



**2<sup>ND</sup> ANNUAL**

**QUEENS COLLEGE**

**UNDERGRADUATE  
RESEARCH OPPORTUNITIES  
SHOWCASE**

**Wednesday, September 28, 2016**



**OUGR** Queens College  
Office of Undergraduate Research

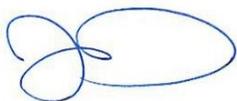
# **WELCOME TO THE 2ND ANNUAL QUEENS COLLEGE UNDERGRADUATE RESEARCH OPPORTUNITIES SHOWCASE**

**SCIENCE BUILDING ATRIUM  
Wednesday September 18<sup>th</sup>, 2016**

Dear Student,

Research is the scholarly pursuit of new knowledge, discovery, or creative activity in an area with the goal of advancing that area's frontiers or boundaries. Engaging in research as an undergraduate can be a transformative experience. Students receive one-on-one mentoring from a professor, hand-on experience in their field, exposure to cutting edge techniques, and a competitive advantage in post-college employment and graduate or professional school applications. Ideally, research experiences would be available for every undergraduate student that desires one. In practice, finding a research position takes considerable effort, persistence, and even a bit of luck. We started the Office of Undergraduate Research to help Queens College students find research opportunities, and to make the most of the opportunities they receive. The Office of Undergraduate Research hosts two events each year. In the fall, we host the Undergraduate Research Opportunities Showcase. Here faculty present on the research ongoing in their laboratories and talk to students about getting involved. In addition, student organizations are on hand to talk about what their groups have to offer. In the spring, students have an opportunity to present their own research at the Undergraduate Research Day. We hope to see you at these events!

Sincerely,



Dr. John J. Dennehy, Director  
Office of Undergraduate Research  
Queens College  
[john.dennehy@qc.cuny.edu](mailto:john.dennehy@qc.cuny.edu)  
<http://ougr.qc.cuny.edu/>

## **Schedule**

### **11:00am Welcome Message from Dean Klotz**

#### **Lightning Talk Schedule**

- 12:15 Dr. Daniel Weinstein (Biology MA Program)
- 12:22 Dr. Azriel Genack (Physics)
- 12:29 Dr. Andrea Li (Psychology)
- 12:36 Dr. Larry Liebovitch (Physics and Psychology)
- 12:43 Ms. Katarina Weingartner (Neuroscience Club)
- 12:50 Dr. Elizabeth Riina (Family, Nutrition and Exercise Sciences)
- 12:57 Dr. Keitaro Yukawa (Computer Science)

#### **Posters (11am - 1:30pm)**

1. Dr. John Dennehy (Biology)
2. Dr. Larry Liebovitch (Physics and Psychology)
3. Dr. Richard Bodnar (Psychology)
4. Dr. Larissa Swedell (Anthropology)
5. Dr. Keitaro Yukawa (Computer Science)
6. Dr. Sung Eun Choi (Family, Nutrition and Exercise Sciences)
7. Dr. Cathy Savage-Dunn (Biology)
8. Dr. Cathy Savage-Dunn (Biology)
9. Dr. Alicia Melendez (Biology)
10. Dr. Andrea Li (Psychology)
11. Dr. Azriel Genack (Physics)
12. Dr. Uri Samuni (Chemistry and Biochemistry)
13. Dr. Jose Anadon (Biology)
14. Dr. Zahra Zakeri (Biology)
15. Dr. Robert Engel (Chemistry and Biochemistry)
16. Dr. Cherice Evans (Chemistry and Biochemistry)
17. Biology Master of Arts program
18. Honors in Mathematics and Natural Sciences program
19. Association for Computing Machinery - Queens College Chapter
20. Biology Honors Society
21. Minority Association of Pre-Medical Students
22. Office of Undergraduate Research
23. Maximizing Access to Research Careers
24. Science Organization of Minority Students
25. Sigma Xi: The Scientific Research Society
26. NERA MedPrep Program
27. Summer Public Health Scholars Program

