

Molloy University

DigitalCommons@Molloy

Faculty Works: BCES (1999-2023)

Biology, Chemistry, Earth & Environmental
Science (BCES)

Winter 2011

Stress Axis Hormones Induce Triglyceride Filled Nodule Formation in Vascular Smooth Muscle Cells

Jodi F. Evans Ph.D.

Molloy College, jevans@molloy.edu

Michelle Vigliotti

Pamela Tello

Follow this and additional works at: https://digitalcommons.molloy.edu/bces_fac



Part of the [Biology Commons](#), and the [Chemistry Commons](#)

[DigitalCommons@Molloy Feedback](#)

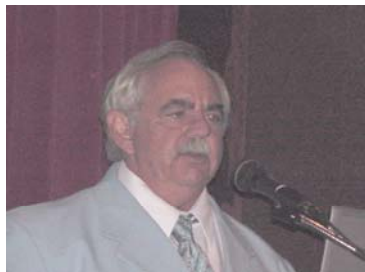
Recommended Citation

Evans, Jodi F. Ph.D.; Vigliotti, Michelle; and Tello, Pamela, "Stress Axis Hormones Induce Triglyceride Filled Nodule Formation in Vascular Smooth Muscle Cells" (2011). *Faculty Works: BCES (1999-2023)*. 21.

https://digitalcommons.molloy.edu/bces_fac/21

This Abstract is brought to you for free and open access by the Biology, Chemistry, Earth & Environmental Science (BCES) at DigitalCommons@Molloy. It has been accepted for inclusion in Faculty Works: BCES (1999-2023) by an authorized administrator of DigitalCommons@Molloy. For permissions, please contact the author(s) at the email addresses listed above. If there are no email addresses listed or for more information, please contact tochter@molloy.edu.

43rd Annual MACUB Conference MOLLOY COLLEGE Rockville Centre, New York October 23, 2010



The Metropolitan Association of College & University Biologists

Serving the Metropolitan New York Area
for 44 Years

MACUB 2010-2011 EXECUTIVE BOARD MEMBERS

PRESIDENT

Prof. Gary Sarinsky
Kingsborough Community College

VICE-PRESIDENT

Dr. Kathleen Nolan
Saint Francis College

TREASURER

Dr. Gerhard Spory
SUNY College at Farmingdale

CORRESPONDING SECRETARY

Dr. Paul Russo
Bloomfield College

RECORDING SECRETARY

Dr. Margaret Carroll
Medgar Evers College

MEMBERS-AT-LARGE

Dr. Carol Biermann
Kingsborough Community College

Dr. Michael Palladino
Monmouth University

Dr. Dirk Vanderklein
Montclair State University

2011 CONFERENCE CHAIR

Dr. Tin-Chun Chu
Co-Chair

Dr. Angela V. Klaus
Seton Hall University

2010 CONFERENCE CHAIR

Dr. Pamela Monaco
Molloy College

2009 Conference Chair

Dr. Kristin Polizzotto
Kingsborough Community College

IN VIVO EDITOR

Dr. Edward Catapane
Medgar Evers College

AWARDS CHAIR

Dr. Anthony DePass
Long Island University

ARCHIVIST

Dr. Kumkum Prabhakar
Nassau Community College

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 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. - ¹Hassan, 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 2010-2011 Executive Board	inside cover
Instruction for Authors	inside cover
MACUB 2010-2011 Executive Board Election Results	23
MACUB 2010 Conference Poster Presentation Award Winners	24
MACUB 2010 Conference Poster Abstracts	26
MACUB 2010 Conference Member Presentations	53
Highlights of the 43rd Annual MACUB Conference	54
Benjamin Cummings/MACUB Student Research Grants	55
Affiliate Members, 44th MACUB Conference Announcement	inside back cover

Election Results MACUB 2010-2011 Executive Board

President:	Prof. Gary Sarinsky, Kingsborough Community College
Corresponding Secretary:	Dr. Paul Russo, Bloomfield College
Members-at-Large:	Dr. Dirk Vanderklein, Montclair University and Dr. Michael Palladino, Monmouth University

Stress Axis Hormones Induce Triglyceride Filled Nodule Formation in Vascular Smooth Muscle Cells. Pamela Tello, Michelle Vigliotti, and Jodi F Evans, Molloy College, Rockville Centre, NY.

