University at Buffalo The State University of New York

2017
Collegiate Science & Technology Entry Program (CSTEP)

2017 CSTEP Research Interns in front of UB Center for the Arts

SUMMER RESEARCH PROGRAM
RESEARCH SYMPOSIUM & LUNCHEON

NEW YORK STATE CSTEP
COLLEGIATE SCIENCE & TECHNOLOGY ENTRY PROGRAM
preparing science, technology & licensed professionals since 1986

Wednesday, August 2, 2017
11:00 am – 1:30 pm
University at Buffalo
Newman Center ~ North Campus

PROGRAM ORDER

WELCOME
SHANNA CRUMP-OWENS
Director, Collegiate Science & Technology Entry Program (CSTEP)

OPENING REMARKS
DR. GRAHAM HAMILL
Interim Vice Provost and Dean of Undergraduate Education

LUNCHEON & SLIDESHOW NARRATIVE
NELSON M. RIVERA
Graduate Assistant

STUDENT PERSPECTIVES
Neneyo Mate-Kole, Cohort Leader
Ashley Solomon, Cohort Leader
Cassandra Ware, Cohort Leader

POSTER COMPETITION & JUDGES PRESENTATION
LAVONE RODOLPH
Research Methods Instructor
Doctoral Student, Computer Science & Engineering

FACULTY MENTOR & STUDENT AWARD PRESENTATION
SHANNA CRUMP-OWENS
CSTEP Director

CLOSING REMARKS
SHANNA CRUMP-OWENS
CSTEP Director

University at Buffalo
Collegiate Science and Technology Entry Program
Undergraduate Education

"TO WHOM MUCH IS GIVEN, MUCH IS EXPECTED"

Welcome to the 11th 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 scholarly 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, tour guides and research methods seminar instructor which number more than 40 - 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 field trips fostered a sense of community while enhancing an undergraduate career. I encourage each CSTEP Scholar to continue taking advantage of the resources, opportunities, and services offered by CSTEP to make your UB experience more personal. 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 was 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 12 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.

TUTORING

CSTEP students have access to the CPMC Academic Resource Center (ARC) which offers tutoring in courses identified as consistent challenges for students such as anatomy, biology, calculus, chemistry, pharmacology, physiology, physics, and engineering.

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: http://cpmc.buffalo.edu/cstep/grad-school.php.

SERVICE LEARNING CLASS

A cohort of 25 students is selected to engage in a semester-long structured service learning project, becoming a Community 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 pursing 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 Project is Unyts (formerly Upstate New York Transplant Services).

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.

HABITAT FOR HUMANITY/GRASSROOTS COMMUNITY GARDENS

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.

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 Newsletter, 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
ABC's of Graduate School
CSTEP Shadow Day
Maximize Your Potential
Rx for Success Seminar (Pharmacy School)
CSTEP's Day of Service
Effective Study Skills
Time Management

Graduate School Panel
End of Semester Reception
Rx for Success Seminar (Medical School)
Blueprint for Success
Statewide Student Conference
Student Recognition Dinner
Student Research Luncheon
Summer Research Program

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 for standardized test preparation, academic and career advisement, tutorial services, monthly seminars, travel to professional conferences, and a support network to assist promising students in achieving their academic and professional goals.

During our 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** of all CSTEP Students possess overall GPAs above 3.0.

- Last year, UB CSTEP exceeded our program enrollment goal of **380** by serving **449** students. Our current enrollment is **408** students.

- Since the program's inception, UB CSTEP has awarded over **170** CSTEP/Kaplan scholarships to students in preparation for standardized graduate school exams (i.e. PCAT, MCAT, GMAT, LSAT, and GRE).

- This year, CSTEP sponsored **11** students, staff, and alumni, including students who presented their research at the 25th Annual CSTEP Statewide Conference: Journey's Beyond Excellence in Lake George, NY resulting in **2** statewide awardees and **1** honorable mention.

- Last year, **34** CSTEP students were placed in funded research internships and completed over **13,000** hours.

- To help provide service to our students, CSTEP has hired, trained, and funded a cadre of approximately **100** Graduate and Student Assistants to work within our office. This also provides critical funding for the student staff to assist with costs as graduate and undergraduate students during their time at UB.

- Last year, there were **128** students in CSTEP's graduating class. Congratulations, Class of 2017!

WHY DO RESEARCH? STUDENT PERSPECTIVES
Written by the 2017 Summer Research Cohort

Research exists in many forms. Whether it is a child turning over rocks to look for bugs, or a NASA scientist combing the night sky in search of extraterrestrial life, research and understanding are integral facets of human behavior. For many students, it is an essential part of the undergraduate experience. The Collegiate Science and Technology Entry Program (CSTEP) Summer Research Program is a comprehensive experience which aims to present students with an opportunity to learn from experts in their fields. For eight weeks, we worked closely under the guidance of a faculty mentor, while also receiving interpersonal enrichment and professional development. The program prepares students for the laboratory environment and serves as a catalyst for their future endeavors.

Students of the CSTEP Summer Research Program are engaging in research for a medley of reasons. Many of them see it as an invaluable learning experience. Christian Romero-Fischer, a senior majoring in Mechanical Engineering, believes that "research gives me an in-depth and hands-on view into the world of engineering." He sees research as an avenue for students to learn valuable skills from professionals in academia. As a senior Psychology major and native of Buffalo, NY, Leon Butcher IV shares a similar view. Leon says, "Research means a hands-on experience that you can't receive in the classroom. Research expands your experience of education and training towards your future career." Many students see research as a method of interacting with knowledgeable professionals in their future careers.

Through their experiences, students catch a glimpse of the day-to-day workings of experts in their fields. Blessing Hunsu, a senior Chemistry major, says "Research is the creation of a new knowledge. It is what we do when we are skeptical about things." Blessing also sees the broader impact of research, adding "It helps shape our society and hunts for the truth." Starr Johnson believes "research is important because there will always be a problem that needs to be solved. But without researching to gain knowledge, you will continue to have a problem." Starr is in her junior year studying Pharmacology & Toxicology, and her research is "Optimized Registration Procedure for Building 3D Tumor Models from H& E Stained Serial Sections."

Sameer Shakur, an Electrical Engineering student hailing from Far Rockaway, NY, views this opportunity as a bridge between university and career, stating: "Research should be done because it enhances your undergraduate experience in a positive way. It challenges you by providing a task that will seem daunting, but when you apply yourself it makes research become simple and worth your time." Sameer's research investigates low-ohmic contact resistance to Gallium Oxide (Ga_2O_3) MOSFETS.

In addition to networking, many students see research as the precursor of innovation. "For me, doing research means challenging myself. More importantly, research is to learn and discover new things along the way," says Coral Lopez-Jimenez, a senior majoring in Chemistry with aspirations of obtaining her MD and PhD. Coral's research concerns the intrinsically disordered linker of *E. coli* SSB protein. Lawrence Owusu, a junior Chemistry major, sees his research as a way to learn new ideas: "To me, research means thoroughly engaging yourself in a topic you want to explore. Doing research will force you to think in creative ways you may not have before." To Godfrey Sakyi, "Doing research acts as tool to building knowledge and efficient learning, which will make me put most of the theoretical topics learned from class into practical use." Godfrey's research is currently using Raman Spectroscopy to identify and analyze graphene and other atomically-thin materials. Ariana Roman, a Psychology major, says of her research experience: "I believe making small or large strides across various disciplines requires progressing and challenging clear and equivocal data. Research means acknowledging and appreciating the past while embracing and investigating the present and future."

Makayla Watson also hopes to leave her mark on history. Makayla is a junior studying Speech & Hearing Sciences, and this summer has been investigating "Noise-Induced Hyperacusis." Says Makayla, "To me, research means trial and error that can lead to exploring the unknown and I believe it is important because you could discover something that can be life changing to someone." According to Tyree Singleton, "Without people developing new technologies and trying to answer questions that have yet to be answered, the intellectual progression and general curiousity of mankind would be severely limited." Tyree is entering his third year as a student in the Department of Industrial Engineering.

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 enrichment of the CSTEP Summer Research program, our students learn the importance of research, gaining skills to use in education, the workforce, and beyond.

