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EAST TENNESSEE STATE  
UNIVERSITY

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# 2018 Boland Undergraduate Research Symposium

Showcasing Student Research  
& Creative Activities

*Tuesday, March 27, 2018*

Millennium Centre, Johnson City  
8:00 a.m. - 5:00 p.m.

***Sponsored by:***

**ETSU Honors College**

**ETSU Office of Research & Sponsored Programs**

**Dr. Jay Boland Honors Endowment**

**ETSU Ronald E. McNair Program**



## The ETSU Honors College welcomes you to the 2018 Boland Undergraduate Research Symposium

The Symposium is dedicated to the memory of **Dr. Jay Boland, Director of the ETSU University Honors Scholars Program from 2002-2006**. The ETSU Undergraduate Student Research Symposium is an event in which ETSU undergraduate students can present their research in an informal, non-competitive environment. The Symposium includes oral presentations in various discipline-themed sessions. Performance artists (music; reading; theater) are particularly encouraged to participate. Visual artists may display their work in the Millennium Centre lobby. ETSU Undergraduate students are encouraged to participate in the Symposium by presenting their research for work-in-progress projects or completed projects. By participating in this event, students will be able to exchange ideas with peers and gather valuable feedback. The Symposium has experienced a steadily increasing number of participants and increasing diversity of disciplines represented. The first Symposium had only 25 participants but has since grown to over 90 participants, with noteworthy discipline expansion into the performing arts and an enhanced role for display artists.

### Presentation Sessions

**Arts and Humanities**  
**Social Sciences, Education, and Business**

**Science and Technology**  
**Student Artworks**

### ETSU Steering Committee

#### Students:

Ginny Allen, Heidi Armstrong, Mitchel Ball, Laura Carr, Alex Day, Dustin Gilmer, Elizabeth Hale, David Hamilton, Amber Howard, Rachel Johnson, Holden Kales, Kristina Lim, Ragan McNair, Ashley Sexton, Aamir Shaikh, Zak Simpson, Erin Teaster

#### Faculty & Staff:

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Dr. Richard Ignace, Director, Undergraduate Research, Honors College

Claire Jones, Information Research Technician, Honors College

Susan Kellogg, Marketing Manager, Honors College

Dr. Karen Kornweibel, Director, University & Midway Programs, Honors College

Dr. Scott Koterbay, Director, Fine & Performing Arts Program, Honors College

Karla Leybold, Recruitment & Assessment Manager, Honors College

Dr. Judy Slagle, Dean, Honors College

Dr. Mick Whitelaw, Director, Honors-In-Discipline Program, Honors College

### Sponsors

#### Dr. Jay Boland Honors Endowment

The Boland Symposium is supported by a memorial endowment from the family of Dr. James "Jay" Boland, past director of the University Honors Programs. The symposium provides ETSU undergraduate students the opportunity to display their abilities and present the results of their research projects to peers, professors and friends to gain valuable feedback.

The Boland Honors Endowment is a lasting tribute to Dr. Jay Boland and makes a significant impact on students experiential learning; helping to inspire, encourage, and create excellence today and for generations to come.

#### The ETSU Honors College

The Honors College at ETSU plays many roles, provides many services, and supports faculty and students alike across all disciplines at ETSU. Research is a central component of an Honors experience at ETSU. The Honors College ensures that undergraduates can work with university faculty on cutting-edge research. The Honors College recognizes experiential learning, the value of unique field courses, exchange programs, internships, student activities and service opportunities that make the world a classroom. With a variety of funding sources, knowledgeable advisors and expertise across all fields of study, the Honors College is committed to supporting our students as they pursue—and achieve—their individual passions and dreams.

#### The Office of Research and Sponsored Programs Administration (ORSPA)

ORSPA assists members of the ETSU community in securing and managing external funding for their research, creative, instructional, and service activities. ORSPA is responsible for ensuring that ETSU proposals, sponsored agreements and other research related agreements conform to sponsor guidelines and are compliant with all federal, state, and ETSU policies and regulations.

Education and training in areas including finding funding opportunities, grant writing, proposal development, and general sponsored programs administration is available to faculty, staff, and students through workshops, guest lectureships, and one-on-one consultation.

#### Ronald E. McNair Post-Baccalaureate Achievement Program

Named in honor of Ronald E. McNair, an African-American astronaut killed in the Challenger Space Shuttle explosion in 1986, this program is one of the United States Department of Education's special initiatives known as TRIO that serve and assist disadvantaged students in their educational endeavors.

The goal of the McNair program is to increase the attainment of graduate degrees, particularly PhDs by students from underrepresented segments of society such as students who are from low-income and first generation backgrounds or students who are ethnic minorities and underrepresented in graduate programs. This program prepares participants for doctoral studies through involvement in research and other scholarly activities.

## 2018 Boland Undergraduate Symposium Event Overview

### MILLENNIUM CENTRE LOBBY

**7:55 am - Welcome - Dr. Richard Ignace, Director, Undergraduate Research & Creative Activities**

**8:00 am - 5:00 pm - Student Art Display**

Richard Brown (*Graphic Design*) - *Untitled* - Wayne Dyer, advisor

Amber Howard (*Studio Art*) - *Hold Me Down* - Vanessa Mayoraz, advisor

Jonathan Jennings (*Graphic Design*) - *Unlabeled 2018*, David Dixon, advisor

Ben Riley and Benjamin Siffring (*Digital Media-Game Design*) - *Procedural Environment & Gore-Based Combat System in a 3D Game Engine* - Todd Emma, advisor

Carrie Williams (*Graphic Design*) - *The Negative Contributions of Factory Farming* - Scott Contreras-Koterbay, advisor

**ETSU BLUEGRASS BAND - Noon - 12:45 pm**

**LUNCH - Noon - 12:45 pm - Room 220**

**PERFORMANCE - 12:45 pm - 1:30 pm - Room 130**

A series of short performance skits.