## **Faculty Research Interests**

### **Dr. Zahra Zakeri (Biology Department)**

[zahra\\_zakeri@qc.cuny.edu](mailto:zahra_zakeri@qc.cuny.edu)

#### **Field of Research**

Programmed cell death, apoptosis and autophagy

Our basic interest is in cellular response mechanisms. Our work has focused primarily on programmed cell death and apoptosis, and more recently on how gender differences affect the fate of the cell and hence the organism. In the last few years there has been an explosion in the study of how the cells die. Cell death is a fundamental aspect of embryonic development, normal cellular turnover and maintenance of homeostasis. It plays an essential role in diseases such as Acquired Immune Deficiency Syndrome (AIDS), cancer, Alzheimer's and other degenerative diseases. During development of embryos, cell death shapes and influences the function of almost all organs. In fact, without cell death there would be no embryo. However, too much or too little cell death can be detrimental to the embryo. Alteration of the correct pattern of cell death can result in developmental defects including neural defects, cleft palate, and numerous malformations. We recently published our work on influenza-induced autophagy and cell death, as the cover story in *Virology* on Feb 5, 2014. This article can be found at this website: <http://www.ncbi.nlm.nih.gov/pubmed/24606695>

### **Dr. Keitaro Yukawa (Computer Science Department)**

[ljn787@gmail.com](mailto:ljn787@gmail.com)

#### **Field of Research**

Database Systems

To know database systems.

### **Dr. Larissa Swedell (Anthropology Department)**

[LarissaSwedell@gmail.com](mailto:LarissaSwedell@gmail.com)

#### **Field of Research**

Behavioral Ecology

Our team studies the social behavior, ecology, genetics, and endocrinology of hamadryas baboons in Ethiopia. While our research takes place mainly in the field, we also have opportunities for students to review, score, and analyze video data on campus.

**Dr. Cathy Savage-Dunn (Biology Department)**

[cathy.savagedunn@qc.cuny.edu](mailto:cathy.savagedunn@qc.cuny.edu)

**Field of Research**

Molecular and Cellular Biology

Our lab studies how cell-cell communication influences development and homeostasis in animals. We use the small nematode *C. elegans* for these studies, due its simple anatomical plan, large brood size, and amenability to genetic analysis.

**Dr. Uri Samuni (Chemistry and Biochemistry Department)**

[usamuni@qc.cuny.edu](mailto:usamuni@qc.cuny.edu)

**Field of Research**

Biophysics and Nanotechnology

Solgel encapsulation of proteins, structure-function and spectroscopic studies. Fabrication and characterization of solgel based nanoparticles for drug delivery applications. Use of Raman Spectroscopy, Dynamic Light Scattering, Transmission Electron Microscopy. Synergetic killing effect of nitric oxide and hydrogen peroxide on bacteria. Mechanism and applications of the oxidation of hydroxamic acids. Application of nitroxides – a novel class of catalytic antioxidants.

**Dr. Elizabeth Riina (Family, Nutrition and Exercise Sciences)**

[elizabeth.riina@qc.cuny.edu](mailto:elizabeth.riina@qc.cuny.edu)

**Field of Research**

Family studies and Lifespan Development

My research examines connections between family processes and child development, and considers the social contexts (neighborhoods, culture) that influence child and family life.

## **Dr. Alicia Melendez (Biology Department)**

### **Field of Research**

Developmental genetics and autophagy in *C. elegans*

The decision of a stem cell to proliferate and differentiate is finely controlled. The *C. elegans* germ line provides a tractable system to study the mechanisms that control stem cell proliferation and homeostasis. Autophagy is a conserved cellular recycling process crucial for cellular homeostasis in many different contexts, but its function in germline stem cell proliferation remains poorly understood. Here, we describe a function for BEC-1/Beclin1, a tumor suppressor protein that is an essential component of the autophagy machinery, in germline homeostasis. We show that BEC-1/Beclin1 and other autophagy genes act independently of the GLP-1/Notch or DAF-7/TGF-beta pathways, but upstream or in parallel of the DAF-2/IIR signaling pathway to promote germline stem cell proliferation during development. Interestingly, BEC-1/Beclin1 acts cell non-autonomously in somatic tissues, and requires the phosphatase and tensin DAF-18/PTEN activity, along with the transcriptional regulator SKN-1/Nrf1, but not the DAF-16/FOXO transcription factor, to promote stem cell proliferation.

