Dentistry	DDS Candidate
Kwame	Boakye-Yiadom	2015	Biological Sciences	Eli Lilly and Company	Safety Manager
Kelly	Boamah	2015	Pharmacology & Toxicology	D'Youville School of Pharmacy	PharmD
Joaquin	Canay	2015	Biotechnology	Thermo Fisher Scientific	Biotechnologist
Jennifer Lynn	Donato	2015	Biotechnology	Lake Erie College	Medical Student
Mark	Estudillo	2015	Mechanical Engineering	Meta	Software Engineer
Shawn	Gibson	2015	Biomedical Sciences	UB Jacobs School of Medicine and Biomedical Science	Medical Doctor
Hoda	Moussa	2015	Biological Sciences	University at Buffalo Law School	Lawyer
Peter	Okoroza	2015	Pharmaceutical Sciences	PRMA Consulting Ltd	PharmD, Senior Analyst
Folake	Olaleye	2015	Biological Sciences	D'Youville School of Pharmacy	PharmD
Oluwatosin	Oniyide	2015	Biological Sciences	Albert Einstein College of Medicine	Medical Student
Rasheen	Powell	2015	Pharmacology & Toxicology	Boston Children's Hospital	Post-Doc Researcher
Valeria	Prieto	2015	Civil Engineering	Gilsanz Murray Steficek	Engineer
Zakiya	Rhodie	2015	Pharmacology & Toxicology	UB School of Pharmacy	Doctor of Pharmacy
I'Yanna	Scott	2015	Biological Sciences	Jacobs School of Medicine	Medical Student
Naza	Abdelrahman	2016	Biomedical Sciences	CITYMD	Medical Scribe
Ali	Al Qaraghuli	2016	Electrical Engineering	Northeastern University	PhD Student
Andrew	Alegria	2016	Mechanical Engineering	University of Minnesota Mechanical Engineering	PhD Student
Barituziga	Banuna	2016	Chemical Engineering	Chemical Engineering at Cornell University	PhD Student
Emmanuel	Cott	2016	Computer Sciences	Huron	Salesforce Developer
Abdul-Malik	Davies	2016	Chemical Engineering	McKinsey & Company	Associate
Tanahiry	Escamilla	2016	Chemical Engineering	3M	Operations Engineer
Alejandro	Falca	2016	Medicinal Chemistry	UB Jacobs School of Medicine	Medical Student
Jarrett	Franklin	2016	Electrical Engineering	Moog Space and Defense Group	Design Engineer

Chris	Gnam	2016	Mechanical Engineering	NASA Goddard Space Center	NASA ProjectTrainee
Dominique	Hickson	2016	Computer Engineering	UB MS Computer Science & Engineering	MS Computer Engineering
Anna	Huang	2016	Social Sciences Interdisciplinary	Jenkins Neurospine	Surgical Coordinator
Mohammed	Karim	2016	Biomedical Sciences	Jacobs School of Medicine & Biomedical Sciences	Medical Student
Jalisa	Kelly	2016	Biomedical Sciences	East Carolina University	MD, Psychiatry Resident
Kaytlan	LoCicero	2016	Social Sciences Interdisciplinary	Osmose	MPH, Project Coordinator
Anthony	Lopez	2016	Biological Sciences	University at Buffalo Dept. of Biological Sciences	Medical Student
Jillian	Naylor	2016	Biological Sciences	New York City	Dental Student
Aaron	Nimako	2016	Biomedical Sciences	Empire MG Inc	President
Lee-Mary	Njoku	2016	Biomedical Sciences	Urban Health Plan, Inc.	Physician Assistant
Ndidiamaka	Okoroza	2016	Biomedical Sciences	Drexel University	MD, Cardiologist
Iyamu	Osazuwa	2016	Electrical Engineering	UB School of Engineering & Applied Sciences	Engineer
Lucas	Rugar	2016	Civil Engineering	Completed Columbia University's Master of Management Science and Engineering program	Graduate Student
Diamile	Tavarez	2016	Biology/Biological Sciences	Weill Cornell Medicine	Research Technician
Douglas	Tsahey	2016	Biomedical Sciences	Jacobs School of Medicine	Medical Doctor
Marcus	Ashford	2017	Electrical Engineering	Calspan Corporation	Electrical Engineer
Leon	Butcher IV	2017	Psychology	University of Maryland	Dentist
Kennedy	Colon	2017	Civil, Structural & Environmental Engineering	Flatiron Construction	Field Engineer III
Leonardo	Gobbato	2017	Chemical Engineering	Dimien	Chemical Engineer
Blessing	Hunsu	2017	Chemistry	Binghamton University School of Pharmacy	Pharmacist
Starr	Johnson	2017	Pharmacology & Toxicology	Sogang Language Program, South Korea	ESL Teacher
Coral	Lopez-Jimenez	2017	Chemistry	Curia Global	Research Scientist
Neneyo	Mate-Kole	2017	Pharmacology & Toxicology	Howard University Hospital -Internal Medicine	MD, Medical Resident
Lawrence	Owusu	2017	Industrial Engineering	University at Buffalo	MS Industrial Engineering