### AUDITORIUM 137A

**8:05 am - 11:55 am - Arts & Humanities**

**1:30 pm - 5:00 pm - Arts & Humanities**

### AUDITORIUM 137B

**8:05 am - 11:55 am - Science & Technology**

**1:30 pm - 3:35 pm - Social Sciences**

### ROOM 120

**8:05 am - 10:00 am - Science & Technology**

**10:15 pm - 11:30 pm - Social Sciences and Performance Arts**

**1:30 pm - 4:45 pm - Science & Technology**

### ROOM 130

**8:05 am - 11:40 am - Social Sciences**

**1:30 pm - 3:30 pm - Science & Technology**

**3:45 pm - 4:50 pm - Arts & Humanities and Performance Arts**

### Auditorium 137A Morning Session

Arts & Humanities

	Student/Presentation Title	Department	Advisor
<b>8:05 am</b>	<b>Ciara Russell</b> <i>The Depiction of Bacchus in the Renaissance</i>	Art History	Vida Hull
<b>8:20 am</b>	<b>Emily Ford</b> <i>While Everyone Else is Sleeping: Challenges of Team-Based Qualitative Research</i>	Communication Studies	Kelly Dorgan
<b>8:35 am</b>	<b>Braden Trent</b> <i>Cultural Competency in the Army: Training for Peace with Tomorrow's Societies</i>	Communication Studies	Laughton Messmer
<b>8:50 am</b>	<b>Timothy Payne</b> <i>Appalachian English in Lee Smith's "Saving Grace"</i>	English	Martha Michieka
<b>9:15 am</b>	<b>Amber Rookstool</b> <i>Portrayal of Women in Hanan al-Shaykh's Fairy Tales</i>	English	Martha Michieka
<b>9:30 am</b>	<b>Laura Carr</b> (Tusculum College) <i>Cleopatra: Perceptions and Reality</i>	History	Joel Van Amberg
<b>9:45 am - 10:00 am</b>  <b>Break</b> 			
<b>10:00 am</b>	<b>Matthew Jennings</b> <i>Nevertheless, She Persisted: Gender Indexicality in the Speech of Elizabeth Warren, 2007-2017</i>	French	Theresa McGarry
<b>10:25 am</b>	<b>Shelby Maiden</b> <i>The Commodity Club: Commodity Fetishism in Modern Art and Tattoos</i>	Graphic Design	Andrew Scott Ross
<b>10:50 am</b>	<b>Abeer Chaudhary</b> <i>Finely Tuned: A Study of Music Performance-Related Injuries, Traditional Medical Therapy, and Alternative Treatments</i>	Health Science	Mary Dave Blackman
<b>11:15 am</b>	<b>Chelsi Crockett</b> <i>Scroll in Color: How Colors in Instagram Pictures Illicit Emotions in Users</i>	Media & Communication	Susan Waters
<b>11:30 am</b>	<b>Larry Keith Maultbay</b> <i>Work-in-Progress: The Playwright's Method</i>	Theatre	Melissa Shafer

**Auditorium 137B Morning Session**  
Science & Technology

	<b>Student/Presentation Title</b>	<b>Department</b>	<b>Advisor</b>
<b>8:05 am</b>	<b>Ryan Lynch</b> <i>High Returns &amp; Low Volatility: The Case for Mid-Cap Stocks</i>	Accounting and Finance	William Trainor
<b>8:30 am</b>	<b>Annie Malcolm</b> <i>Profile of Volatile Fatty Acids (VFA) in the Feces of Normal and Overweight College Students</i>	Nutrition	William A. Clark
<b>8:45 am</b>	<b>Brian Dempsey</b> <i>Small Mammal Mortality Caused by Roadside Containers on a Heavily Trafficked Forest Service Road in the Cherokee National Forest</i>	Biology	Thomas Laughlin
<b>9:25 am</b>	<b>Anthony Adams, Emily Hearl, and David Hopland</b> <i>Baltimore Police Department's Crime Data</i>	Computational Applied Mathematics	Christina Lewis
9:40 am - 9:55 am	<b>Break</b>		
<b>9:55 am</b>	<b>J.P. Mitra</b> <i>Optimizing Construction Estimation: A Case Study of the ETSU Football Stadium and Fine Arts Center</i>	Construction Engineering Technology	Jeremy Ross
<b>10:20 am</b>	<b>Olivia Rowell</b> <i>ETSU Dental Hygiene Students' Interest in and Perceived Preparedness for Nontraditional or Expanded Roles after Graduation</i>	Dental Hygiene	Deborah Dotson
<b>10:45 am</b>	<b>Eva Price</b> <i>Subjective Visual Vertical and Otolith Compensation: Evaluating Off-Axis Rotation Stimulus in Healthy Controls</i>	Exercise Science	Courtney Hall
<b>11:10 am</b>	<b>Grayson White</b> <i>The Effects of Simulated Spaceflight Conditions on the Mucin Lining of the Mouse Uterine Tube</i>	Health Sciences	Allan Forsman
<b>11:25 am</b>	<b>Sydney Keith</b> <i>Experimental Protocol for the Production of Bacterial-Expressed CTRP3</i>	Health Sciences	Jonathan Peterson
<b>11:40 am</b>	<b>Austin Miller</b> <i>Synthesis of Oxadiazole Derivatives as non-β-lactam β-lactamase inhibitors</i>	Chemistry	Abbas Shilabin

**Room 120 Morning Session**  
Science & Technology

	<b>Student/Presentation Title</b>	<b>Department</b>	<b>Advisor</b>
<b>8:05 am</b>	<b>Kimberly Dinsmore</b> <i>Factor and Cluster Analysis of the Learning Orientation Questionnaire</i>	Nursing	Loyd Glenn
<b>8:30 am</b>	<b>Kristina Lim</b> <i>Protective Anti-Inflammatory Role of Extracellular Ubiquitin in Myocardial Ischemia/Reperfusion Injury</i>	Biology and Chemistry	Krishna Singh
<b>8:55 am</b>	<b>Macon Magno</b> <i>A Study of the H-alpha Emission Line Shape in Beta Lyrae</i>	Physics	Richard Ignace
<b>9:20 am</b>	<b>Zakery Simpson</b> <i>The Enduring Effects of Adolescent Alcohol Exposure on Glutamate Levels in the Prefrontal Cortex</i>	Physics	Gerald Deehan
<b>9:35 am</b>	<b>Denise Harness</b> <i>A Comparison of Unsupervised Methods for DNA Microarray Leukemia Data</i>	Mathematics	Jeff Knisley
10:00 am - 10:15 am	<b>Break</b>		
<b>Room 120 Morning Session</b> <b>Social Sciences &amp; Performance Arts</b>			
<b>10:15 am</b>	<b>Kayla Davis</b> <i>Experiencing Illness in the Western Biomedical World: A Push for More Comprehensive Health Care in America</i>	Anthropology	Melissa Schrift
<b>10:40 am</b>	<b>Brittney Stubbs</b> <i>Psychosocial Well-Being and Efforts to Quit Smoking in Pregnant Women of Appalachia</i>	Nutrition	Andrea Clements
<b>11:05 am</b>	<b>Caroline Denning</b> <i>An Actor's Approach to the Role of Trisha in "Five Women Wearing the Same Dress," Written by Alan Ball</i>	Theatre	Bobby Funk