## **Dr. Andrea Li (Psychology Department)**

[andrea.li@qc.cuny.edu](mailto:andrea.li@qc.cuny.edu)

### **Field of Research**

Visual perception and Psychophysics

Visual impairment is reduced vision that results from aging, disease, or injury that cannot be corrected by corrective lenses or surgery. With an aging population and increased prevalence of visual impairment, there is a growing need for understanding the effects of visual impairment on how we perceive and interact with the environment. Our ultimate goal is to contribute to the development of technologies that can be used to improve vision on an individual basis. Towards this goal, we aim to determine the effects of simulated visual impairment on the perception of a range of different visual stimuli ranging from simple patterns and shapes to more complex objects and text. Impairments such as blur and reduced contrast are digitally applied to visual stimuli and we systematically measure the perception of these stimuli under normal viewing conditions and impaired viewing conditions using psychophysical techniques. Results thus far suggest that mild blur (with which someone can still legally obtain a driver's license) has little effect on the perception of tilt but equivalently mild contrast reduction significantly impairs tilt perception. These results highlight the fact that different types of visual impairment result in different perceptions of the environment, and thus must be examined separately, before we can develop technologies to improve vision on an individual basis.

## **Dr. Larry Liebovitch (Physics and Psychology Departments)**

[larry.liebovitch@qc.cuny.edu](mailto:larry.liebovitch@qc.cuny.edu)

### **Field of Research**

Mathematics of Sustainable Peace

Peace is not just the absence of war. For decades scholars in conflict resolution have studied the pathologies of war, violence, and aggression. Conflict and peace have been studied only in the context of those processes. Very little is known about the fundamental conditions needed to sustain peace. An international team convened by the Advanced Consortium on Cooperation, Conflict, and Complexity, AC4, at Columbia University has been conducting a multi-year initiative aimed to provide a comprehensive view of peace and its sustainability. One objective is to build a causal loop diagram that represents the factors involved in sustaining peace and how they influence each other. We are adding new insights to these studies by: 1) creating rigorous quantitative mathematical models of the qualitative causal loop diagrams, and 2) using modern data science methods to measure the values of the peace factors from social media. A mathematical model can: 1) reveal properties about a system that may be difficult to discern in a qualitative causal loop model, 2) determine how the quantitative values of the variables depend on each other and evolve in time, and 3) make quantitative predictions. We are developing graphic interactive displays so that policy makers can explore the consequences of different possible interventions. We are also developing computer programs to collect and analyze data from social media, such as Facebook, Twitter, and trending Google searches to: 1) yield quantitative measures of the values of the peace factors, and 2) assess the validity of the mathematical model.

## **Dr. Azriel Genack (Physics Department)**

[genack@qc.edu](mailto:genack@qc.edu)

### **Field of Research**

Waves in Disordered Media

Fundamental theorems of localization generally assume that the average local density of states (LDOS) is uniform throughout the volume of random samples. We find, however, that the LDOS in ensembles of waveguide filled with randomly positioned dielectric spheres falls dramatically towards the center of the sample once the sample exceeds the localization length. The LDOS is more strongly suppressed as the sample length and boundary reflectivity are increased and as the waveguide diameter is decreased. The suppression is present over a wide range of frequencies and is not the result of residual periodicity. The conductance continues to fall with increasing sample length, but the mode line width and number of modes saturate. This represents a new transport regime in which waves are localized near the boundaries.

