

# **CUSJ** COLUMBIA UNDERGRADUATE SCIENCE JOURNAL

## Spring Undergraduate Research **Symposium 2014**

**APRIL 20<sup>TH</sup>, 2014 • LERNER HALL • 1PM – 3PM**

### **PROGRAM OF EVENTS**

**12:45PM - CHECK-IN**

**1:00PM – OPENING REMARKS**

Ritish Patnaik  
CUSJ Events Vice President

**1:10PM - POSTER SESSION I**

Matthew Trendowski  
Naureen Ghani  
Kristof Toth  
Ajay Kashi  
Yiran Chen  
Hyo Jung Shin  
Edwin Garcia & John Buoncora  
Brian Um  
Yueli Chen  
Yueting Chen  
Prithviraj M. Rajebhosale

**2:00PM – INTERMISSION**

**2:10PM – POSTER SESSION II**

Moses Stephen  
Weiwu Li  
Andrew Perez & Landen Kwan  
Sandy Enriquez  
Ugur Sezer & Derek Bruzewicz  
Daysi Proano  
Miryam Peralta  
Junghoon Kim  
Christine Wang  
Eun Jung Shin & Jihyun Lee  
Ester Shin

**3:00PM – CLOSING REMARKS**

Zahra Bhaiwala & Cristina Sorrento  
CUSJ Undergraduate Editor-in-Chief & CEO

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## POSTER SESSION I

### The Promise of Sonodynamic Therapy: Using Ultrasonic Irradiation and Chemotherapeutic Agents as a Treatment Modality

Matthew Trendowski<sup>1</sup>, Thomas P. Fondy<sup>1</sup>

<sup>1</sup>Department of Biology, Syracuse University, Syracuse, NY

### Classification of Neocortical Neurons using Unsupervised Learning Methods

Naureen Ghani<sup>1</sup>, Rafael Yuste<sup>2</sup>

<sup>1</sup>Department of Biomedical Engineering, Columbia University, New York, NY; <sup>2</sup>Department of Biological Sciences, Kavli Institute for Brain Science, Columbia University, New York, NY

### Oxidation Induced Giant Unilamellar Vesicle Formation during Electroformation

Kristof Toth<sup>1</sup>, Shalene Sankhagowit<sup>2</sup>, Noah Malmstadt<sup>2</sup>

<sup>1</sup>The Cooper Union for the Advancement of Science and Art, New York, NY; <sup>2</sup>Mork Family Department of Chemical Engineering and Material Science, University of Southern California, Los Angeles, CA

### Characterization of Microwave Plasma in Chemical Vapor Deposition

Ajay Kashi<sup>1,2</sup>, Kevin Chen<sup>1,3</sup>

<sup>1</sup>Experimental Research and Design Program, Watchung Hills Regional High School, Warren NJ; <sup>2</sup>Department of Physics and Astronomy, Rutgers University, Piscataway NJ; <sup>3</sup>Johns Hopkins University, Baltimore MD

### Optimizing AZO characteristics by changing deposition parameters

Yiran Chen<sup>1</sup>, Amin Emrani<sup>2</sup>, Charles R. Westgate<sup>3</sup>

<sup>1</sup>Chemistry Department, Queensborough Community College, Bayside, NY; <sup>2</sup>NY Center for Autonomous Solar Power (CASP), State University of New York at Binghamton, Binghamton, NY

### New York City's Waste Water and Sewage Treatment by the Environmental Protection Agency

Hyo Jung Shin<sup>1</sup>, Moses Stephen<sup>1</sup>, Eun Jung Shin<sup>1</sup>, German Patino<sup>1</sup>, Jorge Villacis<sup>2</sup>, Faye Jacques<sup>2</sup>, Panayiotis Meleties<sup>3</sup>, Paris D. Svoronos<sup>1</sup>

<sup>1</sup>Department of Chemistry, Queensborough Community College, Bayside, NY; <sup>2</sup>NYC-DEP, Wastewater Treatment Plant, Wards Island, New York, NY; <sup>3</sup>Office of Academic Affairs, York College, Jamaica, NY

### Mobile Autonomous Robot based on a Raspberry Pi Board

Edwin Garcia<sup>1</sup>, John Buoncora<sup>1</sup>

<sup>1</sup>Department of Engineering Technology, Queensborough Community College, Bayside, NY

### The Use of the QuEChERS Approach in the Extraction of Pesticides from Imported Fresh Fruits and Vegetables

Brian Um<sup>1</sup>, Dr. Keeshan Williams<sup>2</sup>, Michael Iorsh<sup>2</sup>, Paris D. Svoronos<sup>1</sup>

<sup>1</sup>Chemistry Department, Queensborough Community College, Bayside, NY; <sup>2</sup>Food and Drug Administration, Jamaica, NY

### Synthesis and Characterization of Li<sub>7-x</sub>La<sub>3</sub>Zr<sub>2-x</sub>Ta<sub>x</sub>O<sub>12</sub> (0 ≤ x ≤ 1) Lithium Ion Conductors

Yueli Chen<sup>1</sup>, Nicole Yu<sup>1</sup>, Heera Choe<sup>1</sup>, Steve Greenbaum<sup>2</sup>, Paul Sideris<sup>1</sup>

<sup>1</sup>Department of Chemistry, CUNY Queensborough Community College, Bayside, NY; <sup>2</sup>Department of Physics and Astronomy, CUNY Hunter College, New York, NY

### Slp1 is a key component controlling early cardiogenesis in Drosophila

Yueting Chen<sup>1</sup>, Kyle Toles<sup>1</sup>, Paris Svoronos<sup>2</sup>, Yasuno Iwasaki<sup>1</sup>, J. Peter Gergen<sup>1</sup>