**Room 130 Morning Session**  
Social Sciences

	<b>Student/Presentation Title</b>	<b>Department</b>	<b>Advisor</b>
<b>8:05 am</b>	<b>Jessica Chambers</b> <i>Internalizing Symptoms Associated with Emotional Abuse: An Examination of Religious Social Support as a Moderating Variable</i>	Psychology	Diana Morelen
<b>8:30 am</b>	<b>Emily Clark</b> <i>PTSD Symptoms and Military-Specific Stigma in United States Veterans</i>	Psychology	Stacey Williams
<b>8:55 am</b>	<b>Elizabeth Wiederholt</b> <i>Sex Offenders, the Tennessee Public Registry, and Suicidality</i>	Psychology	Jill Stinson
<b>9:20 am</b>	<b>Autumn Glass</b> <i>The Impact of Maladaptive Social Media Use on Mental Well-Being</i>	Psychology and Sociology	Ginette Blackhart
<hr/>			
9:45 am - 10:00 am	<b>Break</b>		
<b>10:00 am</b>	<b>Elizabeth Hale</b> <i>The Relationship of Military Service Branch to Rates of Post-traumatic Stress Disorder and Substance Use Disorder Among Appalachian Veterans</i>	Psychology	Myra Elder
<b>10:15 am</b>	<b>Hal Hughes</b> <i>Capturing the Rise and Ruin of the Researcher: Uses of the Research Notebook</i>	Communication Studies	Kelly Dorgan
<b>10:30 am</b>	<b>Mykala Reynolds</b> <i>Qualitative Research: Giving Stories the Justice They Are Due</i>	Communication Studies	Kelly Dorgan
<b>10:45 am</b>	<b>Angel Lunceford and Alicia Blasini</b> <i>The Importance of Baseline Analysis for Establishing Replicable, Evidence-Based Behavior Analytic Interventions: Implications for Researchers and Practitioners</i>	Microbiology	James Fox
<b>11:00 am</b>	<b>Rebekah Pearson</b> <i>A Shift from Baseball? What Influences the Perception of the National Pastime?</i>	Sport Management	Natalie Smith
<b>11:15 am</b>	<b>Rebekah Cisney</b> <i>Coffee Shops and Third Space: Communicative Practices In-Between</i>	Communicaiton Studies	Amber Kinser

**Auditorium 137A Afternoon Session**  
Arts & Humanities

	<b>Student/Presentation Title</b>	<b>Department</b>	<b>Advisor</b>
<b>1:30 pm</b>	<b>Samuel Sevigny</b> <i>The Implications of Student-Faculty Interaction and Mentorship in Higher Education</i>	Communication Studies	Wesley Buerkle
<b>1:55 pm</b>	<b>Anna Pfeiffer</b> <i>The Medicine of Middle Earth: An Examination of the Parallels Between World War Medicine and Tolkien's "The Lord of the Rings"</i>	English	Daniel Westover
<b>2:20 pm</b>	<b>Rebekah Voiles</b> (Tusculum College) <i>Greed and Parrots: Examining the Emergence of Pirate Tropes in "Treasure Island"</i>	English	Clay Matthews
<b>2:35 pm</b>	<b>Emily Williams</b> <i>Fairy-Tale Convention and Post-Modernism in Aimee Bender's "Off": A Critical Introduction</i>	English	Mark Baumgartner
<b>2:50 pm</b>	<b>Zoe Hester</b> <i>Story-telling through Movement: An Analysis of the Connections between Literature and Dance</i>	English	Michael Cody
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3:15 pm - 3:30 pm	<b>Break</b>		
<b>3:30 pm</b>	<b>Caitlin Tripp</b> <i>The American Impact on the Evolution of the Japanese Women's Rights Movement</i>	History	Henry Antkiewicz
<b>3:55 pm</b>	<b>Allison Smith, Emily Ford, Gavin Skelton and Anthony Walls</b> <i>The Power of Performing Arts</i>	Human Services	Joyce Duncan
<b>4:10 pm</b>	<b>Rebecca Erin Hockman</b> <i>Media's Perception of Veterans</i>	Journalism	Susan Waters
<b>4:35 pm</b>	<b>Sarah Caroline King</b> <i>What You Hear is What You Hear: Preparing an Arrangement of Steve Reich's "Nagoya Marimbas" for Flute Choir</i>	Music Performance	Alison Deadman

**Auditorium 137B Afternoon Session**  
**Social Sciences**

	<b>Student/Presentation Title</b>	<b>Department</b>	<b>Advisor</b>
<b>1:30 pm</b>	<b>Sydney Ross</b> <i>The Social Justice System of Cuba</i>	Anthropology	Melissa Schrift
<b>1:45 pm</b>	<b>Megan Gauck</b> <i>Killed a Bird Today: The Evolution and Hybridization of the Yoruba Tricksters</i>	Anthropology and Biology	Lindsey King
<b>2:10 pm</b>	<b>Alexandra Drumwright</b> <i>A Traditionally Modern "Princess": Gender Stereotypes in Disney's "Moana"</i>	Communication Studies	Wesley Buerkle
<b>2:35 pm</b>	<b>Ragen McNair</b> (Tusculum College) <i>Siblicide: Patterns and Typologies of Offenders.</i>	Criminal Justice	Erica Hutton
<b>2:50 pm</b>	<b>Holdon Guy</b> <i>Diffusion of 100% Tobacco-Free Policies in Higher Education Institutions in Tennessee</i>	Political Science	Hadii Mamudu
<b>3:05 pm</b>	<b>Kaelyn Bishop</b> <i>Perception and Acceptability of Violent Acts in Video Games, Movies, and News Media</i>	Psychology	Andrea Clements
<b>3:20 pm</b>	<b>Rose Stephens</b> <i>The Prevalence of Adverse Childhood Experiences Among Women with Postpartum Psychotic Symptoms</i>	Psychology	Andrea Clements

**Room 120 Afternoon Session**  
**Science & Technology**

	<b>Student/Presentation Title</b>	<b>Department</b>	<b>Advisor</b>
<b>1:30 pm</b>	<b>Ashley Cameron</b> <i>Identification of Farnesol in Extracellular Vesicles of <i>Candida albicans</i></i>	Chemistry	Michael Kruppa
<b>1:55 pm</b>	<b>Anastasia Kuvayskays</b> <i>Modification of Silica Surface</i>	Chemistry	Aleksey Vasiliev
<b>2:10 pm</b>	<b>Patrick South</b> <i>Discovery of a Novel Inhibitory Compound Produced by Soil Bacterium <i>Rhodococcus MTM3W5.2</i></i>	Chemistry	Abbas Shilabin
<b>2:35 pm</b>	<b>Tristan Onek</b> <i>Developing an Open Source Financial Data Collector for Trade Algorithm and Artificial Intelligence Testing</i>	Computer and Information Science	Brian Bennett
<b>2:50 pm</b>	<b>Walter Dominic Espejo</b> <i>Developing and Validating Cancer-Specific Carbon Quantum Dots</i>	Chemistry and Biology	Hua Mei
<b>3:15 pm - 3:30 pm</b>  <b>Break</b> 			
<b>3:30 pm</b>	<b>Luke Hiester</b> <i>File Fragment Classification with Neural Networks</i>	Computing	Jay Jarman
<b>3:55 pm</b>	<b>Noah Carter</b> <i>Building Data Visualization Applications to Facilitate Vehicular Networking Research</i>	Computing	Asad Hoque
<b>4:20 pm</b>	<b>Sarah Zimmer</b> <i>Identification of the <i>HmuPSTUV</i> Operon and Its role in Heme Utilization in <i>Rhizobius Leguminosarum</i> ATCC 14479</i>	Biology	Ranjan Chakraborty

