

**ODU UNDERGRADUATE RESEARCH SYMPOSIUM SPRING 2010 (FEB 6)**  
**Sessions at a Glance & Abstracts**

**SESSIONS AT A GLANCE**

8:30-9:00am: Registration

9:00am: Welcome and Opening Remarks from Provost Carol Simpson, Chandler Recital Hall

9:15-10:15 (Sessions A1-A4): "Undergraduate Research in the Engineering" (FPA 107); "Undergraduate Research in the Sciences and Social Sciences" (poster session, FPA Foyer--West); "Student Art Exhibition" (Diehn Foyer, East); Digital Displays: "Undergraduate Research in Art Education," "Undergraduate Research from the Virginia Beach Higher Education Center Partnerships ( Virginia Aquarium and Marine Science Center, Chrysler Museum of Art" Diehn Foyer, East); "Securing Our Global Supply Chain" (Chandler Recital Hall)

10:30-11:30 (Sessions B1-B3): "Undergraduate Research in the Biological Sciences" (FPA 136); "GIS and Remote Sensing in Environmental Studies" (FPA 107); "Undergraduate Research in Art History (FPA 142)

11:30am-1pm Lunch, North Cafeteria

1-2pm (Sessions C1-C3):" "Contemporary Perspectives on Motherhood" (FPA 136); "Undergraduate Research in the Department of Psychology" (FPA 107); "Issues of Creativity, Interpretation and Organization in the Works of Student Composers" (Chandler Recital Hall)

2:15-3:15 (Sessions D1-D3): "Undergraduate Research in the Sciences & Nursing" (FPA 136); "From Website to Experience: Redesigning the English Department's Digital Space" (FPA 142); "From-Heres & Come-Heres: Perceptions of the Immigrant Other and Transcultural Encounters in Virginia" (FPA 107)

3:30-4:30: Reception, Diehn Composers Room

## ABSTRACTS

### SESSION A (9:15-10:15)

#### Session A1 (FPA107): “Undergraduate Research in Engineering”

Chair: Dr. Osman Akan (Batten College of Engineering)

**Cold Atmospheric Pressure Air Plasma for Medical Applications** by Taranjeet Singh (Advisor: Dr. J. Kolb)

**Abstract:** We have developed a plasma jet, which is operated with ambient air at atmospheric pressure. The plasma is expelled from a microhollow cathode discharge and can reach temperatures close to room temperature within a few millimeters. This allows us using the plasma in medical applications, such as the sterilization of wounds. In the first experiments we have achieved the complete eradication of infectious agents, such as yeast, with a treatment of 90 seconds.

**Experimental Research on Geomembrane Anchor** by Faridoon Razzaq (Advisor: Dr. I. Ishibashi)

**Abstract:** The U.S. EPA estimates that there are over 200,000 surface impoundments widely storing hazardous and non-hazardous wastes in the United States. Geomembranes are widely used as a liquid containment liner in ponds that contain hazardous and non-hazardous wastes. Geomembranes are a very low permeability synthetic membrane liner or barrier so as to control fluid or gas migration in a solid waste landfill and pond structures. Current design methods are questionable due to improper handling of lateral earth pressure theory in an anchoring trench. During this research, model experiments are conducted to simulate in situ a geomembrane anchor system and this experiment will allow for critical evaluation of lateral earth pressure theory currently used in design methods.

**Micro-Satellite Payload System Design** by Jake Tynis (Advisor: Dr. R. Ash)

**Abstract:** The integration of electronic devices and subsystems within a satellite bus is not a trivial issue in the design of a spacecraft. The work conducted has been to integrate a suite of electronic devices and subsystems into a cubesat payload using the United States Air Force's Space Plug-and-Play Avionics (SPA) microsatellite bus architecture and software. The benefit of this research is immediately apparent, expanding experiment opportunities using low-cost access to space. This integration can be demonstrated using a selection of the sounding rocket instrumentation capabilities associated with NASA's RockOn instrumentation suite.