~2017 CSTEP Summer Research Cohort

Jabril Abdul-Rashed

HOMETOWN: Buffalo, NY
MAJOR: Exercise Science
INTERNSHIP PLACEMENT: Exercise and Nutrition Sciences
SUMMER MENTOR: Dr. Zachary Schlader
SUMMER MENTOR TITLE: Assistant Professor
DEPARTMENT: Exercise and Nutrition Sciences

SUMMER PROJECT: *Thermal, Physiological, and Perceptual Transitions from Exercise to Rest*
ABSTRACT: Skin wetness perception and thermal discomfort are large drivers of clothing satisfaction. Factors causing discomfort are unknown during the transition from exercise to rest but may be caused by physiological factors of skin wetness and thermal discomfort. We know about the mechanisms driving comfort at rest and during exercise, however, no one has studied discomfort post exercise. The disconnect between psychological perception and physiological responses causes clothing dissatisfaction post exercise. We intend to sample participants through all phases of exercise with thermal, physiological, and perceptual responses collected. This research will further our understanding of clothing comfortability post exercise.

ACADEMIC AND CAREER GOALS: To become a Physician Assistant.
WORDS TO LIVE BY: "What's life without struggle, only warriors prosper."

Marcus Ashford

HOMETOWN: Rochester, NY
MAJOR: Electrical Engineering
INTERNSHIP PLACEMENT: Energy Systems Integration
SUMMER MENTOR: Dr. Jennifer Zirnheld; Dr. Kevin Burke
SUMMER MENTOR TITLE: Director/Associate Professor; Co-Director/Teaching Assistant Professor
DEPARTMENT: Energy Systems Integration

SUMMER PROJECT: *Characterizing Nonthermal Plasma with Optical Emission Spectroscopy*
ABSTRACT: Nonthermal plasma (NTP) is of interest because it has been proven to kill melanoma cancer cells through apoptotic cell death. High voltage is applied to a flowing inert gas to produce the NTP. The plasma discharge ideally is a stable plume that can be analyzed by using Optical Emission Spectroscopy (OES) to examine the emission properties. Data analysis will reveal plasma characteristics and atomic behavior over the spectrum. Characterization work contributes to research in understanding apoptotic cell death from NTP exposure.

ACADEMIC AND CAREER GOALS: To receive my M.S. in Electrical Engineering and work in the Space or Power Industry.
WORDS TO LIVE BY: "Don't wanna be another statistic." - Ace Hood

RESEARCH INTERNSHIP SCHOLARS

Leon Butcher IV

HOMETOWN: Niagara Falls, NY
MAJOR: Psychology
INTERNSHIP PLACEMENT: Biomedical Sciences
SUMMER MENTOR: Dr. Paul Gollnick
SUMMER MENTOR TITLE: Professor
DEPARTMENT: Biomedical Sciences

SUMMER PROJECT: *Expression of a Foreign protein in E. coli/ Purification of Bacillus subtilis (TRAP)*
ABSTRACT: *Bacillus subtilis* is a bacterium has a protein that regulates transcription attenuation. This transcription attenuation protein is a trans-acting RNA binding regulatory protein (TRAP). Purification of this protein will occur by way of Phenyl Sepharose chromatography and a pET-17d Trap Vector. Pet-17d TRAP is an Ampicilin resistant vector that binds two wild types. This is promoted through IPTG (the inducer). With this purification, a TRAP protein can be built with every other subunit that cannot bind Tryptophan. A similar mechanism of cooperativity is also followed by the binding of hemoglobin to oxygen.

ACADEMIC AND CAREER GOALS: To obtain my Doctorate of Dental Surgery and become a dentist.
WORDS TO LIVE BY: "Anything is possible...You have to dream like you've never seen obstacles." - J. Cole

Joiyeux Clark

HOMETOWN: West Hempstead, NY
MAJOR: Health & Human Services
INTERNSHIP PLACEMENT: Behavioral Neuropharmacology
SUMMER MENTOR: Dr. Peter Thanos
SUMMER MENTOR TITLE: Adjunct Research Associate Professor
DEPARTMENT: Research Institute on Addictions; Psychology

SUMMER PROJECT: *The effects of chronic Methylphenidate on the cannabinoid receptor expression in the rat brain*
ABSTRACT: Methylphenidate (MP) is a psychostimulant prescribed for individuals with Attention Deficit Hyperactivity Disorder. MP has the ability to produce side effects such as nervousness, anxiety and loss in appetite. Chronic MP can lead to behavioral changes when administered, however few studies have correlated to the effects of MP on the endocannabinoid system. Autoradiography was performed with [3H] SR 141716A to examine brain CB1 receptor expression. Long term administration of the drug has shown increase in CB1 receptor signaling in the hippocampus which promotes memory. Conclusively, the utilization of MP has shown to benefit individuals with ADHD.

ACADEMIC AND CAREER GOALS: To become a nurse.
WORDS TO LIVE BY: "My mission in life is not merely to survive, but to thrive; and to do so with some passion, some compassion, some humor, and some style."

Kennedy Colon

HOMETOWN: Buffalo, NY
MAJOR: Civil Engineering
INTERNSHIP PLACEMENT: Civil, Structural, and Environmental Engineering
SUMMER MENTOR: Dr. Pinar Okumus
SUMMER MENTOR TITLE: Assistant Professor
DEPARTMENT: Civil, Structural, and Environmental Engineering

SUMMER PROJECT: *Understanding the behavior and performance of bridges with high skew*
ABSTRACT: Bridges with high skew often have deck cracking and undesired superstructure deformations. It is the hypothesis of this research that these problems are partially due to errors in simplified analysis methods commonly used for bridges. To test this hypothesis, we use the commercial analysis software, CsiBridge, to evaluate analysis methods with different complexity levels and computational demands. We will use 1-D, 2-D and 3-D analyses to identify limitations of each modeling method by comparing the results of models to test data. Overall, we hope to decide which modeling method is the most beneficial for understanding the behavior and performance of bridges with high skew.

ACADEMIC AND CAREER GOALS: To earn my bachelor's degree in Civil Engineering, eventually become a project manger, and flip houses.
WORDS TO LIVE BY: "Treat yo'self ."

Leonardo Gobbato

HOMETOWN: Yonkers, NY
MAJOR: Chemical Engineering
INTERNSHIP PLACEMENT: Chemical and Biological Engineering
SUMMER MENTOR: Dr. Marina Tsianou
SUMMER MENTOR TITLE: Assistant Professor
DEPARTMENT: Chemical and Biological Engineering

SUMMER PROJECT: *Calcium Oxalate Crystal Growth in Silica Hydrogels with Additives*
ABSTRACT: Calcium oxalate is the major constituent of kidney stones. In this study, we investigate the crystallization of calcium oxalate in silica hydrogels as an in-vitro set-up that mimics the in-vivo environment where kidney stones form and aggregate. Furthermore, we employ additives with anionic functional groups that have shown inhibitory effects on crystal formation in aqueous solutions. We investigate the nucleation, growth, and morphological evolution of calcium oxalate as affected by the hydrogel matrix and additive concentration. This research will help further our understanding of how kidney stones form under different conditions.

ACADEMIC AND CAREER GOALS: To get a Master's in Chemical Engineering.
WORDS TO LIVE BY: "Nothing is true; everything is permitted."

Blessing Hunsu

HOMETOWN: Syracuse, NY
MAJOR: Chemistry
INTERNSHIP PLACEMENT: Institute for Lasers Photonics and Biophotonics
SUMMER MENTOR: Dr. Hilliard Kutscher
SUMMER MENTOR TITLE: Research Assistant Professor
DEPARTMENT: Institute for Lasers Photonics and Biophotonics

SUMMER PROJECT: *Development and validation of a GC-MS method for the analysis of Isoflurane in Intralipid®*
ABSTRACT: Influenza is responsible for a considerable amount of morbidity and mortality worldwide. Novel therapies are necessary to reduce the risk of secondary bacterial infections caused by influenza. Isoflurane is a volatile anesthetic that can modulate the immune system. Unfortunately, the concentration of isoflurane loaded into an intralipid emulsion used for IV administration is difficult to determine. A gas chromatography mass spectroscopy via headspace analysis method was developed to determine the concentration of isoflurane entrapped by Intralipid® emulsion. By developing a robust analytical method, accurate administration of emulsified isoflurane as a treatment for influenza, while avoiding its narcosis properties is possible.

ACADEMIC AND CAREER GOALS: To obtain a Doctorate in Pharmacy and become a Chemotherapy Pharmacist.
WORDS TO LIVE BY: "You wouldn't be who you are without all of the difficult times. Be thankful even during the trials."