**Room 130 Afternoon Session**  
Science & Technology

	<b>Student/Presentation Title</b>	<b>Department</b>	<b>Advisor</b>
1:30 pm	<b>Brianna McCoy</b> <i>Analysis of Prerequisite Anatomy Requirements</i>	Health Science	Beatrice Owens
1:45 pm	<b>Joe Oliver</b> <i>Inhibition of Focal Adhesion Kinase Promotes Olfactory Stem Cell Self-Renewal and Neuroregeneration Via Ciliary Neurotrophic Factor</i>	Health Science	Jis Cuihong
2:00 pm	<b>Devin Narwani</b> <i>Can Alcaligenes Be a New Treatment for Staphylococcus Species?</i>	Health Science	Sean Fox
2:25 pm	<b>Lindsey Wright</b> <i>Classifying Textual Fast Food Restaurant Reviews Quantitatively using Text Mining and Supervised Machine Learning Algorithms</i>	Mathematics	Michele Joyner
3:15 pm	<b>Dustin Gilmer</b> <i>Factors that Influence Success in Research Funding Quantitative Study</i>	Physics	Richard Ignace
3:30 pm - 3:45 pm	<b>Break</b>		

**Room 130 Afternoon Session**  
Arts & Humanities and Performance Arts

3:45 pm	<b>Evin McQuistion</b> <i>A Director's Approach to Annie Baker's "The Aliens"</i>	Theatre	Bobby Funk
4:10 pm	<b>Drake Parrott</b> <i>Experiments in Creation</i>	Interdisciplinary Studies	Cara Harker
4:25 pm	<b>Olivia Ellis</b> <i>The Exploitation of Microaggressions</i>	Graphic Design	David Dixon

# 2018 Boland Undergraduate Symposium

## Presentation Abstracts

### Student/Year/Location/Time

**Major:** Advisor

**Presentation Title**

### ANTHONY ADAMS, Senior

*Computational Applied Mathematics: Nicole Lewis*

### Baltimore Police Department's Crime Data

We analyzed the Baltimore Police Department's Crime Data for the American Statistical Association competition. The Crime data included the Calls to 911, Locations of Crimes, CCTV Locations, and the number of Officers in each District. We did comparisons on trends of 911 calls and where crimes are taking place along with how each has changed and how it could change in the future.

**AUD 137B/9:25 am**

### Kaelyn Bishop, Junior

*Psychology: Andrea Clements*

### Perception and Acceptability of Violent Acts in Video Games, Movies, and News Media

Violent video games are often cited as being a factor that increases antisocial behavior. If other media is perceived as being more violent, would the blame still be placed on video games? This study investigates the perceived violence of the same act presented through different media: video games, news, and movies. It also looks at which violent acts are considered acceptable for different ESRB ratings, namely teen and mature.

**AUD 137B/3:05 pm**

### Alicia Blasini, Junior, (co-presenter)

*Microbiology: James Fox*

### The Importance of Baseline Analysis for Establishing Replicable, Evidence-Based Behavior Analytic Interventions: Implications for Researchers and Practitioners

Single subject studies analyze individual behavior identifying how interventions change behavior. Critical to this analysis are repeated baseline measures to identify behavior function and evaluate intervention effects. Forty studies treating child behavior problems between 1997 and 2015 were analyzed. Average student age was 8 years. Most studies used simple frequency counts (47%) of behavior. Baseline observation averaged 42 minutes and 7.4 observations. Most studies (81%) reported no systematic analysis of baseline stability, making it difficult to establish evidence-based effective interventions.

**ROOM 130/10:45 am**

### Richard Brown, Senior

*Graphic Design: Wayne Dyer*

### Untitled

This piece was created in studio photography class for a “one light” project. It explores the balance of the human form.

**MILLENNIUM LOBBY**

### Ashley Cameron, Senior

*Chemistry: Michael Kruppa*

### Identification of Farnesol in Extracellular Vesicles of Candida Albicans

Candidiasis is one of the top causes of nosocomial infections in the United States most commonly caused by *Candida albicans*. Farnesol is a lipid soluble molecule previously found in cell-free media of *C. albicans* and was determined to be a quorum-sensing molecule of this yeast. Extracellular vesicles were isolated using ultrafiltration and concentrated EV samples were assessed using  $^1\text{H}$  NMR. Peaks matching those of pure trans,trans-farnesol show that farnesol is likely transported via extracellular vesicles.

**ROOM 120/1:30 pm**

**Laura Carr, Junior***History: Joel Van Amberg***Cleopatra: Perceptions and Reality**

Although Cleopatra is best known for her reported beauty, her influence went well beyond her outward appearance in Egyptian and Roman society. People often forget that she was a powerful Egyptian leader and had important involvement in events leading up to the emergence of the Roman Empire. This presentation will address the perceptions of Cleopatra and compare that with the reality of this historical figure and the mechanisms that she used to maintain power and influence in a male-dominated society.

**AUD 137A/9:30 am****Noah Carter, Senior***Computing: Asad Hoque***Building Data Visualization Applications to Facilitate Vehicular Networking Research**

A web app was developed which allows any internet-connected device to remotely monitor a roadway intersection's state over HTTP. A mapping simulation was enhanced to allow researchers to retroactively track the location and the ad-hoc connectivity of vehicle clusters. A performance analysis was conducted on the utilized network partitioning algorithm. This work was completed under and for the utility of ETSU's Vehicular Networking Lab. It can serve as a basis for further development in the field of wireless automobile connectivity.

**ROOM 120/3:55 pm****Jessica Chambers, Senior***Psychology: Diana Morelen***Internalizing Symptoms Associated with Emotional Abuse:****An Examination of Religious Social Support as a Moderating Variable**

This study aims to investigate if religious social support in childhood will moderate the impact of negative outcomes associated with emotional abuse. Further, this study will examine whether and how gender and ethnicity impact this relationship. The sample includes undergraduate students attending East Tennessee State University (ETSU). Participants completed an on line survey that asked about childhood experiences (e.g., emotional abuse, emotion socialization, religious social support) as well as current mental health (e.g., anxiety, depression).

**ROOM 130/8:05 am****Abeer Chaudhary, Senior***Health Science: Mary Dave Blackman***Finely Tuned: A Study of Music Performance-Related Injuries, Traditional Medical Therapy, and Alternative Treatments**

Surveys estimate that as many as 75 percent of professional symphony and opera musicians experience injuries which impact performance. Some are psychologic, or stress-related, in nature. Among the somatic types of injuries, repetitive movements seem to be the cause of many dermatologic, musculoskeletal, and neurologic disorders, such as dermatitis, tendinitis, and focal dystonia. Treatments for the latter types of injury are varied, ranging from conservative management to surgical intervention to alternative methods, such as the Alexander and Feldenkrais techniques.

**AUD 137A/10:50 am****Rebekah Cisney, Senior***Communication Studies: Amber Kinser***Coffee Shops and Third Space: Communicative Practices In-Between**

This thesis examines the relationship between communication, identity, and third-space. Definitively, third-space is the milieu in-between (Moje et. al, 2004). Research indicates third-spaces offer opportunity for conversation that otherwise would not occur. The author investigates the influences of the coffee shop as third-space. Drawing from interview data, this study shows that individuals who frequent coffee shops may experience noticeable and describable impacts on their identities, communicative practices, communities, and resistance strategies.