Ariana	Roman	2017	Psychology	Norton & Elaine Sarnoff Center	Health Educator
Godfrey	Sakyi	2017	Electrical Engineering	Naval Sea Systems Command	Systems Engineer
Sameer	Shakur	2017	Electrical Engineering	University at Buffalo	Graduated 2019
Tyree	Singleton	2017	Industrial Engineering	The Perduco Group	Operations Researcher
Ashley	Solomon	2017	Nursing	University at Buffalo	Graduated 2023
Cassandra	Ware	2017	Computer Science & Engineering	New Era Cap	E-Commerce Developer
Makayla	Watson-Wales	2017	Speech & Hearing Science	UB Masters Speech Language Pathology	Speech Language Pathologist
Annakay	Adamson	2018	Biological Sciences	UBMD Emergency Medicine	Research Coordinator
Gregory	Adams, Jr.	2018	Psychology	Brookfield Properties	Systems Engineer
Abshiro	Ali	2018	Biology/Biological Sciences	Community Health Center of Buffalo, Inc.	Medical Assistant
Deborah	Amponsah	2018	Pre-Law/Philosophy	Hurwitz & Fine	Law Clerk
Michael	Banjoko	2018	Biomedical Engineering	Prevail Therapeutics	Associate Researcher
Gerardo	Barrera Giron	2018	Environmental Engineering	BASF	Process Safety Engineer
Kwaku	Bonsu	2018	Biological Sciences	UB Jacobs School of Medicine & Biomedical Sciences	Medical Student
Tanzania	Bussey	2018	Pharmacology & Toxicology	UB MS Biomedical Sciences	Graduate Student
Edgar	Claudio	2018	Pharmacology & Toxicology	UB School of Pharmacy	Pharmacy Student
Temara	Cross	2018	Biomedical Sciences	Roswell Park Cancer Center	Research Apprentice
Chimaobi	Ezeilo	2018	Computer Sciences	University at Buffalo	Graduated 2021
Jhanna	Flora	2018	Biological Sciences	University at Buffalo MS Biotechnology	Graduated 2021
Steven	Herrera	2018	Mechanical Engineering	University at Buffalo MS Mechanical Engineering	Graduated 2021
Charitie	Hill	2018	Chemistry	Q ² Solutions	Laboratory Project Coordinator
Nasiah	Johnson	2018	Electrical Engineering	Lockheed Martin	Systems Engineer
Brianna	Kinley	2018	Psychology	UB Jacobs School of Medicine and Biomedical Sciences	Medical Student
Jessica	Maxwell	2018	Biochemistry	Monroe College MPH	Graduate Student
Shelbi	Molin	2018	Political Sciences	UB Law School	Law Student
Keiona	Nance	2018	Exercise Science	Indiana State PhD Athletic Training Program	Doctor Athletic Training