Homeostatic stress, such as that which occurs in diabetes, is associated with increased risk for the development of atherosclerosis. Atherosclerotic plaques of the artery wall are associated with both lipid accumulation and fibrous and/or calcified tissue accumulation. Vascular smooth muscle cells (VSMC) are derived from mesenchymal stem cells (MSC) which are capable of differentiating into adipocytes, chondrocytes and osteoblasts. MSC of the bone marrow are pushed toward the chondrogenic and adipogenic phenotypes in the presence of the stress hormones glucocorticoid and adrenocorticotropin (ACTH). This led us to hypothesize that the proliferative VSMC of the Goto-Kakizaki (GK) diabetic rat, when exposed to stress hormones will present an adipocytic and/or chondrogenic-like phenotype. VSMC of the GK rat were cultured using conditions that favor the multi-potential differentiation of MSC and were either left untreated, were treated with ACTH, dexamethasone (DEXA) or both. Cells were stained for lipid using oil-red-o, proteoglycan matrix using alcian blue and cell density using methylene blue. DEXA increased lipid nodule formation above the untreated control but the combined ACTH and DEXA treatment led to a significant increase above DEXA alone (lipid nodule #'s per field, DEXA 2.56 ± 1.63 vs. A+D 6.67 ± 1.68). These data suggest that stress hormones may contribute to VSMC matrix accumulation and lipid production during atherosclerosis development in diabetes.

Preliminary Investigations of Distyly in *Primula acaulis*: Morphological and Molecular Characterization of Short- and Long-Styled Plants. Andres Thomas and Farshad Tamari, Ph.D. Kingsborough Community College, Brooklyn, NY.

Distyly is a mating system in which a dimorphism exists in the reproductive organs of hermaphroditic angiosperms. Self-incompatibility, which is often associated with distyly, refers to a strong self- and intra-morph incompatibility. The molecular biology of distyly and self-incompatibility in the Primulaceae remains relatively unknown. We hypothesize that *P. acaulis* is distylous. To ascertain distyly in this species we measured the female and male reproductive organs of five short-styled and five long-styled plants using a pair of Vernier calipers. A one way analysis of variance (ANOVA), comparing the lengths of female and male reproductive organs, indicates that *P. acaulis* is distylous, but not reciprocally herkogamous. It is also hypothesized that there are molecular differences in the reproductive tissues of short- and long-styled plants for genes involved in self-incompatibility such as alpha-dioxygenase. Our preliminary results indicate that alpha-dioxygenase does PCR amplify from the genome of both short-and long-styled plants, however, this finding needs to be confirmed. In the future, a proteomics investigation will be initiated to compare protein profiles of the reproductive tissues of short - and long-styled plants. The ultimate goal of this research is finding and removing self incompatibility barriers in *P. acaulis* to increase seed and plant yield. This work was supported by grants 2R25GM06003 of the Bridges to the Baccalaureate Program of NIGMS and grant 0537101091 of the CSTEP Program of the NYS Department of Education.

Phenol Power: A Study of the Antimicrobial Effects of Polyphenolic Tea Compounds. Jennifer Todd, Lauren Strawn, Jonathan Jimenez and Tin-Chun Chu. Seton Hall University, South Orange, NJ.

Both green and black tea contains polyphenolic compounds which are responsible for the antimicrobial characteristics of both teas. The major polyphenols in black tea are theaflavins. The theaflavins tested were theaflavin (TF-1), theaflavin-3-monogallate (TF-2A), theaflavin-3'-monogallate (TF-2B), and theaflavin-3,3'-digallate (TF-3). In addition, black tea crude extract, black tea powder, and oligonol were tested. Five concentrations of the tea compounds were made: 1.0, 2.5, 5.0, 7.5, and 10.0g/L. *Pseudomonas aeruginosa*, *Enterobacter aerogenes*, *Escherichia coli* and *Staphylococcus epidermidis* were the bacteria used in this study. The antimicrobial abilities of the compounds were determined by the zone of inhibition (ZOI) and the bacterial growth. Against *S. epidermidis*, the minimum concentration was 5.0g/L for TF1, TF2, TF3, and oligonol and 2.5g/L for black tea crude extract and black tea powder. Against *P. aeruginosa*, the minimum concentration was 5.0g/L for all compounds except TF3, whose minimum concentration was 7.5g/L. Black tea crude extract had the largest ZOI against *S. epidermidis* while oligonol had the largest ZOI against *P. aeruginosa*. The tea compounds showed synergistic antimicrobial effects with various antiseptics including mouthwashes and hand sanitizers.

Extra-pair Paternity in Birds: Studying Variations Among Populations With the Genetic Diversity Hypothesis. Lainga Tong and Mohamed Lakrim, Kingsborough Community College, Brooklyn, NY.

Extra-pair paternity is highly variable in birds between species and between populations of the same species. In intra-specific level, the genetic diversity hypothesis suggests that females seek extra-pair copulation to increase the genetic diversity of their broods so that females are more likely to seek extra-pair copulation when there is more genetic variation among males. It has been proposed that island populations have a lower genetic variation than their mainland counterparts. Here I made a comparison analysis of the frequency of EPP in island populations and their mainland counterparts. The result showed that the frequency of EPP was consistently lower in island populations. The result suggested: (1) island populations characterized by low frequency of EPP, (2) the frequency of EPP and genetic variation may have positive correlation in intra-specific variation, (3) the frequency of EPP should be depend on the percentage of broods showing at least one extra-pair young.