#### A2 (Diehn Foyer, West): (poster session) Undergraduate Research in the Sciences and Social Sciences

**Paleoceanographic Proxies for Determining Past Climate Intervals** by Tara Ballinger (Advisor: Dr. Dennis Darby)

***Castanea dentata*: Domination, Destruction, and Restoration** by Christine Bradish (Advisor: Dr. Timothy Motley)

**Nest Size Selection by Acorn Ants** by David Drinkwater (Advisor: Dr. Deborah Waller)

**The Impact of <sup>56</sup>Fe Radiation on Executive Function in Rats Three Months Post-Exposure** by Scott Miles (Advisors: Dr. Lonart and Dr. Niebur)

**The Likelihood of Recidivism Based on the Presence of Intermediate Sanctions in one’s Parole Term: An Offender’s Perspective** by Jennifer Vidler and Nerfertiti Holas (Advisor: Kyshawn Smith)

**Are there any Good Samaritans?** by Anthony Monnin, Courtney Cooper, Holly Helfant, Nicole Cox, Rhamobbie Smith-Vanterpool, Leshaudai Elder (Advisor: Dr. Leon Bouvier)

**Detecting Compromised Nodes in Wireless Sensor Networks** by Reyna Williams, Department of Computer Science, Norfolk State University (Advisor: Dr. Jonathan Graham)

**The Impact of Environmental Water Pollution on Pre-metamorphic Tadpole Development** by Lawrence Garnett, Cherelle Johnson, and Thomas Christian, Department of Biology, Norfolk State University (Advisor: Mrs. Maureen Scott)

**Computational Characterization of Glial Cell Line-Derived Neurotrophic Factor Using Swiss-Pro Viewer Software** by Tacie Kane, Department of Chemistry, Norfolk State University (Advisor: Dr. Katina Patrick)

**Characterizing and Synthesizing Hollow Gold Nanospheres** by Amber Wingfield, Department of Engineering, Norfolk State University (Advisor: Dr. Aswini Pradhan, Center for Materials Research)

### A3 (Diehn Foyer, East): Student Art Exhibition

Exhibition Organizers: Elliott Jones and the Student Art League

<b>Student</b>	<b>Concentration</b>	<b>Advisor</b>
Kjerstin Torpmann-Hagen	Drawing & Design	Elliott Jones
Chris Fuentes	Graphic Design	Kenneth FitzGerald
Savannah Hagey & Samantha Roque	Graphic Design	Kenneth FitzGerald
Thomas Norris	Graphic Design	Kenneth FitzGerald
Diana Heath	Painting	Elliott Jones
Kelly Herring	Painting	Elliott Jones
Danielle Jweid	Painting	Elliott Jones
Amy Price	Painting	Elliott Jones
Julie Alvarado	Print & Photo Media (Photography)	Greta Pratt
Shane Butler	Print & Photo Media (Photography)	Greta Pratt
Stephanie Goodie	Print & Photo Media (Photography)	Greta Pratt
Jeffrey O'Campo	Print & Photo Media (Photography)	Greta Pratt
Paige Anders	Print & Photo Media (Printmaking)	Ken Daley
Catherine Morrison	Print & Photo Media (Printmaking)	Ken Daley
Karine Lombardo	Sculpture	John Roth
Katie McLaughlin	Sculpture	John Roth
Stormie Batten Victoria Farrell Sarah Gondreau Lauren Phelps Jennifer Rodriguez Lauren Futrell Rachel Rodgers Ian Jewell Berly Perlin Nicole Piland Carrie Spencer Kelly Hover Emily Hampton Lauren Coppedge Kristen DeLizzio	Teaching Portfolios & AE Studio Research	Patricia Edwards
Jeff Abbott	Photography & Poster Design	

Danielle Bradley Elizabeth Sharpe	Photography Photography	
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**Session A4 (Chandler Recital Hall): “Securing Our Global Supply Chain”**

Chair and Faculty Advisor: Dr. Ling Li

**Abstract:** This session focuses on the role that operations and supply chain management plays in the design and improvement of the processes used in ensuring the safety of food products. The challenges are magnified by the global span of many product safety problems where touch points in the supply chain may occur in different countries.