**ROOM 130/11:15 am****Emily Clark, Junior***Psychology: Stacey Williams***PTSD Symptoms and Military-Specific Stigma in United States Veterans**

The aim of the current study is to examine the relations between severity of combat, perceived military stigma, and severity of PTSD symptoms. The study consisted of secondary data analysis from survey data of 195 veterans. Results showed that increased levels of internalized stigma and military-specific social stigma mediated the relationship between severity of combat experiences and trauma symptom severity. These results could lead to a better understanding of the effects of stigma on the veteran population.

**ROOM 130/8:30 am****Chelsi Crockett, Senior***Media & Communication: Susan Waters***Scroll in Color: How Colors in Instagram Pictures Illicit Emotions in Users**

Since Instagram began in the U.S., no studies on color and Instagram have been conducted. My desire is to see how/if these two subjects correlate. More specifically, how/if specific color undertones, such as red, green, etc. will elicit a different response in the Instagram user when viewing the various colored content.

**AUD 137A/11:15 am****Kayla Davis, Senior***Anthropology: Melissa Schrift***Experiencing Illness in the Western Biomedical World:****A Push for More Comprehensive Health Care in America**

In this thesis, illness narratives were studied in order to examine the relationships that patients have with their physicians and families. Examining these relationships, combined with an original auto-ethnography and personal illness experience, allows for a discussion on truly competent health care by taking into consideration the patient's perspective. This discussion creates a guide for families and physicians to utilize when attending to, and interacting with, the chronically ill.

**ROOM 120/10:15 am****Brian Dempsey, Senior***Biology: Tom Laughlin***Small Mammal Mortality Caused by Roadside Containers on a Heavily Trafficked Forest Service Road in the Cherokee National Forest**

Discarded containers along roadways trap and kill small mammals. Significant numbers of small-mammal remains were found inside containers along Cherokee National Forest roads in remote areas in a previous study. In this study, we investigated the effects of containers along a 5.5 km stretch of a more heavily used two-lane forest service road in the Cherokee National Forest. Three hundred eight containers were collected from five different pull-off sites and within those were 13 small-mammal skulls representing five species of mammals.

**AUD 137B/8:45 am****Caroline Denning, Senior***Theatre: Bobby Funk***An Actor's Approach to the Role of Trisha in "Five Women Wearing the Same Dress"****Written by Alan Ball**

The Actor's Approach thesis is designed in three written parts following the performance aspect. The chapters include Research, Documentation, and Reflection. Through this analysis, I dissect the script and all of its parts, the role, and the process that led up to the mounted performance and the reflection that has followed and influenced other personal works within my craft of Theatre.

**ROOM 120/11:05 am**

**Kimberly Dinsmore, Senior**

*Nursing: Loyd Glenn*

**Factor and Cluster Analysis of the Learning Orientation Questionnaire**

The purpose was to determine the factor structure of the 25-item Learning Orientation Questionnaire used to customize teaching programs. By manual evaluation of inter-item correlations and automated varimax rotation in the R language, four factors were extracted: progress of learning, desire to learn, determination of intended goals, and learning achievement, accounting for 49 percent of the total variance. Previous findings were partially confirmed and our results show that questionnaire could be reduced in size while maintaining a strong measurement quality.

**Alexandra Drumwright, Senior**

*Communication Studies: Wesley Buerkle*

**A Traditionally Modern “Princess”: Gender Stereotypes in Disney’s Moana**

Movies- even those designed for young children- consistently portray and reinforce idealized social norms, attitudes, and behaviors according to the roles that dominant social culture deems appropriate (Rome). This thesis will investigate whether Disney’s newest “princess” *Moana* continues the production company’s tendency to portray male and females in stereotypical gender roles, or if takes a step in a positive feminist direction. This research will look at the Disney movie, *Moana*, through a variety of feminist perspective lenses.

**Olivia Ellis, Senior**

*Graphic Design: David Dixon*

**The Exploitation of Micro-aggressions**

*The Exploitation of Micro-aggressions* documents my personal experiences as an African American, the history of Blaxploitation, and the current racial climate in the United States. This is also a documentation of my BFA Senior Exhibition of the same title.

**Walter Dominic Espejo, Senior**

*Chemistry/Biology: Hua Mei*

**Developing and Validating Cancer-Specific Carbon Quantum Dots**

A carbon dot is a small, fluorescent carbon nanoparticle that generally ranges from 3-10 nanometers. Similar to quantum dots, carbon quantum dots have controllable emission wavelengths and excellent photo-bleaching resistance; however, carbon quantum dots have a lower quantum yield and better biocompatibility. In this research, carbon quantum dots were synthesized using ammonium citrate as the carbon source and folic acid as the targeting agent. These carbon dots were validated through characterization methods such as IR, UV-vis, and proton NMR spectroscopies.

**Emily Ford, Senior**

*Communication Studies: Kelly Dorgan*

**While Everyone Else is Sleeping: Challenges of Team-Based Qualitative Research**

In this presentation, I draw on a reflexive approach in reviewing three challenges potentially faced by researchers when conducting team-based qualitative research. First, I address the obstacles that can possibly arise from the interpersonal dynamics of the research team. Second, I speak about the impact time constraints have on a research team. Third, I discuss the challenges of being the first author on a qualitative research project. Last, I identify lessons I have learned from my qualitative research experience.

**ROOM 120/8:05 am**

**AUD 137B/2:10 pm**

**ROOM 130/4:25**

**ROOM 120/2:50 pm**

**AUD 137A/8:20 am**

**Emily Ford, Senior, (co-presenter)**

*Human Services: Joyce Duncan*

**The Power of Performing Arts**

The undergraduate research featured a study of POP Arts, an all-inclusive program for students with and without disabilities. POP Arts emphasizes implementation of theatrical skills to improve behavioral, physical, and mental capabilities. Throughout the study, the researchers observed skill development through the eyes of volunteers and parents of participants in the program. Findings indicated that parents and volunteers noted enormous differences in socialization and skill acquisition and emphasized the importance of adding or continuing arts programs in the school system.

**Megan Gauck, Senior**

*Anthropology and Biology: Lindsey King*

**Killed a Bird Today: The Evolution and Hybridization of the Yoruba Tricksters**

The trickster archetype appears cross culturally, recognizable by their cunning exploits and gray morality. Ajapa and Eshu both possess these characteristics, though they fulfill different functions in the Yoruba belief system. Upon the introduction of Regla de Ocha (or Santeria) to Cuba following the transatlantic slave trade, a new figure emerges, known for his tricks and adaptability. This study investigates the unique role Eleggua plays in Cuban life and how he represents a hybridized form of his African trickster predecessors.

**Dustin Gilmer, Senior**

*Physics: Richard Ignace*

**Factors that Influence Success in Research Funding Quantitative Study**

Productivity in the field of research is often difficult to quantify, but is important to answer due to the amount of funds that enter the field. To answer this question quantitative data such as hours spent and funding returned, as well as publication data can be used to find some measure of productivity.