Fedora Jeanty-Fils

HOMETOWN: Brooklyn, NY
MAJOR: Biomedical Sciences
INTERNSHIP PLACEMENT: Pediatrics; Epidemiology and Environmental Health
SUMMER MENTOR: Dr. Xiaozhong Wen
SUMMER MENTOR TITLE: Assistant Professor
DEPARTMENT: Pediatrics; Epidemiology and Environmental Health

SUMMER PROJECT: *Gestational weight gain trajectories during pregnancy and postpartum among smokers*
ABSTRACT: Gestational weight gain (GWG) is crucial for maternal and infant health. However, the timing and rate of GWG, and postpartum weight retention (PPWR) among smokers and quitters remain understudied. In order to conduct our study, we utilized our Pregnancy and Smoking Cessation Study to classify GWG based on the total GWG and pre-pregnancy body mass index of 17 quitters and 6 non-quitters. We compared weight trajectories between quitters and smokers using t-tests and Fisher's Exact Tests. We found 76.5% of quitters had excessive GWG, whereas 83.3% of non-quitters had inadequate GWG (p-value=0.001). We concluded smoking is associated with inadequate GWG, while smoking cessation is associated with excessive GWG.

ACADEMIC AND CAREER GOALS: To obtain a Master's in Public Health, become a physician, and open my own non-profit clinic.
WORDS TO LIVE BY: "Knowing is not enough, we must apply. Willing is not enough, we must do." - Johann Wolfgang von Goethe

Starr Johnson

HOMETOWN: Buffalo, NY
MAJOR: Pharmacology & Toxicology
INTERNSHIP PLACEMENT: Pathology and Anatomical Sciences
SUMMER MENTOR: Dr. Scott Doyle
SUMMER MENTOR TITLE: Research Assistant Professor
DEPARTMENT: Pathology and Anatomical Sciences

SUMMER PROJECT: *Optimized Registration Procedure for Building 3D Tumor Models from H& E Stained Serial Sections*

ABSTRACT: A large percentage of patients diagnosed with low-stage Oral Cavity Cancer (OCC) experience loco-regional recurrence. The Histologic Risk Model (HRM) is a clinically validated risk assessment tool used by head and neck pathologists to predict OCC progression. The HRM can be improved using 3D tumor models. We aim to generate these 3D models by creating an optimized registration procedure for serial histopathology. Qualitatively, a sample registration of two images shows proper alignment of tissue edges and large internal structures. Accurate 3D models of OCC, in combination with the HRM, will provide a more accurate prognostic system.

ACADEMIC AND CAREER GOALS: I plan to continue into medical school and have a career as a forensic pathologist.
WORDS TO LIVE BY: "The woman who follows the crowd will usually go no further than the crowd. The woman who walks alone is likely to find herself in places no one has been before." - Albert Einstein

Sasha Joseph

HOMETOWN: Williamsville, NY
MAJOR: Psychology
INTERNSHIP PLACEMENT: Epidemiology and Environmental Health
SUMMER MENTOR: Dr. Kirsten Moysich
SUMMER MENTOR TITLE: Research Professor
DEPARTMENT: Epidemiology and Environmental Health

SUMMER PROJECT: *The Role of Myeloid-Derived Suppressor Cells in Epithelial Ovarian Cancer*

ABSTRACT: Myeloid-derived suppressor cells (MDSC) are immature myeloid cells that impair tumor immunity. Accumulation of these cells is associated with a suppressed immune system, and frequency in blood and tumor samples is positively related to tumor stage. In our research, we will measure MDSC concentrations in epithelial ovarian cancer patients at two time points: diagnosis (prior to treatment) and post-treatment. MDSC levels will be correlated with clinical characteristics and outcomes. If a strong association between MDSC accumulation and treatment outcomes is identified, this information can be used in the clinical setting in identifying most promising candidates for novel immunotherapeutic approaches.

ACADEMIC AND CAREER GOALS: To obtain my Doctor of Medicine degree and open my own practice, hopefully for disadvantaged families.
WORDS TO LIVE BY: "Trust in the Lord with all your heart, and lean not on your own understanding. In all Your ways, acknowledge Him and He will direct your paths." - Proverbs 3:5-6

Coral Lopez-Jimenez

HOMETOWN: Tonawanda, NY
MAJOR: Chemistry
INTERNSHIP PLACEMENT: Microbiology and Immunology
SUMMER MENTOR: Dr. Piero Bianco
SUMMER MENTOR TITLE: Associate Professor
DEPARTMENT: Microbiology and Immunology

SUMMER PROJECT: *Analyzing the intrinsically disordered linker of E. coli SSB protein*
ABSTRACT: The *Escherichia coli* single stranded DNA binding protein (SSB) is critical to DNA metabolism. The intrinsically disordered linker (IDL) is critical to all protein-protein interactions of SSB. Truncating and/or mutating the IDL sequence impairs binding to ssDNA2. SSB binds to RecO in-vivo with high affinity. We are determining the key components of IDL that bind to RecO. We will express the relevant proteins in-vivo in the same cell and purify potential complexes using nickel column chromatography. Complexes to be tested include his-SSB+RecO; his-GFP-linker+RecO as well as various linker mutants. This research will help further our understanding of the interaction between the IDL and a key partner protein.

ACADEMIC AND CAREER GOALS: To obtain an MD/PhD and become a medical scientist, working in a county hospital while collaborating with a university to conduct research.
WORDS TO LIVE BY: "There are not limits, except the one you set for yourself."

Neneyo Mate-Kole

HOMETOWN: Wheatley Heights, NY
MAJOR: Pharmacology & Toxicology
INTERNSHIP PLACEMENT: University At Buffalo School of Public Health and Health Professions
SUMMER MENTOR: Dr. David Dietz
SUMMER MENTOR TITLE: Associate Professor and Interim Chair
DEPARTMENT: Pharmacology & Toxicology

SUMMER PROJECT: *E3 ubiquitin ligase Trim3 regulates cocaine-induced plasticity in the nucleus accumbens*
ABSTRACT: Drug addiction is a chronic brain disease that can develop gradually due to the imprudent utilization of psychoactive substances. These substances, which include heroin and cocaine, utilize dynamic alterations in specific brain regions that are associated with motivation and reward. This includes the nucleus accumbens (NAc). The ubiquitin-proteasome system (UPS) has been shown to be involved in cocaine-induced plasticity due to its impact on protein degradation. Substrates are polyubiquitinated for degradation via E3 ubiqutin ligases. In this research, we examine tripartite motif-containing protein 3 (Trim 3) an E3 ubiquitin ligase, to see its functional importance on a specific substrate (INO 80) in cue-induced cocaine seeking during prolonged withdrawal.

ACADEMIC AND CAREER GOALS: My academic goal is to obtain my M.D. (Doctor of Medicine) and become a physician. My career goal after this is to create a STEP-like program in another state for underrepresented high school students to encourage them to pursue STEM-related fields.
WORDS TO LIVE BY: "Stay far from timid, only make moves when your heart is in it, and live the phrase the sky's the limit." - Christopher Wallace

Lawrence Owusu

HOMETOWN: Inwood, NY
MAJOR: Chemistry
INTERNSHIP PLACEMENT: Chemistry
SUMMER MENTOR: Dr. Janet Morrow
SUMMER MENTOR TITLE: Assistant Professor
DEPARTMENT: Pharmacology and Toxicology

SUMMER PROJECT: *Fluorescence Sensors for Transition Metals in the Biological System*
ABSTRACT: A variety of transition metals are present in the human body, often in trace amounts; iron is the most abundant. These metal ions are mostly present in the catalytic sites of various proteins. With the use of fluorescence sensors that bond to metals, images can be generated to monitor metal levels and their role in biological processes. Our research focuses on the use of a synthetic carbosytril sensor and a synthetic fluorescein fluorophore to detect transition metals in biological processes. Findings will assist in showing how metals play a part in biological processes.

ACADEMIC AND CAREER GOALS: To obtain a Master's degree.
WORDS TO LIVE BY: "Treat every opportunity as if it's the last one you'll get."

Ariana Roman

HOMETOWN: New York, NY
MAJOR: Psychology
INTERNSHIP PLACEMENT: Jacobs School of Medicine and Biomedicine
SUMMER MENTOR: Dr. Rina Eiden, PhD
SUMMER MENTOR TITLE: Senior Research Scientist
DEPARTMENT: Research Institute on Addictions

SUMMER PROJECT: *Cocaine Exposure and Caregiving Status: Effects on Child Behavior Problems*
ABSTRACT: Prenatal cocaine exposure contributes to higher externalizing behaviors throughout childhood. Conceivably, a large proportion of cocaine-exposed children may eventually be placed in foster or kinship care, resulting in exposure to greater environmental risks related to externalizing behaviors. This study will review literature examining how child sex, quality of caregiving, and age of entry into foster care may moderate the association between foster care status and externalizing behaviors among cocaine and non-cocaine exposed children.This research increases our understanding of the relationship between caregiving status and externalizing behaviors, and will help identify a program for future research.