**The Global Supply Chain of Tyson Foods, Inc** by Christopher Cooper

**Smithfield Foods, A Vertically Integrated Supply Chain** by Michael DeMark

**SuperValu Grocery Supply Chain** by Samson Samonte

**The Gatorade Supply Chain** by Cameron Peel

**SESSION B (10:30-11:30)**

**Session B1 (FPA 136): Undergraduate Research in the Biological Sciences**

Chair: Dr. Chris Osgood (Department of Biological Sciences)

**Background Color Preference and Movement Patterns of Mosquito Larvae and Pupae** by Donna Bucci (Advisor: Dr. Deborah Waller)

**Abstract:** *Culex* mosquitoes lay egg cases in shallow water where the eggs hatch into larvae that develop through four instars before they pupate and emerge as aerial adults. This study examined whether larvae and pupae preferred to settle over dark or light backgrounds. Newly hatched larvae showed no preference, but after the first day they preferred white backgrounds. Later instars showed no preference but pupae preferred dark backgrounds. These preferences are likely influenced by food availability and predator risk for the different immature stages. Early instars, which must search for food, were more active than pupae, which do not feed.

**A Proposed Model for Bone Metabolism in the Acute Inflammatory Phase of Charcot Neuro Osteoarthropathy** by Lisa Grant (Advisor: Dr. Chris Osgood)

**Abstract:** Charcot Neuro Osteoarthropathy, a disease affecting the structure and stability of neuropathic joints in diabetic patients, has evaded elucidation for nearly 150 years. Within the last several decades, a dramatic increase in the incidence of Charcot foot, secondarily related to diabetic peripheral neuropathy, has made Neuro Osteoarthropathy a significant burden to society. Although some research has been performed on diabetic Neuro Osteoarthropathy, the mechanism of osteoid destruction is not clearly understood. In this study, bone metabolism serum markers, such as RANK, RANK-L, OPG and  $TF\alpha$  were determined in neuroosteopaths as well as neuropathic controls. Bone density scans as well as Doppler arterial scans were then used to track bone structure and viability of Calcaneal bone. These tests were used in conjunction with other clinical neuropathy screens leading to the illumination of a common metabolic pathway found in Charcot Diabetic bone. Although not directly addressed in this research, the data collected from this study can aid in constructing a full pathologic pathway for this debilitating disease.

**Molecular Characterization of *Cuscuta* in Brunei Darussalam** by Amanda Bieber (Advisor: Dr. Lytton Musselman)

**Abstract:** The parasitic plant *Cuscuta* (family Convolvulaceae), commonly known as dodder, grows in disturbed areas along roadsides in Brunei Darussalam, and has potential to become a noxious weed. The life cycle of the plant was monitored for 18 months and produced no flowers. Its reproduction has been assumed to be through the growth of perennating structures, or distinctive shoots that form from thick coils as a result of stem damage. However, one population of flowering *Cuscuta* was discovered in November 2009. This apparently introduced species was difficult to identify. Thus, DNA sequence data from the nuclear ribosomal internal transcribed spacer (ITS) and chloroplast intron trnL-F was generated from silica dried plant tissue. The Basic Local Alignment and Search Tool (BLAST) applied to the DNA indicated that the introduced dodder is closely related to *Cuscuta australis*. With the identification of the species, it may be possible to compare it with other non-flowering *Cuscuta* populations. Estimation of genetic diversity to infer the number of introductions in Brunei is important to evaluate its weedy potential.

### **Session B2 (FPA 107): “GIS and Remote Sensing in Environmental Studies”**

(Chairs and Research Advisors: Dr. Hua Liu and Dr. Don Zeigler)

**Examination of crime surrounding the ODU Norfolk Campus** by Daniel Fourquet.

**Abstract:** The purpose of this study is to examine the crime immediately surrounding the ODU Norfolk campus by using Geographic Information Systems (GIS) technologies. Crime data include the address, date, time, and crime description. A weight system is created to discriminate different types of crime. Multiple maps are created to show the variety of crimes found surrounding the ODU Norfolk campus. The results can provide very useful information for ODU public safety monitoring.