**Autumn Glass, Senior**

*Psychology/Sociology: Ginette Blackhart*

**The Impact of Maladaptive Social Media Use on Mental Well-Being**

While social networking sites (SNSs) may be useful tools to communicate, connect, and share with others digitally, many individuals use SNSs in maladaptive ways. Maladaptive use of SNSs is defined by compulsive use and making social comparisons through SNSs. The objective of this study is to examine how maladaptive SNS use is related to depression, anxiety, and stress. Findings reveal that SNSs have a large impact on mental well-being, and that social media may inflict more harms than benefits.

**Holdon Guy, Junior**

*Political Science: Hadii Mamudu*

**Diffusion of 100% Tobacco-Free Policies in Higher Education Institutions in Tennessee**

As 99 percent of smokers start by age 26, higher educational institutions (HEIs) must take roles in reducing tobacco use among students with school tobacco policies (STPs). This study has five phases: a literature review, 10 focus group discussions, development of an STP rating system, assessment of the 71 STPs at non-profit HEIs in Tennessee, and publishing results. Variance is found among the 49 STPs of Tennessee public institutions. Eleven limit few tobacco products, and six limit smoking only near buildings.

**AUD 137A/3:55 pm**

**AUD 137B/1:45 pm**

**ROOM 130/3:15 pm**

**ROOM 130/9:20 am**

**AUD 137B/2:50 pm**

**Elizabeth Hale, Junior**

*Psychology: Myra Elder*

**The Relationship of Military Service Branch to Rates of Post-traumatic Stress Disorder and Substance Use Disorder Among Appalachian Veterans**

This study examines multiple Veterans Affairs Medical Centers to compare *Post-traumatic Stress Disorder* (PTSD) and *Substance Use Disorder* (SUD) in veterans from Central Appalachia. We expect to find a relationship between branch of service and the co-occurrence of PTSD and SUD. Past research has provided data on PTSD and SUD, but little information on the rates of co-morbidity is known. Other variables, such as age, race, sex, and combat status will be measured, controlling for impact on rates of diagnoses.

**Denise Harness, Senior**

*Mathematics: Jeff Knisley*

**A Comparison of Unsupervised Methods for DNA Microarray Leukemia Data**

Advancements in DNA microarray data have created the need for sophisticated machine learning algorithms and feature selection methods. Unsupervised classification identifies activated genes in a Leukemia patient. Partial correlations between the features are used to create a precision matrix. This technique reduces the number of genes to a fraction of the original 7,000. Then a graphical network of these connections is created. The results of this are compared against other feature engineering approaches to assess its accuracy on the Leukemia data.

**Emily Hearl, Senior, (co-presenter)**

*Computational Applied Mathematics: Nicole Lewis*

**Baltimore Police Department's Crime Data**

We analyzed the Baltimore Police Department's Crime Data for the American Statistical Association competition. The Crime data included the Calls to 911, Locations of Crimes, CCTV Locations, and the number of Officers in each District. We did comparisons on trends of 911 calls and where crimes are taking place along with how each has changed and how it could change in the future.

**Zoe Hester, Senior**

*English, Foreign Language: Michael Cody*

**Story-telling through Movement:**

**An Analysis of the Connections between Literature and Dance**

Movement and story-telling are the links between past and present; both dance and literature have the same artistic and primal origins. We began to dance to express and communicate, to worship and feel. We tell stories for the same reasons: to learn from the past and to be able to communicate in the present. This work explores the many connections between literature and dance through examinations of six dance forms: Native American, Bharatanatyam, West African, Ballet, Modern, and Post-Modern dance.

**Luke Hiester, Senior**

*Computing: Jay Jarman*

**File Fragment Classification with Neural Networks**

This study explored a novel approach for applying neural network models to file fragment classification, the task of identifying the type of a small isolated segment from a digital file, with application areas including digital forensics and network security. The results show that this approach has good potential, but further work is needed in model tuning. The contributions of this study include the application of neural network types previously unused in this domain and a novel representation for model input.

**ROOM 130/10:00 am**

**AUD 137A/4:10 pm**

**Rebecca Erin Hockman, Senior**

*Journalism: Susan Waters*

**Media's Perception of Veterans**

I am performing a quantitative study on the East Tennessee State University's population of veterans and their families by using an IRB-approved survey. The survey asks them how they feel they are affected by the portrayal of veterans in the media regarding obtaining a job, social standing in society, and general perception. In addition, my research received a \$500 grant that will be used for gift cards to be given to randomly selected participants of the survey.

**ROOM 120/9:35 am**

**AUD 137B/9:25 am**

**David Hopland, Sophomore, (co-presenter)**

*Computational Applied Mathematics: Nicole Lewis*

**Baltimore Police Department's Crime Data**

We analyzed the Baltimore Police Department's Crime Data for the American Statistical Association competition. The Crime data included the Calls to 911, Locations of Crimes, CCTV Locations, and the number of Officers in each District. We did comparisons on trends of 911 calls and where crimes are taking place along with how each has changed and how it could change in the future.

**AUD 137B/9:25 am**

**MILLENNIUM LOBBY**

**Amber Howard, Senior**

*Studio Art: Vanessa Mayoraz*

**Hold Me Down**

My work explores the interplay of flesh and spirit and finding a balance between both. *Hold Me Down* refers to my acceptance of a physical, primal need in a sexual encounter that juxtaposes a similar need in scripture, "Wives be submissive to their husbands."

**AUD 137A/2:50 pm**

**ROOM 130/10:15 am**

**Hal Hughes, Senior**

*Communication Studies: Kelly Dorgan*

**Capturing the Rise and Ruin of the Researcher: Uses of the Research Notebook**

This presentation examines the functions of the research notebook by a novice qualitative researcher. Drawing on a reflexive approach, I outline the benefits and best practice methods when using a research notebook. Discussed benefits include: 1) personalizing style; 2) reflecting on the researcher's emotional states; and 3) documenting the research process.

**ROOM 120/3:30 pm**

**AUD 137A/10:00 am**

**Matthew Jennings, Senior**

*French: Theresa McGarry*

**Nevertheless, She Persisted:**

**Gender Indexicality in the Speech of Elizabeth Warren, 2007-2017**

This project is a replication of a study done analyzing the relationship between the linguistically feminine and masculine elements of Hillary Clinton's speech over the course of 21 years which found that Clinton's language became decreasingly feminine or increasingly masculine as her involvement in the political world grew. By analyzing the speech of Senator Elizabeth Warren, this project aims to see if her speech displays similar linguistic trends despite a much shorter political career.

**ROOM 130/10:15 am**

**MILLENNIUM LOBBY**

**Jonathan Jennings, Senior**

*Graphic Design: David Dixon*

**Unlabeled 2018**

This work presents the idea of labels referring to gender identity, sexual orientation and the attempt to see these facets of one's self without pinning an exact label on an individual.

