

## Molloy College DigitalCommons@Molloy

Faculty Works: Biology, Chemistry, and  
Environmental Studies

Biology, Chemistry, and Environmental Science

Winter 2017

# The Stress of Public Speaking Increases Cortisol Levels in Undergraduates: Is increased Preparation Really the Best Remedy?

Jodi F. Evans Ph.D.

Molloy College, [jevans@molloy.edu](mailto:jevans@molloy.edu)

Erin Clinton

Grace Cookson

Stephanie Brown

Daniel Woods

Follow this and additional works at: [https://digitalcommons.molloy.edu/bces\\_fac](https://digitalcommons.molloy.edu/bces_fac)

 Part of the [Biology Commons](#), and the [Chemistry Commons](#)  
[DigitalCommons@Molloy Feedback](#)

### Recommended Citation

Evans, Jodi F. Ph.D.; Clinton, Erin; Cookson, Grace; Brown, Stephanie; and Woods, Daniel, "The Stress of Public Speaking Increases Cortisol Levels in Undergraduates: Is increased Preparation Really the Best Remedy?" (2017). *Faculty Works: Biology, Chemistry, and Environmental Studies*. 17.

[https://digitalcommons.molloy.edu/bces\\_fac/17](https://digitalcommons.molloy.edu/bces_fac/17)

This Abstract is brought to you for free and open access by the Biology, Chemistry, and Environmental Science at DigitalCommons@Molloy. It has been accepted for inclusion in Faculty Works: Biology, Chemistry, and Environmental Studies by an authorized administrator of DigitalCommons@Molloy. For more information, please contact [tochter@molloy.edu](mailto:tochter@molloy.edu), [thasin@molloy.edu](mailto:thasin@molloy.edu).



# IN VIVO

The Publication of the Metropolitan Association of College and University Biologists

Winter 2017

Volume 38, Issue 2

## **49th Annual MACUB Conference SUNY at Old Westbury Old Westbury, New York October 29, 2016**



# The Metropolitan Association of College & University Biologists

Serving the Metropolitan New York Area  
for 50 Years

## MACUB 2016-2017 EXECUTIVE BOARD MEMBERS

### PRESIDENT

Dr. Kathleen Nolan  
Saint Francis College

### VICE-PRESIDENT, Interim

Dr. Fernando Nieto  
SUNY College at Old Westbury

### TREASURER

Dr. Margaret Carroll  
Medgar Evers College

### CORRESPONDING SECRETARY

Dr. Paul Russo  
Bloomfield College

### RECORDING SECRETARY

Dr. Jill Callahan  
Saint Peter's University

### MEMBERS-AT-LARGE

Dr. Tin Chun Chu  
Seton Hall University  
Dr. Fernando Nieto  
SUNY College at Old Westbury  
Dr. Christopher Corbo  
Wagner College  
Dr. Donald Stearns  
Wagner College

### 2016 CONFERENCE CHAIR

Dr. Fernando Nieto  
SUNY College at Old Westbury

### 2015 CONFERENCE Co-CHAIRS

Dr. Dirk Vanderklein  
and  
Dr. Quinn C. Vega  
Montclair State University

### IN VIVO EDITOR

Dr. Edward Catapane  
Medgar Evers College

### AWARDS CHAIR

Dr. Anthony DePass  
Long Island University

### ARCHIVIST

Dr. Kumkum Prabhakar  
Nassau Community College

### PAST PRESIDENT

Prof. Gary Sarinsky  
Kingsborough Community College

### TREASURER EMERITUS

Dr. Gerhard Spory  
Farmingdale State University

### MEMBER-AT-LARGE EMERITUS

Dr. Michael Palladino  
Monmouth University

## Instructions for Authors

**IN VIVO** is published three times yearly during the Fall, Winter, and Spring. Original research articles in the field of biology in addition to original articles of general interest to faculty and students may be submitted to the editor to be considered for publication. Manuscripts can be in the form of a) full length manuscripts, b) mini-reviews or c) short communications of particularly significant and timely information. Manuscripts will be evaluated by two reviewers.

Articles can be submitted electronically to [invivo@mec.cuny.edu](mailto:invivo@mec.cuny.edu) or mailed as a printed copy (preferably with a diskette that contains the file) to the Editorial Board at Medgar Evers College. All submissions should be formatted double spaced with 1 inch margins. The title of the article, the full names of each author, their academic affiliations and addresses, and the name of the person to whom correspondence should be sent must be given. As a rule, full length articles should include a brief abstract and be divided into the following sections: introduction, materials and methods, results, discussion, acknowledgments and references. Reviews and short communications can be arranged differently. References should be identified in the text by using numerical superscripts in consecutive order. In the reference section, references should be arranged in the order that they appeared in the text using the following format: last name, initials., year of publication. title of article, journal volume number: page numbers. (eg. - <sup>1</sup>Hassan, M. and V. Herbert, 2000. Colon Cancer. *In Vivo* **32**: 3 - 8). For books the order should be last name, initial, year of publication, title of book in italics, publisher and city, and page number referred to. (eg. - Prosser, C.L., 1973. *Comparative Animal Physiology*, Saunders Co., Philadelphia, p 59.). Abbreviations and technical jargon should be avoided. Tables and figures should be submitted on separate pages with the desired locations in the text indicated in the margins.