ACADEMIC AND CAREER GOALS: To obtain a PhD in Clinical or Developmental Psychology, work as a clinician or experimentalist, and pursue candidacy for tenure at a university.
WORDS TO LIVE BY: "I am new. History made me. My first language was Spanglish. I was born at the crossroads and I am whole." - Aurora Levins Morales

Christian Romero-Fischer

HOMETOWN: New York, NY
MAJOR: Mechanical Engineering
INTERNSHIP PLACEMENT: Mechanical and Aerospace Engineering
SUMMER MENTOR: Dr. Mostafa Nouh
SUMMER MENTOR TITLE: Assistant Professor
DEPARTMENT: Mechanical and Aerospace Engineering

SUMMER PROJECT: *Thermoacoustics: Piezo-electric Energy Harvesting from Radial Standing Waves*
ABSTRACT: Thermoacoustics has emerged recently as a source of utilizing waste heat. The phenomenon of heat-generated sound is still studied in depth today as a means to produce electricity through an efficient use of piezoelectric materials. The pressure created from sound vibrations accrue a mechanical stress on piezoelectric materials, such as lead zirconate titanate, that forces the also reversible process of internal electrical generation. The radial engine we designed holds up to and follows the same theoretical principles as the radial wave engine described in Jay A. Lightfoot and Patrick Arnott's experimental study. Although the engine is still being developed, we will be running efficiency tests such as the input vs. output power once finally constructed.

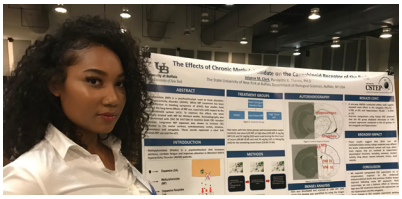
ACADEMIC AND CAREER GOALS: To obtain a Master's degree in Mechanical Engineering and to work as an engineer for an automobile company.
WORDS TO LIVE BY: "Climb the ladder to success escalator style." - Christopher "Notorious B.I.G." Wallace

Godfrey Sakyi

HOMETOWN: Bronx, NY
MAJOR: Electrical Engineering
INTERNSHIP PLACEMENT: Electrical Engineering
SUMMER MENTOR: Dr. Jonathan Bird
SUMMER MENTOR TITLE: Professor
DEPARTMENT: Electrical Engineering

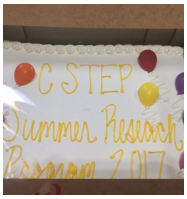
SUMMER PROJECT: *Using Raman Spectroscopy to Identify and Analysis Graphene and Other Atomically-thin Materials*
ABSTRACT: Graphene is a single layer of pure carbon atoms that are strongly bonded together. Previous works have demonstrated graphene to be 200 times stronger than steel, yet very flexible. It has also been proven to be a good heat and electrical conductive material. Despite its unique properties, developing high quality graphene for commercial use is a very expensive and complex process. This research will utilize Raman spectroscopy to characterize and identify the atomic structure of graphene. I will also identify and characterize other atomically-thin materials such as Cobalt (II) oxide (CoO), Cobalt (III) Oxide (Co_3O_4), and Aluminum Oxide (Al_20_3).

ACADEMIC AND CAREER GOALS: To obtain my bachelor's degree in Electrical Engineering and secure a positon as a wireless telecommunication technician with a great telecommunication company.
WORDS TO LIVE BY: "It is better to walk alone, than with a crowd going in the wrong direction."



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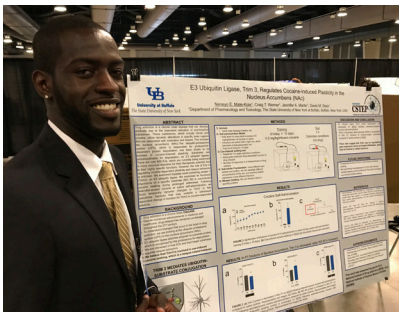
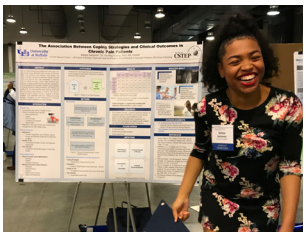
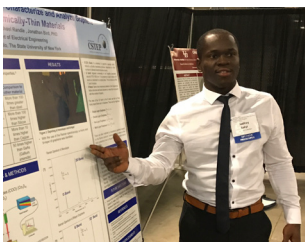
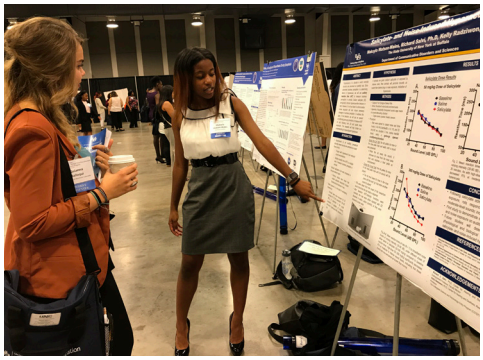
Summer Research

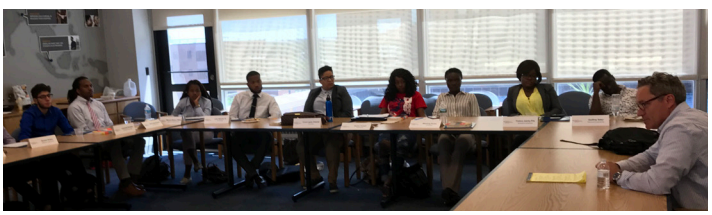



DARIEN LAKE



TICKETS


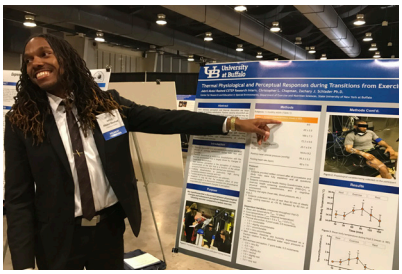





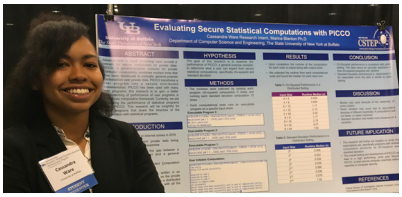
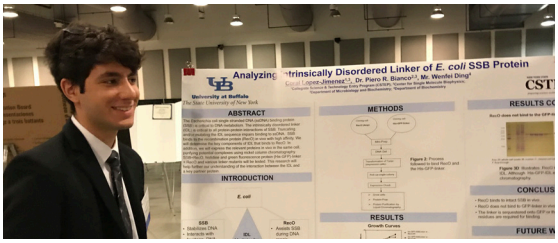





University at Buffalo






Evaluating Secure Statistical Computations with PICCO

Analyzing
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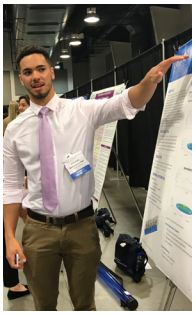
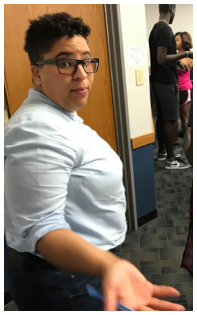
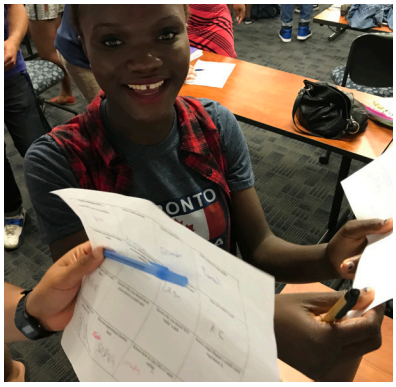
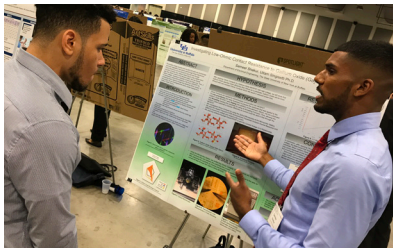
University at Buffalo
ABSTRACT
INTRODUCTION
METHODS
RESULTS
CONCLUSION
FUTURE W






RESEARCH INTERNSHIP SCHOLARS

Adline Sarpong

HOMETOWN: Mount Vernon, NY
MAJOR: Biological Sciences
INTERNSHIP PLACEMENT: Behavioral Neuropharmacology
SUMMER MENTOR: Dr. Peter Thanos
SUMMER MENTOR TITLE: Research Scientist
DEPARTMENT: Research Institute on Addictions

SUMMER PROJECT: *Chronic Effects of Antipsychotic Medication on the Brain's Glutamate System*
ABSTRACT: Antipsychotic drugs are a primary use for human neuropsychiatric conditions such as schizophrenia. Haloperidol and olanzapine, first and second generation antipsychotic agents, have been proven effective against the positive and negative symptoms of schizophrenia. However, the long-term use of these drugs is unknown regarding its affects towards the brain's glutamate system. Autoradiography using [3H] MK-801 was performed to examine brain NMDA receptor expression. Long-term administration of the antipsychotics olanzapine and haloperidol was found to decrease expression of NMDA receptors in the hippocampus, an area associated with learning and memory. The functionality of these receptors will be examined with further research.