**Sydney Keith, Senior**

*Health Sciences/Microbiology Concentration: Jonathan Peterson*

**AUD 137B/11:25 am****Experimental Protocol for the Production of Bacterial-Expressed CTRP3**

Previous studies have shown that mammalian-expressed CTRP3 functions by lowering blood glucose levels in transgenic mice. However, mammalian-expressed CTRP3 is expensive and can only produce up to 1mg/L of recombinant protein. However, bacterial-expressed CTRP3 is relatively inexpensive and can theoretically produce 70mg of recombinant protein per L of bacteria. The issue being addressed in this experiment is to see if a functional bacterial-expressed CTRP3 can be produced effectively and economically by using a bacterial expression protocol.

**Sarah Caroline King, Senior**

*Music Performance: Alison Deadman*

**What You Hear is What You Hear:****Preparing an Arrangement of Steve Reich's "Nagoya Marimbas" for Flute Choir**

Visual artist Frank Stella (b. 1936) said about his work, "What you see is what you see." A member of the visual art movement known as Minimalism, he is famed for his repeating black-stripe paintings. There are noticeable parallels between the concept of these visual works and Steve Reich's (b. 1936) Minimalist music, particularly *Nagoya Marimbas* (1994). This presentation will explore the repetitive rhythmic components of Minimalist music and the challenges of arranging a percussion piece for a flute ensemble.

**Anastasia Kuvayskaya, Senior**

*Chemistry: Aleksey Vasiliev*

**Modification of Silica Surface**

Novel functionalized organic/inorganic hybrid materials were successfully synthesized by surface modification of mesoporous silica gel. Two surface reactions were used for immobilization of 4-vinylphenylboronic acid: hydrosilylation and hydrothiolation of the alkene group. The hydrothiolation reaction demonstrated better effectiveness and resulted in higher density of surface boronic acid groups. The obtained materials were highly porous with high surface area. They can be used for the preparation of various catalysts, adsorbents and composite materials.

**Kristina Lim, Senior**

*Biology and Chemistry: Krishna Singh*

**Protective Anti-Inflammatory Role of Extracellular Ubiquitin in Myocardial Ischemia/Reperfusion Injury**

Heart disease is the leading cause of death in the United States. Myocardial ischemia/reperfusion injury refers to the myocyte death that results from the cessation and subsequent restoration of blood flow to the heart. Ubiquitin (UB) is a highly conserved protein.  $\beta$ -adrenergic receptor ( $\beta$ -AR) stimulation in myocytes increases extracellular levels of UB, and extracellular UB decreases  $\beta$ -AR-stimulated myocyte apoptosis and cardiac fibrosis. This study explored the potential therapeutic role of extracellular UB in myocardial ischemia/reperfusion injury using a mouse model.

**Angel Lunceford, Senior**

*Microbiology: James Fox*

**The Importance of Baseline Analysis for Establishing Replicable, Evidence-Based Behavior Analytic Interventions: Implications for Researchers and Practitioners**

Single subject studies analyze individual behavior identifying how interventions change behavior. Critical to this analysis are repeated baseline measures to identify behavior function and evaluate intervention effects. Forty studies treating child behavior problems between 1997 and 2015 were analyzed. Average student age was 8 years. Most studies used simple frequency counts (47%) of behavior. Baseline observation averaged 42 minutes and 7.4 observations. Most studies (81%) reported no systematic analysis of baseline stability, making it difficult to establish evidence-based effective interventions.

**AUD 137A/4:35 pm****Ryan Lynch, Senior**

*Accounting and Finance: William Trainor*

**High Returns & Low Volatility: The Case for Mid-Cap Stocks**

This study examines excess returns and lower volatility generated by mid-cap firms. Larger returns of small-cap stocks is statistically insignificant. However, excess returns generated by mid-cap firms is statistically significant. This study hypothesizes the mid-cap anomaly results from the returns of growing firms within the segment, or that non-size-related factors have a significant impact on mid-cap firms. The results suggest the anomaly is not a result of either hypothesis. Therefore, the anomaly is not independent of non-size-related factors.

**Macon Magno, Senior**

*Physics: Richard Ignace*

**A Study of the H-alpha Emission Line Shape in Beta Lyrae**

Beta Lyrae is a binary star system containing two massive stars. The higher mass star (primary) is gaining mass from the lower mass star (secondary), and this process causes a disk to form around the primary star. Some studies suggest the disk contributes to the H-alpha emission, while others have shown that a jet exists in the system and could contribute to the H-alpha emission. We have considered various factors when modeling the H-alpha emission from Beta Lyrae.

**Shelby Maiden, Senior**

*Graphic Design: Andrew Scott Ross*

**The Commodity Club: Commodity Fetishism in Modern Art and Tattoos**

The current culture of commodity fetishism that surrounds both modern art and tattoos is disproportionately a part of the perpetuation of an artificial sense of society and community. It promotes the notion that by simply inking the deeper layers of their skin or by spending millions on a painting that somehow one becomes elevated and enters an elite space, or club, of people like them.

**Annie Malcolm, Junior**

*Nutrition: William A. Clark*

**Profile of Volatile Fatty Acids (VFA) in the Feces of Normal and Overweight College Students**

Five students of normal weight (N) and five who were overweight/obese (O) were recruited after IRB approval to provide a stool sample and fill out a food frequency questionnaire. Stool samples were analyzed for macronutrient composition and VFA fermentation profile. The data discovered suggests different fermentation in the colon between N and O participants that is potentially due to the macronutrient dietary profile, fiber intake, or bacterial species present in the colon.

**Larry Keith Maultbay, Senior**

*Theatre: Melissa Shafer*

**Work-in-Progress: The Playwright's Method**

An in-depth exploration of the play writing process. The playwright of *Closet Skeletons* retraces the steps of writing his play, while also discussing and uncovering the connections between his dramatic influences in theatre and film. *Work-in-Progress* will also discuss the conclusion of the play writing process as well as how audience feedback from staged readings was used to better the next draft of *Closet Skeletons*.

**ROOM 120/8:30 am****ROOM 130/10:45 am****AUD 137B/8:05 am****ROOM 120/8:55 am****AUD 137A/10:25 am****AUD 137B/8:30 am****AUD 137A/11:30 am**

**Brianna McCoy, Sophomore***Health Science: Beatrice Owens***Analysis of Prerequisite Anatomy Requirements**

The purpose of this project is to identify an optimum series of undergraduate coursework for success in ETSU's physical therapy program. Research based on seven years of academic performance data of students enrolled in ETSU's physical therapy program is used to explore the impact of undergraduate coursework on the performance of students in gross anatomy. Our hypothesis states students who complete separate, higher level courses at four-year universities are better prepared for rigorous work of graduate programs.

**Ragen McNair, Senior***Criminal Justice: Erica Hutton***Siblicide: Patterns and Typologies of Offenders**

This study analyzes 100 cases of siblings that murder their siblings within the United States. From these cases criminality patterns are identified and typologies are developed. The purpose of this study is to examine those who murder their siblings and help develop common patterns for this type of crimes that can later be used to assist in investigations.