## IN VIVO Editorial Board

**Editor:** Dr. Edward J. Catapane,  
Medgar Evers College

**Associate Editors:** Dr. Ann Brown,  
Dr. Margaret A. Carroll,  
Medgar Evers College

## In This Issue:

MACUB 2016-2017 Executive Board	inside cover
Instruction for Authors	inside cover
Formation of Structures Resembling Early Embryonic Neural Plate in Traumatized Adult <i>Danio rerio</i> Optic Tectum Maintained in Organotypic Culture: a Morphological Study by Christopher P. Corbo and Zoltan L. Fulop	28
Clinical Reasoning Preparation: Gross Anatomy Case Studies in Occupational Therapy and Athletic Training by Patrick Field	44
MACUB 2016 Conference Poster Presentation Award Winners	57
MACUB 2016 Conference Highlights	66
MACUB 2016 Conference Poster Abstracts	70
MACUB 2016 Conference Member Presentations	108
Affiliate Members	inside back cover

## Call for Manuscripts

Publish your manuscripts in *In Vivo*  
Follow the Instructions for Authors on the inside cover and submit your manuscripts electronically to the Editorial Board at [invivo@mec.cuny.edu](mailto:invivo@mec.cuny.edu)

**The Stress of Public Speaking Increases Cortisol Levels in Undergraduates: Is increased Preparation Really the Best Remedy? Erin Clinton, Grace Cookson, Stephanie Brown, Daniel Woods and Jodi F. Evans, Molloy College, Rockville Centre, NY.**

Perceived stress is prevalent among the undergraduate population. When this stress persists, it has the potential to lead to mental health illnesses. Recent research shows 85% of students experience overwhelming anxiety from academic pressures. Physiologically, during stressful events, cortisol levels rise in the body which disrupts homeostasis. The anticipation prior to a class presentation, a form of public speaking, is a common source of perceived stress among undergraduates. The focus of this experiment was to determine if there is a correlation between factors such as increased preparedness, sleep, level of understanding, perceived anxiety and physiological stress parameters. Twenty-eight student volunteers with an impending oral presentation were enrolled from both 100-level and 200-level undergraduate courses. At baseline and on the day of the presentation, salivary cortisol, heart rate, and blood pressure were measured. The participants were also asked to complete the Beck's Anxiety Inventory (BAI). Compared to baseline, cortisol levels on the day of the presentation were significantly increased in both groups. The change in salivary cortisol levels did not correlate with the number of hours spent preparing, the level of understanding nor hours of sleep the night before the presentation. However, the analyses revealed a trend toward an inverse correlation between the self-reported level of understanding and change in cortisol levels. Essentially, students who felt ambiguous toward their level of understanding of their presentation experienced lower changes in cortisol levels when compared to those students who reported a stronger understanding of the material. This study confirms that undergraduates' perceived stress in anticipation of public speaking does manifest in significantly elevated cortisol levels. It does not provide a link between increased preparation and reduction of stress parameters. Future studies could focus on alternative methods such as mindfulness and meditation and their efficacy in reducing undergraduate stress associated with public speaking.

**Anterior Cerebral Artery Stroke: A Case Study Created to Understand the Clinical Dysfunctions Related to the Ischemic Brain Regions. D. Colgan, W. Mirza, L. Lorentzen and K. Reilly, Kean University, Union NJ.**

A case study was developed by a student team in an undergraduate neuroscience class to link functional brain anatomy to cardiovascular attack in a teaching style format. The student team reviewed the three major cerebral arteries (anterior, middle and posterior) and researched all brain regions that each artery and major bifurcation branches supply. The students then researched

the neurological functions of each brain region. The students selected one artery of interest and a case study was then created that presented the signs and symptoms of embolic anterior cerebral artery stroke. The case study presented a patient, with a history of hypertension and high blood pressure, who suddenly began suffering from a series of ailments such as aphasia, apraxia, and topical anesthesia. Further medical examination performed by the patient's neurologist revealed the diagnosis of Broca's Aphasia, Hemiplegia, and Alien Hand Syndrome. Case study questions were then created to relate the symptomology to the functional anatomy of the brain regions supplied by the artery. In researching and conducting this case study, the students learned to integrate their classroom content in neuroscience and anatomy/physiology with clinical relevance as they designed this case for future use by faculty in an advanced course.

**Isolation and Identification of Antibiotic-Resistant Bacteria From New York City Soil Samples. Adolfo Coyotl and Joan Petersen, Queensborough Community College, Bayside, NY.**

As an urban environment, New York City puts an enormous amount of pressure on its natural areas. As part of the Soil Joint Seed Project we are interested in the potential effects of antibiotic resistant bacteria on human health and the environment. My research project is focused on determining patterns of antibiotic resistance among bacteria found in New York City soils. Samples were collected from three sites with varying degrees of human influence: Thain Forest (TF-pristine), Central Park (CP-intermediate), and Newtown Creek (NC-heavily polluted). Over 131 pure cultures were isolated on Reasoner's agar (R2A) from dilutions of soil samples. To test for antibiotic resistance, cultures were streaked onto R2A plates containing either penicillin or kanamycin. Gram staining and microscopy were used to determine morphology and Gram reaction of the resistant isolates. Overall there were 96 gram-positive and 35 gram-negative isolates. Endospore-formers were found among all three sites: Newtown Creek had the largest percentage of endospore-formers (65% of isolates). Antibiotic testing showed that there were resistant bacteria in all three sites, with more isolates being resistant to penicillin than to kanamycin. The Newtown Creek site had the most penicillin-resistant isolates (89%). Further studies will involve identification of species by 16S rDNA sequencing along with determination of resistance mechanism using PCR primers specific to resistance genes. The prevalence of the isolates in the natural soil community will be determined by comparing our sequences to metagenomic sequencing results. This research has possible implications for determining sources of antibiotic resistance genes in urban microbiomes.