ACADEMIC AND CAREER GOALS: To attend medical school and pursue a career in pediatric medicine.
WORDS TO LIVE BY: "Raise your words, not your voice. It is rain that grows flowers, not thunder." - Jalal ad-Din Rumi

Sameer Shakur

HOMETOWN: Far Rockaway, NY
MAJOR: Electrical Engineering
INTERNSHIP PLACEMENT: Electrical Engineering
SUMMER MENTOR: Dr. Uttam Singisetti
SUMMER MENTOR TITLE: Assistant Professor
DEPARTMENT: Electrical Engineering

SUMMER PROJECT: *Investigating Low-Ohmic Contact Resistance to Gallium Oxide (Ga_2O_3) MOSFETS*
ABSTRACT: Renewable energy sources such as wind and solar are increasingly used and integrated in the electric grid through Power Electronics. Power Electronics can be reduced in size and cost through reduction of power loss. Gallium Oxide (Ga_2O_3) has a higher band gap than Silicon (used in most devices today), and can handle higher voltages, resulting in reduction of size and lower cost. Thus, it is necessary to reduce the resistance in the Ga_2O_3 MOSFET by increasing power capacity through low resistance ohmic contact. In this project, we are investigating low-ohmic contact resistance to Gallium Oxide (Ga_2O_3).

ACADEMIC AND CAREER GOALS: My academic goals are to achieve a Bachelor of Science in Electrical Engineering. My career goals are to design a product that no one has ever thought of before and become a CEO of my own company.
WORDS TO LIVE BY: "Good, better, best. Never let it rest. Until your good is better and your better is best." - Tim Duncan

Tyree Singleton

HOMETOWN: Brooklyn, NY
MAJOR: Industrial Engineering
INTERNSHIP PLACEMENT: Industrial and Systems Engineering
SUMMER MENTOR: Dr. Jun Zhuang
SUMMER MENTOR TITLE: Associate Professor
DEPARTMENT: Industrial and Systems Engineering

SUMMER PROJECT: *Analysis of Retweet Distribution and Information Sharing on Twitter*
ABSTRACT: Twitter has been widely used by both the general public and official agents for crisis communication and disaster management. Dissemination speed, distribution, and coverage of crisis information on Twitter are important issues, but have not been thoroughly studied. This research fills this gap by analyzing the dissemination speed, distribution of dissemination time, and the information coverage of tweets during disasters. Tweets posted before and during Hurricane Mathew and Louisiana floods in 2016 were collected respectively for analysis. Results show that the dissemination time of tweets is best fitted with the power law distribution. Also, Disaster Relief Agencies have retweeters that frequently distribute information during disasters.

ACADEMIC AND CAREER GOALS: I want to obtain a Master's in Industrial Engineering and start my own business.
WORDS TO LIVE BY: "A ship is safe in harbor, but that's not what ships are for." - William Shedd

Ashley Solomon

HOMETOWN: Bronx, NY
MAJOR: Intended Nursing
INTERNSHIP PLACEMENT: Nursing
SUMMER MENTOR: Dr. Yu-Ping Chang
SUMMER MENTOR TITLE: Assistant Professor
DEPARTMENT: Nursing

SUMMER PROJECT: *The Association Between Coping Strategies and Clinical Outcomes in Chronic Pain Patients*
ABSTRACT: Over 100 million Americans are afflicted with chronic pain. A general comprehensive method to treat all chronic pain doesn't exist. Pain management is important for enhanced clinical outcomes. Current clinical treatment lacks emphasis on coping strategies that increase pain management. This study explores the association between coping strategies and clinical outcomes including depression, pain intensity, and quality of life. This cross-sectional design analyzes survey data from 100 patients using regression analysis. We expect to see an increase in quality of life and a decrease in all other variables. If the hypothesis holds true, findings will provide pertinent information for the development of improved interventions with an emphasis on coping strategies.

ACADEMIC AND CAREER GOALS: My academic and career goals are to become a Nurse Practitioner with a Master's degree.
WORDS TO LIVE BY: "Stay ready to keep from getting ready."

Cassandra Ware

HOMETOWN: Buffalo, NY
MAJOR: Computer Engineering
INTERNSHIP PLACEMENT: Computer Engineering
SUMMER MENTOR: Dr. Marina Blanton
SUMMER MENTOR TITLE: Associate Professor
DEPARTMENT: Computer Science and Engineering

SUMMER PROJECT: *Evaluating Secure Statistical Computations with PICCO*
ABSTRACT: Advancements in cloud computing have revived a concern for secure computation on private data. PICCO, a general-purpose compiler for private distributed computation, combines multiple tools that have been developed to evaluate general-purpose functionalities over private data. PICCO transforms a user program into a secure distributed implementation. PICCO has been used with many user programs, this research is to gain a better understanding of performance of user programs in this secure computation framework. Currently, we are evaluating the performance of statistical programs using PICCO. This research will be insightful for other programs that share the structure of the computation with statistical programs.

ACADEMIC AND CAREER GOALS: I plan to go into industry and enter into a Master's program, delving further into research.
WORDS TO LIVE BY: "You have to work for the things you want in life."

Makayla Watson-Wales

HOMETOWN: Amherst, NY
MAJOR: Speech & Hearing Sciences
INTERNSHIP PLACEMENT: Communicative Disorders and Sciences
SUMMER MENTOR: Dr. Richard Salvi
SUMMER MENTOR TITLE: Adjunct Professor
DEPARTMENT: Communicative Disorders and Sciences

SUMMER PROJECT: *Noise-Induced Hyperacusis*
ABSTRACT: Hyperacusis is a disorder in which everyday sounds are perceived as painfully loud. Since abnormal loudness perception is a determining factor in hyperacusis, we will use auditory reaction time (ART) to measure loudness perception in animals. Previous studies have shown that sodium salicylate temporarily induces hyperacusis-like behavior in rats. However, that study failed to assess rats following noise exposure, the more clinincally relevant way of inducing hyperacusis. In this study, we will use an operant conditioning go/no-go procedure to measure ART in rats following both salicylate and acute noise exposure. This research will help further our understanding of noise-induced hyperacusis.

ACADEMIC AND CAREER GOALS: My goal is to get my Masters in Speech Therapy so that I can practice as a Speech Language Pathologist. I also will get my Doctor of Audiology degree, so that I can practice as an Audiologist. I also want to obtain my PhD in Audiology and pursue research. Ultimately, I would like to open my own practice, while running a research lab.
WORDS TO LIVE BY: "Just do it." - Nike motto

Daisy Wilson

HOMETOWN: Staten Island, NY
MAJOR: Chemical Engineering
INTERNSHIP PLACEMENT: Chemical and Biological Engineering
SUMMER MENTOR: Dr. Marina Tsianou
SUMMER MENTOR TITLE: Assistant Professor
DEPARTMENT: Chemical and Biological Engineering

SUMMER PROJECT: *Utilizing the Constant Composition Method to Investigate Calcium Oxalate Crystal Nucleation and Growth*

ABSTRACT: Kidney stone disease is often associated with an increase of mineral supersaturation in the body and lack of natural inhibitory molecules. The objective of this work is to investigate the effects of additives on the crystallization of calcium oxalate, the primary mineral constituent of kidney stones. We study the kinetics of calcium oxalate crystallization in aqueous solutions by employing a constant composition potentiostatic technique and we evaluate the effects of supersaturation, temperature and additives. These studies offer a better understanding of the calcium oxalate crystallization and provide insights on the mechanism of renal stone formation and inhibition.