**Land surface changes in the waterfront neighborhood of Bolling Square, Norfolk, VA** by Wendy Hill.

**Abstract:** The objective of this project is to determine if the changes in the land cover of the Bolling Square neighborhood has impacted the surface runoff into surrounding waterways. The Bolling Square neighborhood is located along the shores of the Lafayette River, Norfolk, VA. Two land cover types, vegetative and impervious surface are derived from remote sensing satellite images. The results determine if there has been an increase or decrease over the past ten years in the site runoff into the adjacent Lafayette River.

**Remote Sensing in Education Across Disciplines** by Christopher Contreras.

**Abstract:** The purpose of this study is to discuss how remote sensing has been used in environmental and some other related studies. The study also investigates how to make the technologies relevant and understandable to people who have little prior understanding of those technologies. The results provide useful background information for general education of remote sensing by summarizing the capability of remote sensing technologies in those studies.

### **Session B3 (FPA 142): Undergraduate Research in Art History**

Chair and Advisor: Dr. Anthony Lichi (Art Department)

**Andrea del Castagno's Last Supper** by Susan Mercado

**Lewis Comfort Tiffany and the Wisteria Lamp** by Samantha Karam

**Feminism in Mary Cassatt's The Bath** by Morgan Reinhart

**LUNCH (11:30-12:45, North Cafeteria, Webb Center)**

## Session C (1-2pm)

### Session C1 (FPA 136): “Contemporary Perspectives on Motherhood”

Chair & Advisor: Dr. Lindal Buchanan, Assistant Professor of English and Women’s Studies

This panel examines current issues shaping the practice and experience of motherhood: Brook Buesking analyzes the gendered, anti-feminist rhetoric of abstinence-only programs; Patrina Fannoh explains why maternal mortality rates in sub-Saharan Africa are the highest in the world and proposes solutions; and Teri Sheffield explores a revolutionary form of motherhood that completely disrupts traditional notions of gender.

**“Like a Virgin”: The Gendered Rhetorics of Abstinence-Only Programs** by Brook Buesking.

**Abstract:** In the 1990s, education and government officials responded to a perceived “epidemic” of teen pregnancy by introducing abstinence-only programs into the nation’s high schools. Rather than striving to reduce rates of teen pregnancy, abstinence-only programs instead discouraged teen sexual activity. Interestingly, the burden for “just saying no” and remaining chaste until marriage became the responsibility of girls rather than boys. I examine how this misogynist message is communicated through the programs’ visual and textual rhetorics and uncover their arguments and assumptions about women as sexual and maternal beings. Abstinence-only programs situate sexual activity and family patterns within a heterosexual and patriarchal framework, thereby disempowering young women and rendering the experiences of gay, lesbian, and transgender students invisible.

**Dying To Give Birth: Maternal Mortality in Sub-Saharan Africa** by Patrina Fannoh.

**Abstract:** Each day thousands of women in developing countries die as a result of childbirth, despite remarkable advances in medicine and technology over the past century. Nearly twenty years ago, the United Nations committed itself to cutting maternal death rates in half, writing this objective into its Millennium Developmental Goals (MDGs). The MDG focused, in particular, on reducing maternal mortality in Africa, the Middle East, and Latin America and, to that end, provided both financial aid and developed programs. Although substantial progress has occurred in most regions, the UN will not achieve its MDG goals in sub-Saharan Africa by the targeted date of 2015. Maternal mortality rates there have shrunk only 2% in the past two decades in while rates in other targeted regions approach 50%. Many complex social and political factors have contributed to the lack of progress in sub-Saharan Africa. This presentation identifies some of the major obstacles and presents solutions for reducing pregnant women’s and mothers’ preventable deaths.