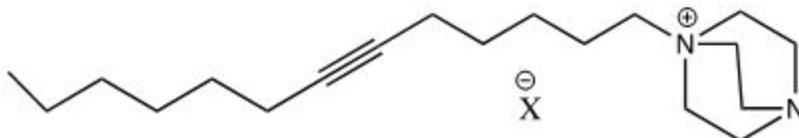
**Dr. Robert Engel (Chemistry and Biochemistry Department)**

[robert.engel@qc.cuny.edu](mailto:robert.engel@qc.cuny.edu)

**Field of Research**

Antimicrobial Surfaces

Our laboratory has for some time now been involved with the development of surfaces that serves as antimicrobials, preventing the transmission of microbes (particularly pathogenic bacteria) from surface to surface without the use of antibiotics. While we have been quite successful with ordinary Gram – and Gram + bacteria (among other microbes) in this effort, *mycobacteria* have remained resistant to our approaches. Our current approach toward these bacteria (responsible for tuberculosis) that has proven of significant potential, involves incorporating various  $\pi$ -linkages into the lipophilic chain of cationic lipids. We are synthesizing cationic alkynes of the type shown below.



**Dr. John Dennehy (Biology Department)**

[john.dennehy@qc.cuny.edu](mailto:john.dennehy@qc.cuny.edu)

**Field of Research**

Microbiology

Research in my laboratory has three main foci. 1) We study virus emergence (host switching) using bacteriophage and influenza as model organisms. 2) We study how precision in the timing of cellular events is ensured despite noisy gene expression. 3) We are investigating the impact of human disturbances on soil microbial communities across Long Island. We have a history of success in involving undergraduate students in research and have had numerous publications with undergraduate students as coauthors.

**Dr. Sung Eun Choi (Family, Nutrition and Exercise Sciences)**

[sungeun.choi@qc.cuny.edu](mailto:sungeun.choi@qc.cuny.edu)

**Field of Research**

Food Sensory Science

My research interests are as follows: the effects of taste perception on health, the influence of genetic sensitivity in bitter taste on taste preference and food intake, optimization of food formulations using sensory evaluation. My research projects examined the relationships of genetic taste sensitivity (6-n-propylthiouracil test for detection of taste blindness), food acceptances, food consumption patterns and body weight between African Americans and Asian Americans, meat eaters and non-meat eaters, and chili pepper users and non-users. Especially, my undergraduate students have participated in the research projects developing healthy and highly delicious food products using sensory evaluation. As one of the undergraduate research projects, the poster titled "Sensory and physical properties of low fat Macaroni and Cheese prepared by replacing whole fat cheese with nutritional yeast" will be presented at the Undergraduate Research Showcase 2016.

**Dr. Richard Bodnar (Psychology Department)**

[richard.bodnar@qc.cuny.edu](mailto:richard.bodnar@qc.cuny.edu)

**Field of Research**

Behavioral Neuroscience

The Bodnar Behavioral Pharmacology laboratory has been at Queens since 1979, and has been recently studying the pharmacological substrates of sweet and fat intake and preferences in rats and inbred mouse strains. We have differentially implicated dopaminergic (D1 and D2), NMDA, cholinergic (muscarinic and nicotinic), GABAergic and opioid processes in the consumption of sugar, saccharin and fat intake per se, as well as in the acquisition (learning) and expression (maintenance) of conditioned flavor preferences (CFP) for sugars and fats. The rat studies have allowed the identification of the nucleus accumbens, amygdala, prefrontal cortex and lateral hypothalamus in these responses. The inbred mouse studies have identified important observations of the role of genetic variance in differentially mediating the potency and participation of these pharmacological interventions. Current studies are examining the ability of muscarinic receptor antagonism with scopolamine to affect sucrose and saccharin intake as well as the acquisition and expression of sucrose-CFP in inbred SWR, BALB/c and C57BL/6 mouse strains.