ACADEMIC AND CAREER GOALS: To obtain my MBA and start my own business.
WORDS TO LIVE BY: "We go hard. In everything we do, we're going to accomplish our victory and our goal. If it takes a day, a year, or 20 years, we're going to win. I haven't taken a loss because everything I've done has been a working process to win." - DJ Khaled

The 2017 CSTEP Summer Research Program expresses thanks & appreciation to the following workshop & tour facilitators for their contributions & support:

STEPHANIE ADAMS, ESQ.
GENERAL COUNSEL, NIAGARA UNIVERSITY

DR. JASON ADSIT
DEAN, SCHOOL OF ARTS, SCIENCES, AND EDUCATION, D'YOUVILLE COLLEGE

DR. BILL BAUER
DIRECTOR, HAUPTMAN-WOODWARD INSTITUTE (HWI)

DAVID BERTUCA
MAP LIBRARIAN,
SCIENCE AND ENGINEERING LIBRARY

DR. KATE BEZRUKOVA
ASSOCIATE PROFESSOR,
ORGANIZATION AND HUMAN RESOURCES,
SCHOOL OF MANAGEMENT

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ED BRODKA
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TERRI BUDEK
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CO-DIRECTOR,
UNDERGRADUATE EDUCATION,
ELECTRICAL ENGINEERING

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ASSISTANT DIRECTOR,
STUDENT ENGAGEMENT

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DIRECTOR, FELLOWSHIPS & SCHOLARSHIPS,
OFFICE OF THE GRADUATE SCHOOL

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EXPERIENTIAL LEARNING COORDINATOR,
STUDENT LIFE

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ASSISTANT PROFESSOR,
BIOMEDICAL ENGINEERING,
SAN JOSE STATE UNIVERSITY

ERIK EUSTICE
MARKETING CAPTAIN, OF THE SEA, LLC

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PROFESSOR, DEPARTMENT OF COMMUNICATION

DAVID GILLES-THOMAS
ASSOCIATE DIRECTOR, CLINICAL PSYCHOLOGIST, COUNSELING SERVICES

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ATA PRACTITIONER, SCHOOL OF ENGINEERING AND APPLIED SCIENCE

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ADMINISTRATIVE ASSISTANT,
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RESEARCH COMPLIANCE

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ASSISTANT DEAN, DIVISION OF EDUCATIONAL AFFAIRS, ROSWELL PARK CANCER INSTITUTE

DAWN LONGUIL
GRADUATE PROGRAMS MANAGER (WNY),
KAPLAN

DR. AMY MARSCHILOK
RESEARCH ASSOCIATE PROFESSOR,
STONY BROOK UNIVERSITY

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LEADERSHIP PROGRAMMING COORDINATOR,
OFFICE OF STUDENT ENGAGEMENT

LIA MUNOZ
INSTRUCTIONAL SUPPORT ASSISTANT,
CAMPUS LIFE

TOM MURDOCK
MANAGER, UB INCUBATOR NETWORK

DR. CELESTE OWENS
CLINICAL PSYCHOLOGIST, AUTHOR

WAYNE PORTERFIELD
ASSISTANT DIRECTOR, CAREER SERVICES

BRITANI PRUNER
UB LINKED COORDINATOR

NANCY SCHILLER
ENGINEERING LIBRARIAN,
SCIENCE AND ENGINEERING LIBRARY

CAROL SCHMEIDLER
MANAGER, UNIVERSITY FACILITIES
ENVIRONMENT, HEALTH & SAFETY SERVICES

LIZ SNIDER
ASSOCIATE DIRECTOR/CLINICAL DIRECTOR,
COUNSELING CENTER

EZRA STALEY
PAST ASSISTANT VICE PRESIDENT,
M&T BANK GOVERNMENTAL AFFAIRS

DR. CLAYTON STEEN
VICE PRESIDENT FOR ENROLLMENT
MANAGEMENT, SUNY EMPIRE STATE COLLEGE

DR. ANDREW STOTT
VICE PROVOST AND
DEAN OF UNDERGRADUATE EDUCATION

DR. CHRISTINE TINNESZ
ASSOCIATE DIRECTOR, METHODS OF INQUIRY

TIMOTHY TRYJANKOWSKI
DIRECTOR, CENTER FOR UNDERGRADUATE
RESEARCH & CREATIVE ACTIVITIES

JIM ULRICH
PHOTOGRAPHER

CATE VIVACQUA
CAREER PLANNING AND DEVELOPMENT
ASSOCIATE, CAREER SERVICES

OLIVIA WEST
MONEY MANAGEMENT,
WEST ADVISORY GROUP

CHRISTINE WINGO
PAST CSTEP AB PRESIDENT

LINDA ZILGME
DIRECTOR, ACADEMIC RESOURCE CENTER

THANK YOU to our 2017 CSTEP Summer Syposium Judges!

NAME	DEPARTMENT
DR. JESSY ALEXANDER	Dept. of Medicine, Jacobs School of Medicine & Biomedical Sciences
DR. CEMAL BASARAN	Dept. of Civil Engineering
DR. GLENNA BETT	Dept. of Obstetrics and Gynecology, Jacobs School of Medicine & Biomedical Sciences
DR. MARY BISSON	Dept. of Biological Sciences
KENDRA CADOGAN	Academic Advisor, Ackers Scholars Program
MR. AKIN CAULCRICK	CSTEP Alumnus & Dupont, Manufacturing Process Engineering
DR. ROSEMARY DZIAK	Oral Biology, UB School of Dental Medicine
MR. PABLO FALCA	Business Executive
DR. JOHANNES HACHMANN	Dept. of Chemical & Biological Engineering
DR. MARK HICAR, MD, PHD	Pediatrics, Jacobs School of Medicine & Biomedical Sciences, Clinical Translational Research Center
DR. BLAIR JOHNSON	Dept. of Exercise & Nutrition
MR. LEO KAYEMBE	UB Alumni, Electrical Engineer
DR. JOBAIDUR KHAN	Dept. of Mechanical Engineering
DR. ELINI KYRIAKIDOU	Dept. of Chemical & Biological Engineering
DR. XIAOZHUO LIU	Dept. of Biological Sciences (Post Doc)
DR. SUPRIYA MAHAJAN	Dept. of Medicine, Jacobs School of Medicine & Biomedical Sciences
DR. HOUTAN MOSHIRI	Dept. of Biological Science (Post Doc)
MR. THOMAS MURDOCK	Manager, UB Incubator Network
DR. HEATHER OROM	Dept. of Community Health and Health Behavior, School of Public Health & Health Professions
DR. ATRI RUDRA	Dept. of Computer Science & Engineering
MS. ANNIKA SAMUELS	CSTEP Alumna & National Fuel, Industrial Engineering
DR. JONGMIN SHIM	Dept. of Civil, Structural & Environmental Engineering
DR. FILIP STEFANOVIC	Dept. of Biomedical Engineering
DR. JING WANG	Dept. of Biomedical Engineering
DR. NOEMI WAIGHT	Graduate School of Education

WHERE ARE THEY NOW?
An Update On Previous CSTEP Summer Research Interns

First Name	Last Name	Summer Research Prog. Year	UB Major(s)	Where are they now?	What's their title?
Naza	Abdelrahman	2016	Biomedical Sciences	University at Buffalo	Graduate program in Biological Sciences
Frank	Acheampong	2007	Pharmacy	UMass Memorial Medical Center	Clinical Pharmacist - Informatics
Bruck	Adam	2010	Mathematics	IPRO, NYS Department of Health, Office of Quality and Patient Safety, Bureau of Health Informatics	Data Analyst
Priscilla	Adjei-Baffour	2010	Pharmacy		Pharmacy Manager
Geraldene	Agbasionwe	2007	Pre-Pharmacy	Live Good Pharmacy INC	Supervising Pharmacist
Chiamaka	Agbasionwe	2010		Biological Deparment	Research Intern
Jonathan	Ahmedu	2013	Mechanical & Aerospace Engineering	Kohasa Engineering Company Ltd. in Port Harcourt, Nigeria; Cornell University	Pipeline Engineer; Masters student
Ali	Al Qaraghuli	2016	Electrical Engineering	Northrop Grumman Space Park (Los Angeles, CA)	Systems Engineer
Andrew	Alegria	2016	Mechanical Engineering	University of Purdue, CCEFP REU Program	Research Intern
Summar	Amin	2013	Biomedical Sciences	University at Buffalo Dental School	Dental Student
Uzoamaka	Aniagba	2014	Biological Sciences	Indiana University School of Medicine	Medical Student
Christina	Aponte	2015	Biomedical Sciences	Nickel City Dentistry	Dental Intern
Barituziga	Banuna	2016	Chemical Engineering	University at Buffalo	Continuing student
Warren	Barrett	2014	Chemistry	University at Buffalo School of Pharmacy	Pharmacy Student
Leatrice	Bennett	2014	Biological Sciences	University at Buffalo	Graduate student in Community Health and Health Behavior
Sharece	Blake	2012	Electrical Engineering	Roswell Park Cancer Institute	Research Associate
Kwame	Boakye-Yiadom	2015	Biological Sciences	University at Buffalo School of Pharmacy	Pharmacy Student