**Men or Mothers?: Recognizing Transgender Male Motherhood** by Teri Sheffield.

**Abstract:** Thomas Beatie, the first “Pregnant Man,” shocked the nation when he gave birth to his first child in 2008. Beatie, in other words, is both a man and a mother, two gender roles that are not typically linked. Beatie is a transgender man who was born with female physiology but self-identified as male. Trans men may surgically alter their bodies and/or enhance their bodies with testosterone; those who keep their female reproductive organs have the option of enacting a revolutionary form of motherhood. Transgender male mothers, like Beatie, challenge current legal and medical constructs, which are grounded on the male/female binary. I examine transgender male mothers’ problematic positioning within these systems, and the systems’ propagation of socio-cultural misperceptions and misunderstandings. Transmale mothers are an unconventional but, nevertheless, very real sector of society. Their existence radically unsettles traditional notions of gender and motherhood, a disruption that provides rich grounds for rethinking both of these categories.

## **Session C2 (FPA 107): UNDERGRADUATE RESEARCH IN THE DEPARTMENT OF PSYCHOLOGY**

Chair: Dr. Valerian Derlega (Department of Psychology)

**Correlating Punishment under HIV Disclosure Laws and Personal Acquaintances with a Person Living with HIV/AIDS or Currently Serving a Jail Sentence** by Brittany Neilson (Advisor: Dr. Valerian Derlega).

**Abstract:** Twenty-three states make it unlawful for a person living with HIV to have sexual intercourse with a partner without previously disclosing their HIV-status. One hundred and eighty-five undergraduate psychology students participated in a larger study evaluating the motivations for punishing under HIV disclosure laws. Information was gathered about participants' relations to people living with HIV and people currently serving a jail sentence; this information was correlated with recommended jail sentence and monetary fine. Both correlations were insignificant, showing that personal acquaintances did not moderate the main effect found in the larger study linking deservingness of the offender to punishment outcomes.

**The Relationship between Driver Improvement Courses and Drivers' Attitudes** by Tanesha Washington (Advisor: Dr. Bryan Porter).

**Abstract:** Driver improvement courses (DIC) serve many purposes, but are typically used to discourage the underlying risky attitudes and driving behaviors that may lead to crash involvement. The purpose of the present study is to evaluate the relationship between driver improvement courses and drivers' attitudes and driving behaviors. A sample of 200 participants will complete a questionnaire that measures attitudes towards speeding, attitude towards social norms, sensation seeking, risk propensity, and self-reported driving behavior. There will be a minimum of 100 Old Dominion University (ODU) students and a sample of 100 recently enrolled drivers in Driver Improvement Clinics.

**Hierarchical Linear Modeling of Drinking to Cope with Anxiety among College Students** by Bradley Wetzell (Advisor: Dr. Matthew Henson).

**Abstract:** Previous research has assumed that drinking motives (reasons for drinking) remain fairly stable over time. The current study examines how drinking motives of college students may vary over time. Weekly measures were completed by 125 undergraduates at Old Dominion University, which examined how average levels of anxiety interacted with anxiety coping motives to influence drinking. Using Hierarchical Linear Modeling, it was found that anxiety coping motives were less predictive for participants with elevated average anxiety levels, as opposed to participants with normal to low anxiety levels. Implications and possible explanations are discussed.

## **Session C3 (Chandler Recital Hall): "Issues of Creativity, Interpretation and Organization in the Works of Student Composers"**

Chair & Faculty Mentor: Professor Andrey Kasparov (Department of Music)

**The Creative and Organizational Process of Composing Music**, featuring original pieces by Thomas Joseph (b. 1988).

**Abstract:** Music is an artistic medium that allows individuals to express their ideas, emotions and abstract creativity. However, like the development of a good essay, creating a musical work requires a process of organizing and detailed planning. The intellectual process of creating a music composition differs for each individual, though a basic practice is observed. A theme, or simply a vision is required as a focal point to begin the process. This is followed by a culmination of other characterized factors such as harmonic language, phrase structure, and development which exemplify an intricate design process in its creation.