Nailah	Oronde	2018	Public Health	University at Buffalo	Graduated 2019
Priya	Persaud	2018	Aerospace Engineering	Lockheed Martin	Design Engineer
William	Phillips	2018	Computer Sciences	L3Harris Technologies	Software Engineer
Elizabeth	Quaye	2018	Pharmacology & Toxicology	UB Jacobs School of Medicine & Biomedical Sciences	Medical Student
Aliaya	Williams	2018	Biological Sciences	Buffalo Medical Group	Medical Assistant
Marvellous	Adegoke	2019	Pharmacy	UB School of Pharmacy and Pharmaceutical Sciences	PharmD Candidate
Abdulelah	Ahmed	2019	Biomedical Sciences	Jacobs School of Medicine & Biomedical Sciences	Medical Student
Taylor	Campbell	2019	Biomedical Sciences	UB Obstetrics and Gynecology	Staff Assistant
Julie	Campbell	2019	Public Health	University of Pittsburgh	MPH Student
Heather	Evangelista	2019	Environmental Engineering	H2M Architects & Engineers	Water Resources Staff Engineer
Florencia	Fils-Aime	2019	Computer Sciences	General Motors	Software Developer
Triniti	Fitts	2019	Biological Sciences	UB MD	Medical Scribe
Ronique	Fletcher	2019	Biological Sciences	University at Buffalo	ME Chemical Engineering
Allea	Frazier	2019	Psychology	Yale University School of Medicine	Post-Doctoral Researcher
Muhammed	Ibrahim	2019	Computer Science & Mathematics	Boeing	Software Engineer
Ayesha	Ismail	2019	Computer Science	Foxtrot Division	Developer
Arsh	Issany	2019	Biomedical Sciences	Jacobs School of Medicine & Biomedical Sciences	Medical Student
K'Von	Jones	2019	Biological Sciences	Illustrations by K'Von	Illustrator/Artist
Charles	Lafargue	2019	Pharmacology & Toxicology	Jacobs School of Medicine & Biomedical Sciences	Medical Student
Tamijah	Lawton-Stone	2019	Psychology/Sociology	University at Buffalo	Master's Student
Isabelle	Linares	2019	Biomedical Engineering	University of Rochester	PhD Student Biomedical Engineering
Julius	Mark	2019	Mathematics/Actuarial Sciences (Statistics minor)	SUNY Downstate	MPH Student
Ricardo	Martinez	2019	Mechanical Engineering	EB Mechanical LCC.	Mechanical Engineer
Marcellus	Midyette	2019	Biological Sciences	Church of Jesus Christ of Latter Day Saints	Missionary
Chidubem	Okoroza	2019	Chemical Engineering	University at Buffalo, MS Data Science & Applications	Graduate student
Kyle	Pierre	2019	Electrical Engineering	Ford Motor Company	Product Development Engineer
Adegboyega	Thompson	2019	Chemistry	UB MD	Medical Scribe
Lesly	Villanueva	2019	Environmental Engineering	Mott MacDonald	Civil Engineer 1- Water

Mohammed	Abbadi	2020	Biology/Biological Sciences	Dupont	Lab Analyst
Omolara	Adeyemi	2020	Biology/Biological Sciences	University at Buffalo	Graduated 2022
Isaac	Asante	2020	Public Health	University at Buffalo	Graduated 2021
Jordan	Brathwaite	2020	Biomedical Engineering	NYU Tandon	Graduate Student
Paula	Costa	2020	Neuroscience	University of Pennsylvania	PhD Student Pharmacology
Waldine	Edouard	2020	Chemistry	University at Buffalo	Graduated 2021
Ahamed	Fofana	2020	Computer Sciences	University at Buffalo	Graduated 2022
Sonjii	Parris	2020	Industrial Engineering	Binghamton University	Graduate Student
Brittany	Richardson	2020	Psychology	UB Clinical and Research Institute on Addictions	Research Assistant
Samantha	Watts	2020	Biomedical Sciences	UB Clinical and Research Institute on Addictions	Research Assistant
Malaike	Addo	2020	Public Health	UB School of Public Health and Health Professions	Graduate Student
Moyofoluwa Rachel	Aguda	2020	Biochemistry	NIH, Bethesda, Maryland	Post-Bacc Researcher
Mirka	Arevalo	2020	Aerospace & Mechanical Engineering	Team Real Talk/UB School of Engineering and Applied Sciences	UX Designer/Graduate Student
Mahanaz	Chowdhury	2020	Civil Engineering	University at Buffalo	Continuing Student
Adwoa	Dadzie	2020	Biology/Biological Sciences	Penn State University	Research Technologist
Michael	Edovia Osagiede	2020	Public Health	Pace University	Nursing Student
Jerry	Ingram	2020	Biology/Biological Sciences	Moog Inc.	Cybersecurity Intern
Evelyne	Kouya	2020	Biomedical Sciences	Your Family Fertility PLLC	Fertility Care Coordinator/Medical Scribe
Chukwudi	Nwoke	2020	Aerospace Engineering	UB Aerospace Engineering	Undergraduate Student
Ugonna	Okafor	2020	Chemistry	Notre Dame University	Graduate Student (Pharmaceutical Sciences)
Elijah	Panayoty	2020	Electrical Engineering	UB School of Engineering and Applied Sciences/ Raytheon Intelligence & Space	Undergraduate Student
Ophelia	Phillips	2020	Biology/Biological Sciences	CITYMD	Medical Scribe
Nigel	Smith Ordain	2020	Public Health	RTI International	Public Health Analyst III
Dorien	Thompson	2020	Biology/Biological Sciences	Erie Community College	Preparing for Nursing/PA
Ean	Weise	2020	Mechanical Engineering	UB School of Engineering and Applied Sciences	Graduate Student (Mechanical Engineering)