First Name	Last Name	Summer Research Prog. Year	UB Major(s)	Where are they now?	What's their title?
Kelly	Boamah	2015	Pharmacology & Toxicology	D'Youville School of Pharmacy	Pharmacy Student
David	Bratton	2014	Biological Sciences	Jacobs School of Medicine & Biomedical School	Medical Student
John	Brito	2013	Biological Sciences	Columbia University	Graduate Student
Ernestine	Brown	2007	Nursing	University of Rochester Medical Center	Nurse Practitioner
Kevin	Bryant	2008	Electrical Engineering, MS	Bechtel Plant Machinery, Inc	Electrical Engineering Project Manager
Joaquin	Canay	2015	Biotechnology	Thermo Fisher Scientific	
Kevin	Carpio	2014	Mechanical & Aerospace Engineering	Northrop Grumman (California)	Aerospace Engineer (Palmdale, California)
Keelan	Chu For	2011	MAE	University at Buffalo	Graduate Research Assistant
Nicholas	Costable	2013	Biological Sciences	Jacobs School of Medicine & Biomedical School	Medical Student
Emmanuel	Cott	2016	Computer Sciences, MS	University at Buffalo	Graduate Student
Belle	Cunningham	2011	Electrical Engineering	Pepsi	Project Supervisor
Nuris	De La Cruz	2012		Columbia Presbyterian	Psychological Counseling
Mohamed	Diaby	2015	Civil Engineering & Mathematics	Whiting-Turner Contracting Company (Baltimore,MD); UB Structural Engineering	Intern; Graduate Student
Joseph	Diehl	2010	Civil Engineering, MS	Parsons	Bridge Engineer, Manager
Keith	Dolcy	2012	Pharmacy, PharmD	San Francisco, CA	Specialty Pharmacist
Jennifer Lynn	Donato	2015	Biotechnology	Thermo Fisher Scientific	Research & Development Intern II
Ian	Duncan	2010	Mechanical Engineering	Suspension & Steering Dynamics at Honda R&D	Vehicle Performance Engineer
Brandon	Durant	2012		University at Buffalo	Graduate Student
Dr. Corie	Ellison	2007	Pharmacology & Toxiology	Procter & Gamble	Toxicologist

First Name	Last Name	Summer Research Prog. Year	UB Major(s)	Where are they now?	What's their title?
Tanahiry	Escamilla	2016	Chemical Engineering	University at Buffalo	Continuing student
Alejandro	Falca	2016	Medicinal Chemistry	Watson Lab	Research intern
Moses	Farley	2007	Electrical Engineering	Pennsylvania Power and Light Corporation	Distribution Design & Standards Engineer
Jonathan	Feliciano	2011	Psychology	Memorial Sloan Kettering Cancer Center	Research Analyst
Robert	Ferguson	2014	Biomedical Sciences	University at Buffalo Dental School	Dental Student
Jarrett	Franklin	2016	Electrical Engineering	University at Buffalo School of Engineering	Graduate Student
Daivon	Garrick	2008	Pharmacology & Toxicology	M&T Bank	Credit Risk Analyst
Tavia	Garvey	2011	Pharmacy	Wegman Food Market	Pharmarcy Technician
Shawn	Gibson	2015	Biomedical Sciences	University at Buffalo	Schomburg Fellow; graduate student
Paul	Glenn	2011	Engineering Physics; Electrical Engineering	Brookhaven National Laboratory	Research Intern
Chris	Gnam	2016	Mechanical Engineering	NASA's Johnson Space Center (Houston, TX)	Simulations Development Intern
Isabel	Gonzalez	2011	Civil Engineering, MS	NYC Department of Design and Construction	Project Engineer, Fabrication Engineer
Johnathan	Goodrum	2013	Electrical Engineering	Amazon	Software Engineer
John	Habert	2013	Biological Sciences	United States Marine Corps	
Marda	Hailu	2008	Biological Sciences	Western New England University College of Pharmacy	Pharmacy Student
Ron	Heichman	2010	Mechanical & Aerospace Engineering	University at Buffalo	Mechanical & Aerospace Engineering PhD Student
Dominique	Hickson	2016	Computer Engineering	University at Buffalo	Graduate School of Computer Science & Engineering
Anna	Huang	2016	Social Sciences Interdisciplinary	NYC	Applying to graduate school programs
Richard	Hunte	2011	Biomedical Sciences, PhD	Florida	Doctoral Student & Research Assistant
Jessica	Isaac	2008	Pharmacy	Fidelis Care NY	Medicare Clinical Pharmacist

First Name	Last Name	Summer Research Prog. Year	UB Major(s)	Where are they now?	What's their title?
Aggrey	Jacobs	2008	Electrical Engineering	UB School of Engineering	Doctoral Student
Anthony	Jones	2008	Biomedical Sciences; Neuroscience PhD	Roswell Park Cancer Institute	Doctoral Student
Jordan	Jorgensen	2011	Electrical Engineering	Global Foundries	Advanced Manufacturing Engineer
Corinna	Joseph	2009	Industrial Engineering	Bechtel Marine Propulsion Corporation (Bechtel Plant Machinery Inc.)	Engineer
Akunne	Kanu	2014	Pharmacology & Toxicology	University at Albany	Graduate Student, Public Health, Epidemiology
Mohammed	Karim	2016	Biomedical Sciences	Buffalo, NY	Applying to medical school program
Jalisa	Kelly	2016	Biomedical Sciences	University at Buffalo	Medical Student
Muhammad	Khan	2013	Mechanical & Aerospace Engineering	Northrop Grumman	Reliability Engineer (Florida)
Gael	Lamothe	2011	Civil Engineering	Hunter Roberts Construction Group	Assistant Project Manager
Dr. Richard	Linares	2007	Mechanical & Aerospace Engineering	University of Minnesota	Assistant Professor
Kaytlan	LoCicero	2016	Nursing/ Social Sciences Interdisciplinary	University at Buffalo	Continuing studies
James	Lopez	2013	Psychology	Power U Center for Social Change (Miami, FL)	Executive Director
Anthony	Lopez	2016	Biology/Biological Sciences	University at Buffalo	Graduate program in Biological Sciences
David	Louis	2007	Psychology	Bedford Flatbush Chiropractic	Project Director
Jean	Mandat	2009	Doctor of Osteopathic Medicine	Community Health of South Florida, Inc.	Medical Student
Jasmine	May	2009	Medicinal Chemistry	Northwestern University Feinberg School of Medicine	Medical Student
Micah	McCurty	2008	Exercise Science		DPT
Ayo	McKenzie	2013	Chemistry	Temple University	Pharmacy Student
Jacob	Milling	2014		University at Buffalo	Medical Student

First Name	Last Name	Summer Research Prog. Year	UB Major(s)	Where are they now?	What's their title?
Ashley	Narain	2012	Pre-Pharmacy	University of Bridgeport College of Chiropractic	Doctor of Chiropractic Medicine Student
Jillian	Naylor	2016	Biology/Biological Sciences	Applying to dental school	Dental Assistant
Hieu	Nguyen	2008	Biochemistry	UB Dental School	Dental Student
Thao	Nguyen	2010	Electrical Engineering	Catholic Family Center	English-Vietnamese Interpreter
Aaron	Nimako	2016	Biomedical Sciences	University at Buffalo	Graduate program in Biological Sciences
Lee-Mary	Njoku	2016	Biomedical Sciences	University at Buffalo	Continuing Student
Millicent	Nwankwo	2011	Biological Sciences	Shire Pharmaceuticals	R&D Global Health Economic, Outcomes Research, Epidemiology
Andrews	Obeng-Ayarkwah	2013	Pharmaceutical Sciences	University at Buffalo School of Pharmacy	Pharmacy Student
Damian	Ogbonna	2011	Computer Engineering	Computer Science and Engineering	Graduate Student - University of Buffalo
Peter	Okorozo	2015	Pharmaceutical Sciences	University at Buffalo School of Pharmacy; CVS	Pharmacy Student; Pharmacy Tech
Ndidiamaka	Okorozo	2016	Biomedical Sciences	Applying to medical school	
Folake	Olaleye	2015	Biological Sciences	D'Youville School of Pharmacy	Pharmacy Student
Abas	Omar	2014	Biological Sciences	Roswell Park Cancer Institute	Clinical Observation Dental Maxillofacial Department
Oluwatosin	Oniyide	2015	Biological Sciences	University at Buffalo	Applying to medical school programs
Iyamu	Osazuwa	2016	Electrical Engineering	University at Buffalo School of Engineering	Graduate Student
Wilberforce	Osei	2008	Chemistry & Pharmacology		Pharmacist
Francis	Perez	2008	Chemical/Biological Engineering, MS		Chemical Engineer
Adonis	Pimienta-Penalver	2010	Aerospace Engineering	Aerospace Engineering, University at Buffalo	Doctoral Student
Rasheen	Powell	2015	Pharmacology & Toxicology	University at Buffalo	PhD Student - Pharmacology & Toxicology
Austin	Price	2014	Biological Sciences	University at Buffalo	Medical Student