**Interpreting a Composition**, featuring original pieces by Adelaide Coles (b. 1991).

**Abstract:** Performing a piece requires a great deal of sensitivity to the composer's intentions. It is important to know the purpose of the composition; occasionally a piece intended in all seriousness could be interpreted by its performer as a farce, which completely counters the point of the music and destroys what emotions the composer wished to portray. Thus the performer needs to understand the context of the music and balance both the details that the composer includes in the music and the performer's own instincts as to what the piece means to him personally. Consequently, it can be beneficial for the composer himself to perform his own works so there is no risk of misinterpretation, even though this can result in missing out on possible interpretations that the composer may not have even considered.

### Session D (2:15-3:15)

#### Session D1 (FPA 136): Undergraduate Research in Biology and Nursing

**Pathogens Associated with Ticks in South East Virginia** by Chelsea Wright (Advisors: Wayne Hynes and Holly Gaff)

**Abstract:** Tick-borne infections are an important issue in the health of many Americans. Lyme disease, Rocky Mountain spotted fever, Ehrlichiosis and Anaplasmosis are some of the tick-borne diseases diagnosed in residents of Virginia. In the absence of appropriate treatment, these diseases can lead to serious complications and even death. This research focuses on understanding the distribution of ticks and the pathogens they transmit in southeastern Virginia. These results will be used to create models for the tick population and tick-borne pathogen distribution in southeastern Virginia, which can later be used as a tool for further research.

**Getting Started with Undergraduate Research in Nursing:** The “Faith, Fellowship & Fitness” Project by Emily Melnick, Faith Muller, Brian Jones. Heather Englestad (Advisor: Dr. Mary Ann Notarianni)

**Abstract:** Routine physical activity, about 2.5 hours per week, can help reduce weight, prevent cardiovascular disease, decrease diabetes risk, improve bone and muscle strength, and enhance a person's emotional well being. Unfortunately, only 40.4% of African-Americans meet recommended CDC physical activity guidelines compared to 51.7% of Caucasians and 42.1% of Hispanics. The Faith, Fellowship, & Fitness program is a collaborative, culturally tailored, faith-based intervention for African-American church members to increase physical activity. The proposed intervention is designed to assist leadership and members of an African-American church to design, implement, and maintain the program without researcher involvement. The proposed study is a quasi-experimental, pre-test, post-test design without a comparison group. The purpose of the proposed study is to determine if a collaborative, culturally tailored, faith-based intervention located in a church environment can increase the physical activity participation rates of African-American congregation members.

#### Session D2 (FPA 142): “From Website to Experience: Redesigning the English Department's Digital Space”

Chair and Faculty Advisor: Dr. Liza Potts

Presenters: Chris Backus, and Geoff Owens, Bradley Wetzell

**Abstract:** This presentation will discuss the redesign project for the English Department's website. The project's purpose was to redesign the environment to better suit the needs of its users; namely, prospective students, current students, and faculty. Upon completion of a thorough content inventory of the current platform, a landscape analysis was conducted to ascertain successful techniques employed by other institutions. Next, using open card-sorting and a controlled vocabulary, a new site-map was constructed with corresponding wireframes designed for maximal consistency. From these elements, an interactive structural prototype was built for usability testing with randomly selected potential users, the results of

which suggested a successful design. Finally, a fully-polished mockup of the new environment was created utilizing design principles including contrast, repetition, alignment, and proximity. The resulting product provides an aesthetically pleasing, user-centered experience.

**Session D3 (FPA 107): “From Here’s & Come-Here’s: Perceptions of the Immigrant Other and Transcultural Encounters in Virginia”** Chair: Dr. Page Laws (Dean, Honors College, Norfolk State University)

Presenters: James Lee, Deandra Hennemann and Errica Bertsch (Honors College, Norfolk State University)

**Closing Reception (Diehn Composer’s Room): 3:30-4:30.**

Dr. Charles Wilson (Vice Provost for Undergraduate Studies, Dean of University College) will provide closing remarks.

2/2/10