Emmanuel	Agyenim Boateng	2021	Biomedical Sciences	Univeristy at Buffalo	Continuing Student
Chidera	Anameze	2021	Biomedical Sciences	Jacobs School of Medicine	Medical Student
Chidalu	Anameze	2021	Biomedical Sciences	Jacobs School of Medicine	Medical Student
Lillian	Baker	2021	Environmental Engineer- ing	D&B Engineers and Architects	Water Supply Engineer
Jose	Carrasco Ramon	2021	Civil Engineering	Cole Technologies Group	Inspector Engineer
Jeremiah	Chapman	2021	Biochemistry	University at Buffalo	EOPIIM
Sara	Cruz	2021	Psychology	UB MS Neuroscience	Graduate Student
Iyobosa	Ekhator	2021	Public Health	UB MA Biological Sciences	Graduate Student
Bradley	Givens	2021	Computer Sciences	BAS Math & Computer Science	Continuing Student
Danielle	Haynes	2021	Psychology	UBMD Family Medicine	Medical Scribe/ Will be applying to PA school
Amarachi	Kanu	2021	Biology/Biological Sci- ences	UB School of Pharmacy and Pharmaceutical Sciences	PharmD Student
Justin	Kellier	2021	Biology/Biological Sci- ences	University at Buffalo PhD Biological Sciences	PhD Student
Tyree	Langley	2021	Psychology	University of Pittsburgh	Post-Bacc Researcher
Marcos	Lopez	2021	Biology/Biological Sci- ences	University at Buffalo	Continuing Student
Jenny	Moya	2021	Biomedical Engineering	UB ME Engineering Management Online	Graduate Student
Marieross	Navarro	2021	Mechanical Engineering	University at Buffalo	Continuing Student
Ngowari	Opuso-Jama	2021	Biochemistry	Jacobs School of Medicine ¹	Medical Student
Maisha	Rahman	2021	Public Health	UB School of Public Health/ MPH	MPH 2023
Breanna	Roper	2021	Biotechnology	ECMC	ACC
Dania	Salah	2021	Biomedical Sciences	Physician's Office	Medical Assistant
Holliday	Sims	2021	Computer Sciences	University at Buffalo	Continuing student
Sergio	Smith	2021	Mathematics	University at Buffalo	Continuing student
Melina	Villa	2021	Biomedical Sciences	Graduated May 2021	Will be applying to medi- cal school

CSTEP 2023 SUMMER RESEARCH PROGRAM STAFF



CSTEP Director

Shanna Crump-Owens

CSTEP Administrative Assistant (Retired)

Patricia Greer

CSTEP Post-Doctoral Research Associate

Rebecca Borowski, PhD

Research Methods Course Instructor

Barnard Onyenucheya, PhD

Poster Competition Coordinator

Lavone Rodolph, PhD

Graduate Assistants

Shelbi Molin, JD

Dorcas Nsumbu

Student Assistants

Malisah Amoako

Muhsinah Howlader

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2023 CSTEP SUMMER RESEARCH INTERNS



2023 CSTEP Research Interns at BNMC Innovation Center