First Name	Last Name	Summer Research Prog. Year	UB Major(s)	Where are they now?	What's their title?
Valeria	Prieto	2015	Civil Engineering	University at Buffalo	Master's degree in Civil Engineering
Zakiya	Rhodie	2015	Pharmacology and Toxicology	University at Buffalo School of Pharmacy	Pharmacy Student
Lucas	Rugar	2016	Civil Engineering	Columbia University	Graduate student in Engineering
I'Yanna	Scott	2015	Biological Sciences	University at Buffalo	Graduate program in Biological Sciences
Frank	Segui	2012	Electrical Engineering	Western Michigan University	Graduate Student, Electrical Engineering
Timothy	Semon	2014	Biomedical Sciences	Marquette University (Wisconsin)	Dental Student
Michael	Singletary	2013	Electrical Engineering	University at Buffalo	Graduate Student - Electrical Engineering; United States Army
Souleymane	Sow	2008	Aerospace Engineering	Completed MS in Aerospace Engineering from Purdue University	Aerospace Engineer
Hamlet	Spencer	2014	Mechanical Engineering, MS	University at Buffalo	Graduate Student - Mechanical Engineering
Diamile	Tavarez	2016	Biological Sciences	University at Buffalo	Continuing student
Shiny	Thomas	2007	Pharmacy	CVS Pharmacy; Touro College	Completed PharmD
Alexandria	Trujillo	2013	Biological Sciences	University at Buffalo	PhD Student - Pharmacology & Toxicology
Douglas	Tsahey	2016	Biomedical Sciences	University at Buffalo	Graduate program in Biological Sciences
Antonio	Upia	2010	Electrical Engineering	Mass Electric Construction Co.	Electrical Field Engineer
Bethany	Walton	2014	English	University at Buffalo	Graduate Student - School of Social Work
Christopher	Williams	2009	Electrical Engineering	Lam Research Corp. / IBM Corp.	Field Service Engineer II, (FSE)
Franklin	Yeboah	2008	Medical Technology	Massachusetts College of Pharmacy and Health Sciences	Grad Intern with RiteAid Pharmacy
Theresa	Yera	2012	Anthropology, Pre-Med	Dept. of Sociology, The Maxwell School of Syracuse University	Teaching Assistant
Yun	Zheng	2012	Medicinal Chemistry	Albany Molecular Research Inc. (AMRI)	Research Scientist I

CSTEP 2017 SUMMER RESEARCH PROGRAM STAFF

Shanna Crump-Owens
CSTEP Director

Patricia "Tia" Greer
CSTEP Administrative Assistant

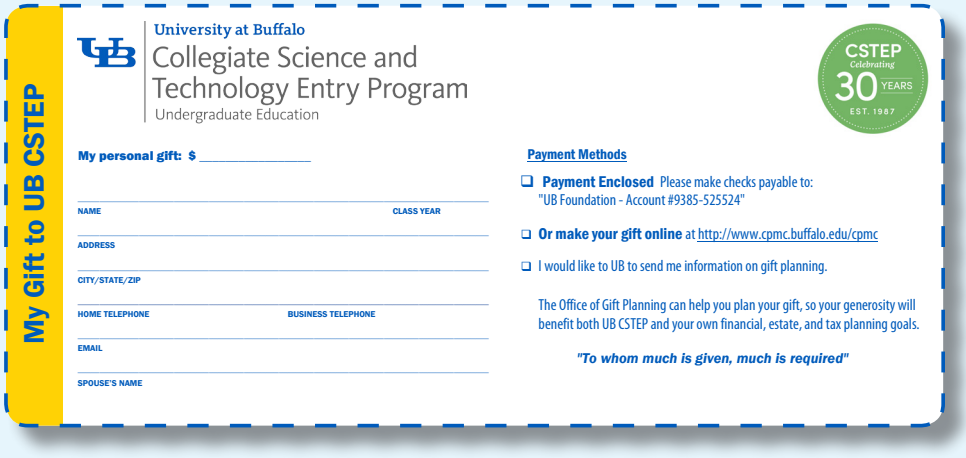
Lavone Rodolph
Research Methods Course Instructor
Doctoral Student, Computer Science & Engineering

Graduate Assistants
Rebecca Borowski
Karole Collier
Nelson Rivera

Student Assistants
Dominique Hickson

Alumni Volunteer
Christine Wingo (Past CSTEP Advisory Board President)

Feel free to fill out one of our pledge cards found on your table!



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- 3 MBA LeaderCORE *
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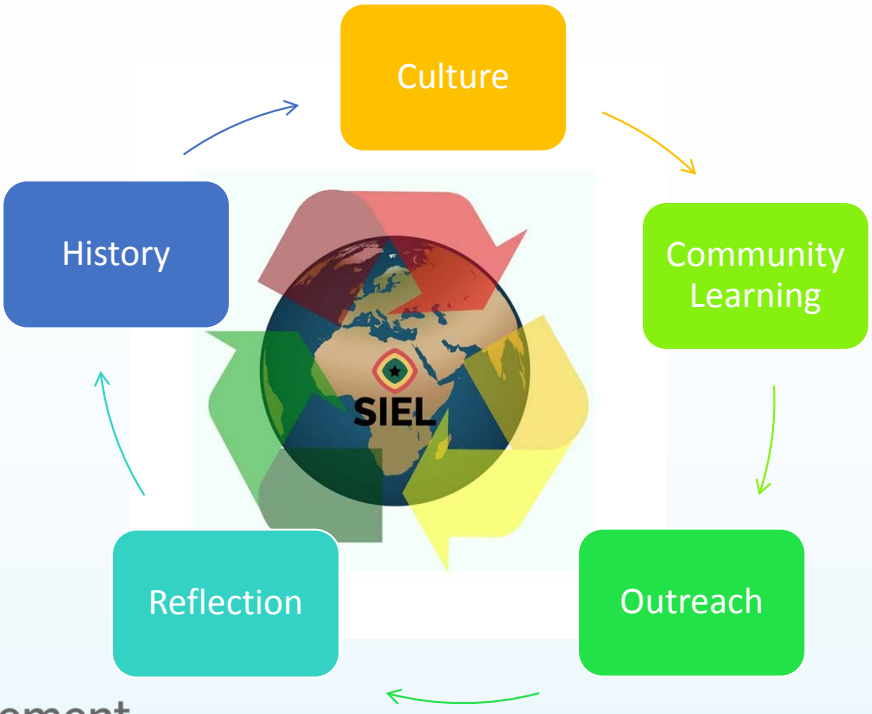
- 1 or 2 MPH /UP Graduate Mentors

* Already identified



Limited space available for SOM Undergraduates: Contact
Dorothy Siaw-Asamoah, PhD
dasamoah@buffalo.edu

University at Buffalo
School of Management

- 4 Interactive Modules
- Mandatory Research Project (Deal Expo)
- 2-3 Pre- trip workshops (fall semester)
- 1-2 Post-trip workshops (spring semester)
- Interview Required
- Final Decision Deadline: 9/1/17
- Cost: (*including air-tickets, 3 credit UB tuition & travel insurance, boarding & lodging, etc*)

$500 scholarships are available from CSTEP via the CPMC Experiential Scholarship Award. This year's winner was Jillian Naylor '17.

University at Buffalo The State University of New York

2017 CSTEP SUMMER RESEARCH INTERNS

2017 CSTEP Research Interns field trip to Hauptman-Woodward Institute (HWI) with Dr. Bill Bauer

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COLLEGIATE SCIENCE & TECHNOLOGY ENTRY PROGRAM
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