<sup>1</sup>Department of Biochemistry and Cell Biology & Center for Developmental Genetics, Stony Brook University, Stony Brook, NY; <sup>2</sup>Chemistry Department, Queensborough Community College, Bayside, NY

### "Neuregulating" Transcription: Effects of Neuregulin 1 Type III Back-Signaling on the Expression of α7 Nicotinic Acetylcholine Receptors (α7nAChR)

P M Rajebhosale<sup>1</sup>, L W Role<sup>2,3,4</sup>, D A Talmage<sup>2,5</sup>

<sup>1</sup>Undergraduate Program in Pharmacology, Stony Brook University, Stony Brook, NY; <sup>2</sup>Center for Nervous System Disorders Research, Stony Brook University, Stony Brook, NY; <sup>3</sup>Department of Neurobiology & Behavior, Stony Brook University, Stony Brook, NY; <sup>4</sup>Neurosciences Institute, Stony Brook University, Stony Brook, NY; <sup>5</sup>Department of Pharmacology, Stony Brook University, Stony Brook, NY

## POSTER SESSION II

### Porous Microspheres of Poly(o-toluidine): Understanding Sphere Formation and Improving Dispersibility

Moses Stephen<sup>1</sup>, David M. Sarno<sup>1</sup>

<sup>1</sup>Department of Chemistry, Queensborough Community College, Bayside, NY

### Screening the Saccharomyces cerevisiae genomic library for genes involved in copper induced cell death.

Weiwu Li<sup>1</sup>, Nidhi Gadura<sup>1</sup>

<sup>1</sup>Department of Biology, Queensborough Community College, Bayside, NY

### Hydrogen Fuel Cell Catalyst

Andrew R Perez<sup>1</sup>, Landen Kwan<sup>1</sup>, Kee Park<sup>1</sup>

<sup>1</sup>Department of Engineering Technology, Queensborough Community College, Bayside, NY

### The Determination of Gallic Acid present in Juice and Tea Beverages using High Performance Liquid Chromatography

Sandy Enriquez<sup>1</sup>, Soraya Svoronos<sup>1</sup>, Pedro Irigoyen<sup>1</sup>, Paris Svoronos<sup>1</sup>

<sup>1</sup>Department of Chemistry, Queensborough Community College, Bayside, NY

### Chemical Aging of Soot Nanoparticles Changes Their Morphology and Interaction with Light

Ugur Sezer<sup>1</sup>, Xiangying Wu<sup>1</sup>, Derek A. Bruzewicz<sup>1</sup>

<sup>1</sup>Department of Chemistry, Queensborough Community College, Bayside, NY

### Controlling the Industrial Heavy Metal Pollutants' Discharge into New York City's Wastewater through the Industrial Pretreatment Program (IPP) of the NYC Department of Environmental Protection (NYC-DEP)

Daysi Proano<sup>1</sup>, Miryam Peralta<sup>1</sup>, Paris Svoronos<sup>1</sup>, Faye Jacques<sup>2</sup>, Jorge Villacis<sup>2</sup>, Carol Troy<sup>2</sup>, Panayiotis Meleties<sup>3</sup>

<sup>1</sup>Department of Chemistry, Queensborough Community College, Bayside, NY; <sup>2</sup>NYC-DEP, Wastewater Treatment Plant, Wards Island, New York, NY; <sup>3</sup>Office of Academic Affairs, York College, Jamaica, NY

### Microspectrophotometric Determination of the Total Amount of Antioxidants in Juice Beverages by the Folin Ciocalteu Method

Miryam Peralta<sup>1</sup>, Daysi Proano<sup>1</sup>, Sandy Enriquez<sup>1</sup>, Paris Svoronos<sup>1</sup>, Pedro Irigoyen<sup>1</sup>, Soraya Svoronos<sup>1</sup>

<sup>1</sup>Department of Chemistry, Queensborough Community College, Bayside, NY

### Dampening of Back-Propagating Action Potentials in Dendritic Spines Quantified via Voltage Imaging

Junghoon Kim<sup>1</sup>, Masayuki Sakamoto<sup>2</sup>, Yeonsook Shin<sup>2</sup>, Rafael Yuste<sup>3</sup>

<sup>1</sup>Columbia College, Columbia University, New York, NY; <sup>2</sup>Department of Biological Sciences, Columbia University, New York, NY; <sup>3</sup>HHMI, Department of Biological Sciences, Kavli Institute for Brain Science, Columbia University New York, NY

### Effects of fasudil on glioma cells

Christine Wang<sup>1</sup>, Benjamin Amendolara<sup>2</sup>, Thanassis Dovas<sup>3</sup>, Peter Canoll<sup>3</sup>

<sup>1</sup>Columbia College, Columbia University, New York, NY; <sup>2</sup>Department of Neurosurgery, Columbia University, New York, NY; <sup>3</sup>Department of Cell Biology and Pathology, Columbia University, New York, NY

### Temperature Dependence of Refractive Index of Water and Alcohol Compounds Determined by a Laser Pointer: Simple and Cost Effective System

Eun Jung Shin<sup>1</sup>, Jihyun Lee<sup>1</sup>, Jun H. Shin<sup>1</sup>

<sup>1</sup>Department of Chemistry, Queensborough Community College, Bayside, NY

### The Refractive Index of Solid Ionic Compound Measured by the Zoom-In Method and the Extension Method

Esther J. Shin<sup>1</sup>, Ruth Kim<sup>2</sup>, Jun H. Shin<sup>3</sup>

<sup>1</sup>Roslyn High School, Roslyn Heights, NY; <sup>2</sup>Department of Chemistry, University of California at Berkeley, Berkeley, CA; <sup>3</sup>Department of Chemistry, Queensborough Community College, Bayside, NY

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