**Dr. José Anadón (Biology Department)**

[jose.anadon@qc.cuny.edu](mailto:jose.anadon@qc.cuny.edu)

**Field of Research**

Ecology

We are investigating the composition of the scavenger community at the Black Rock Forest. Scavengers provide important ecosystem services to humans by removing carcasses of dead animals and thus preventing the spread of diseases. Obligate scavengers (vultures) are however one of the most threatened groups of species at a global scale. At our lab we are studying how scavengers communities changes due to natural and human mediated factors in two contrasting systems: US East coast and Nepal. Here we present the composition of the scavenger community in our first pilot location, the Black Rock Forest (NY). This work has been developed within the College Now Program that provides research opportunities to high school students.

## **Clubs and Opportunities**

### **Association for Computing Machinery - Queens College Chapter**

The Queens College Association for Computing Machinery (ACM) chapter aspires to involve all computer technology enthusiasts in Queens College by providing networking, learning and career-building opportunities. We're also on Slack! Register at this link [[qc-acm.slack.com](https://qc-acm.slack.com)] to receive updates or just chat with other members.

**Contacts:** Aldolfas Lapsys (President): [adolfas.lapsys23@gmail.cuny.edu](mailto:adolfas.lapsys23@gmail.cuny.edu); Zohaib Tariq (Vice President) [Zohaibsuccess@gmail.com](mailto:Zohaibsuccess@gmail.com); Henry He (Secretary) [henry.he44@gmail.cuny.edu](mailto:henry.he44@gmail.cuny.edu)

### **Biology Honors Society**

The Biology Honor Society works to educate the students of Queens College by providing information about various opportunities the biology department has to offer. In addition to holding a number of events throughout each semester, BHS offers tutoring for a number of introductory level biology courses through the Queens College Tutoring Center. The Biology Honor Society also provides a recitation program to help and educate Bio 105 students. This recitation program implements key concepts and questions that students will be tested on.

**Contacts:** Dov Bitterman (Co-President): [dovibitterman@gmail.com](mailto:dovibitterman@gmail.com) and David Bitterman (Co-President): [leeper9494@gmail.com](mailto:leeper9494@gmail.com).

### **Biology Master of Arts Program**

An advanced degree confers a distinct advantage in today's competitive job market, along with the satisfaction of mastery in a specialized field. The Biology Department at Queens College offers a wide range of courses and research training opportunities leading to the Master of Arts degree. Our program provides enhanced credentials, skills, and knowledge to motivated individuals who wish to pursue careers in science-related fields, including biotechnology, occupational health and safety, patent law, forestry, science education, animal care, and conservation biology. The MA can also be a gateway into doctoral programs in the basic sciences, human and veterinary medicine, dentistry, public and allied health professions, law, technology, and engineering.

The flexible program accommodates both full- and part-time students; depending on student course load, typical time-to-degree ranges from two to four years. MA candidates may choose between a course-intensive track, which offers advanced training in the biological sciences, and a research-intensive track, tailored to provide an immersive field- or laboratory-based experience, culminating in a research thesis. All students, regardless of track, are urged to participate in the extensive research opportunities within the department, and are eligible to receive credit toward their degree for this work.

**Contact:** Dr. Daniel Weinstein (Director, Biology Department):  
[daniel.weinstein@qc.cuny.edu](mailto:daniel.weinstein@qc.cuny.edu)

### **Honors in the Mathematical and Natural Sciences program**

The Honors in the Mathematical and Natural Sciences program (HMNS, or Science Honors) is the Science Division's honors program. HMNS is an interdisciplinary program that offers undergraduates the opportunity to join research groups and carry out long-term research projects, for course credit, under the direction of faculty mentors. The first course in the program is HMNS 101, the Science Honors Seminar, which is an introduction to science research. Students can then register for the HMNS research courses, which culminate in presentation of an undergraduate thesis based on their project.

**Contact:** Dr. Wilma Saffran (Director, Chemistry and Biochemistry Department):  
[wilma.saffran@qc.cuny.edu](mailto:wilma.saffran@qc.cuny.edu)

### **Minority Association of Pre-Medical Students**

The Minority Association of Pre-Medical Students (MAPS) is a club that helps pre-health students achieve their academic and social goals. We do this by providing our members with opportunities to do volunteer work in our community as well as have our members network with medical schools and medical students whom they'd have trouble networking with if it wasn't for this club.

Contact: Cristina Rodriguez (President): [Queenscollegemaps@gmail.com](mailto:Queenscollegemaps@gmail.com)

### **Maximizing Access to Research Careers**

The MARC program is designed to provide junior and senior students extensive research experience with appropriate guidance to gain entrance to graduate biomedical research programs and to succeed in their graduate studies. The program is divided into several phases, with applications due in the spring prior to the student's junior year, and activities beginning starting the summer preceding junior year. The activities designed to enhance graduate research success include: Workshops every semester and summer for students enrolled in the Program. The workshops provide information and enhance skills in research basics, such as performing literature searches, critical analysis of research papers, research ethics, and how to examine, analyze and present data. In addition, the sessions are designed to prepare students for successful entry into graduate school, including strategies for preparation and applying to graduate programs.

The heart of the program is the opportunity for hands-on research experience. This activity starts in the first summer of the students' entry into the Program in the form of laboratory rotations and soon after in a mentor's laboratory. We monitor each student's progress through regular advisement, group meetings, student presentations, and written evaluations. Students gain awareness of the breadth and depth of sciences by attending departmental colloquia, student presentations, and internal and external scientific meetings. Interactions of MARC students with other students both encourages the non-MARC students to enter the field and builds self-confidence in the MARC students.

**Contacts:** Dr. Zahra Zakeri (Director): [zahra.zakeri@qc.cuny.edu](mailto:zahra.zakeri@qc.cuny.edu); Lynnmarie Alafnourian (Program Coordinator): [qc.marc@hotmail.com](mailto:qc.marc@hotmail.com)

### **NERA MedPrep Program**

The NERA MedPrep Program is a free 3 year summer commitment aimed to assist students who represent economic, geographic, cultural, racial, and ethnic diversity in their pursuit of gaining admission to medical school. As health care disparities continue to persist, MedPrep is committed to developing a diverse medical workforce as they will be well-suited to address such gaps. Participants are College Freshman or Sophomore college students OR a community college student and from an economically disadvantaged background; a racial or ethnic group that has been historically underrepresented in medicine and dentistry; or a part of the country where residents have been historically underrepresented in medicine. The NERA MedPrep program uniquely builds on the collective expertise of four outstanding institutions (Rutgers New Jersey Medical School, Columbia University College of Physicians and Surgeons, Icahn School of Medicine at Mount Sinai and Hofstra Northwell School of Medicine at Hofstra University) to expand health career preparation for minority and disadvantaged students from junior high school through medical school with the goal of increasing competitiveness for and in medical school. Ultimately, we expect our scholars will have the humanism, professionalism, and interpersonal skills required of a future physician caring for a diverse population. The program offers stipend support, MCAT Prep, Clinical and Research Experience, and Academic Counseling and Mentoring. For the application, please visit <http://www.neramedprep.org/apply.html> starting November 1<sup>st</sup>, 2016. The application deadline is March 1<sup>st</sup>, 2017.

Contact: Cindy Estevez (Program Coordinator): [cr2322@cumc.columbia.edu](mailto:cr2322@cumc.columbia.edu)

### **Neuroscience Club**

The Neuroscience Club is a collection of students dedicated to making the physiological and behavioral aspects of Neuroscience approachable, informative, and inclusive to all majors in order to broaden, as well as deepen, students' learning of the field.

**Contact:** Katarina Weingartner (President): [katarinawengert@gmail.com](mailto:katarinawengert@gmail.com)

### **Office of Undergraduate Research**

The Office of Undergraduate Research provides information to Queens College students and faculty about research opportunities and the successful practice of research. Recent research shows that involving students in research has many beneficial outcomes: higher GPAs, greater retention, faster graduation rates, greater satisfaction with the college experience and increased pursuit of graduate degrees. In short, the undergraduate research experience can be one of the most transformative experiences an undergraduate student can have. Visit our website at [ougr.qc.cuny.edu](http://ougr.qc.cuny.edu) to find opportunities, resources, funding and classes involving undergraduate research at Queens College.

**Contact:** Dr. John Dennehy (Director): [john.dennehy@qc.cuny.edu](mailto:john.dennehy@qc.cuny.edu)

### **Science Organization of Minority Students**

The Science Organization of Minority Students (SOMS) is a pre-professional club dedicated to aiding ethnic minorities as well as all interested students in pursuing a career in the sciences and math-related fields. Since 1972, SOMS has been a major factor in sending hundreds of Queens College students to the professional/graduate schools of their choice. As a member of SOMS or a "somie", one is equipped with the skills and strategies necessary to achieve admission into some of the nation's top professional/graduate schools. Our partnership with the Office of Minority Affairs in Frese Hall has allowed our members to be offered with top-notch advisement services. Our executive board as well as our older members are made up of passionate individuals who enjoy sharing beneficial opportunities and aiding you in your journey to professional/graduate school.

**Contact:** Myrtle Montague (President): [Myrtle.Montague46@gmail.com](mailto:Myrtle.Montague46@gmail.com)

### **Sigma Xi: The Scientific Research Society**

Sigma Xi, The Scientific Research Society is the honor society of scientists and engineers that recognizes scientific achievement. The Society is a diverse organization of members and chapters dedicated to companionship in science and engineering and to the advancement of knowledge through research, service and teaching. Its mission is to enhance the health of the research enterprise, foster integrity in science and engineering and promote the public's understanding of science for the purpose of improving the human condition.

**Contacts:** Dr. John Dennehy (President, Queens College Chapter): [john.dennehy@qc.cuny.edu](mailto:john.dennehy@qc.cuny.edu); Dr. Timothy Eaton (Treasurer, Queens College Chapter):

[timothy.eaton@qc.cuny.edu](mailto:timothy.eaton@qc.cuny.edu) and Dr. Richard Bodnar (Secretary, Queens College Chapter): [richard.bodnar@qc.cuny.edu](mailto:richard.bodnar@qc.cuny.edu).

### **Summer Public Health Scholars Program**

The Summer Public Health Scholars Program (SPHSP) is designed for undergraduate students to increase their interest and knowledge of public health and biomedical science careers. SPHSP is a partnership of Columbia University's College of Physicians and Surgeons, College of Dental Medicine, School of Nursing and the Mailman School of Public Health. Together they represent the broad spectrum of public health practice. SPHSP has been possible through grant funding awarded by the Centers for Disease Control and Prevention (CDC) Office of Minority Health & Health Equity. It serves as a platform integrating science and practice for future public health professionals, physicians, dentists, nurses and research scientists, giving them a head start for a brilliant career.

This is a free ten week summer program with the application being officially open November 1st, 2016 and ending January 31<sup>st</sup>, 2017. The program includes:

- Trip to the Centers for Disease Control & Prevention (CDC): Introduces students to national and international public health work and opportunities in a government setting.
- Orientation: One week Orientation at Columbia University Medical Center.
- Field Experience/Mentoring
- Field Trips
- Public Health Coursework: 1) Introduction to Public Health, 2) Introduction to Epidemiology and 3) Health Disparities & Cultural Competence.
- Case Studies & Analysis
- Test Prep
- Professional Development

#### Program Benefits:

- A stipend, round-trip travel, and housing will be provided to the 42 selected program participants.
- Ongoing follow up and career/academic advisement from Columbia University staff and faculty.
- Students from across the country learn together on the same platform and network in one of the prime cities of the world with the ability to tap into the resources of Columbia University and the Centers for Disease Control & Prevention.

Please see the link below for more information:

<http://ps.columbia.edu/education/student-life/office-diversity/programs/college-and-post-baccalaureate-students/summer-publ>