**Evin McQuistion, Senior***Theatre: Bobby Funk***A Director's Approach to Annie Baker's "The Aliens"**

An overview of a director's process through the phases of rehearsal and performance for Patchwork Player's Spring 2016 production of *The Aliens* by Annie Baker. Includes research on the playwright and her other works as well as a journal of the rehearsal process of staging *The Aliens*.

**Austin Miller, Senior***Chemistry: Abbas Shilabin***Synthesis of Oxadiazole Derivatives as non- $\beta$ -lactam  $\beta$ -lactamase inhibitors**

Bacterial resistance to  $\beta$ -lactam based drugs such as penicillin is a deep scientific concern for both hospital and community acquired bacterial infections. The search for new classes of drugs as antibiotics has become ever more important. Oxadiazole derivatives and, in particular, 1,2,4-oxadiazolidin-5-ones are promising candidates as non- $\beta$ -lactam  $\beta$ -lactamase inhibitors. Unfortunately, current methods only provide access to oxadiazolidinones that are bulky and are unable to interact with  $\beta$ -lactamase due to steric concerns. The focus of this research is to present a method involving 1,3-dipolar cycloadditions of nitrones for the synthesis of oxadiazolidinones as well as a method for evaluating products inhibition of  $\beta$ -lactamase.

**J.P. Mitra, Senior***Construction Engineering Technology: Jeremy Ross***Optimizing Construction Estimation:****A Case Study of the ETSU Football Stadium and Fine Arts Center**

Considering the competitiveness of the construction industry, it is important to predict costs for a project accurately throughout the entire estimation process. Thus, it is important to know what makes construction estimation so variable even among expert estimators within the same company. This study will look at the estimation methods used by BurWil Construction Company and Denark Construction, Inc., for the ETSU Football Stadium and Fine Arts Center, respectively, as case studies for both post- and in-development construction projects.

**ROOM 130/1:30 pm****AUD 137B/2:35 pm****ROOM 130/3:45 pm****AUD 137B/11:40 am****AUD 137B/9:55 am****Devin Narwani, Senior***Health Sciences: Sean Fox***Can Alcaligenes be a New Treatment for Staphylococcus species?**

The *Staphylococcus* genus is a major cause of disease in humans. Our research previously demonstrated that *Alcaligenes faecalis* has inhibitory effects against *Staphylococcus aureus*. We therefore wanted to explore if *A. faecalis* inhibits other *Staphylococcus* species and if this effect is shared among *Alcaligenes* species. Our results indicate *Alcaligenes faecalis* and *Alcaligenes viscolactis* possess the ability to inhibit *Staphylococcus aureus* and all *Staphylococcus* species are inhibited in varying degrees. Understanding this mechanism may indicate new targets to combat *Staphylococcus* infections.

**Joe Oliver, Junior***Health Science: Jia Cuihong***Inhibition of Focal Adhesion Kinase Promotes Olfactory Stem Cell Self-Renewal and Neuroregeneration Via Ciliary Neurotrophic Factor**

Focal Adhesion Kinase (FAK) is one component of integrin signaling and regulates cell adhesion and proliferation. Previously, we identified FAK inhibition increased cell proliferation in adult mouse OE via ciliary neurotrophic factor (CNTF). Now we tested whether FAK inhibition increased neuroregeneration in the OE using BrdU pulse-chase method. FAK inhibitor significantly increased BrdU+ stem cells and olfactory neurons in the OE of CNTF wildtype but not knockout mice, indicating FAK inhibition promotes olfactory stem cell self-renewal and neuroregeneration via CNTF.

**Tristan Onek, Sophomore***Computer and Information Science: Brian Bennett***Developing an Open Source Financial Data Collector for Trade Algorithm and Artificial Intelligence Testing**

Successfully implementing stock trading algorithms using artificial intelligence requires a constant and reliable flow of data. Such data can be expensive or difficult to acquire. This study developed a zero-cost alternative model that mitigates the need to purchase big data from on line vendors. A collection program locates and stores publicly available stock data on the Internet for free. Using this new model, trade testing strategies and their required data sets can become more accessible to potential new investors.

**Drake Parrott, Senior***Interdisciplinary Studies: Cara Harker***Experiments in Creation**

This will be a modern dance piece created with different methods of dance composition, including pre-determined choreography, improvisation, and aleatoric movement.

**Timothy Payne, Senior***English: Martha Michieka***Appalachian English in Lee Smith's Saving Grace**

The dialect spoken within Appalachia is a distinct dialect within American English, one well-known and stigmatized against in spoken language. Past writers have written in the dialect inaccurately, treating it as a joke, but in recent years authors have been working to better represent the dialect. Among them is Lee Smith. My thesis examines how Smith, in her novel *Saving Grace*, expresses the dialect faithfully, using it to better represent Appalachian people and as a storytelling tool.

**ROOM 130/2:00 pm****ROOM 130/1:45 pm****ROOM 120/2:35 pm****ROOM 130/4:10 pm****AUD 137A/8:50 am**

**Rebekah Pearson, Senior***Sport Management: Natalie Smith***A Shift from Baseball? What Influences the Perception of the National Pastime?**

Baseball has often been seen as America's Pastime, etched into the cultural landscape of the United States for over 100 years. However, recent shifts both in cultural landscape and the sport industry puts this moniker into question. Whether Americans consider baseball the national pastime is currently up for debate. The crux of that debate for individuals may be influenced by their emotional attachment to the sport or an emotional attachment to competing sports.

**Anna Pfeiffer, Senior***English: Daniel Westover***The Medicine of Middle Earth: An Examination of the Parallels Between World War Medicine and Tolkien's "The Lord of the Rings"**

Despite J.R.R. Tolkien's flat denial that his famous *The Lord of the Rings* was influenced by his time in combat during WWI, many scholars have dedicated their studies to identifying concrete similarities between *LOTR* and the war. However, no significant study examines the connection between Tolkien's depictions of medical treatments in *LOTR* and his own experiences with wartime medicine. Examining remedies within *LOTR* and linking them to medical practices used in WWI reveals previously unidentified points of correlation.

**Eva Price, Senior***Exercise Science: Courtney Hall***Subjective Visual Vertical and Otolith Compensation:****Evaluating Off-Axis Rotation Stimulus in Healthy Controls**

Damage to the peripheral vestibular system affects the semicircular canals and/or otolith end-organs. Vestibular rehabilitation focuses on compensation of the semicircular canal-mediated vestibular-ocular reflex. Little is known about treatment for otolith dysfunction; yet recent research suggests that fall risk may be related to otolith dysfunction. A case study utilized off-axis rotation, which may stimulate otolith compensation. The goal of our study was to evaluate subjective visual vertical perception in healthy controls to determine optimal stimulus parameters for off-axis rotation.

**Mykala Reynolds, Junior***Communication Studies: Kelly Dorgan***Qualitative Research: Giving Stories the Justice They Are Due**

The qualitative research process is a time-consuming, intensive procedure that requires persistence, dedication, and determination. Sometimes researchers may feel they are not worthy enough to share research participants' stories, or that they are not equipped for the task of giving those stories the justice due. This presentation focuses on the complications of managing story-data, and the techniques for addressing those complications.

**Ben Riley, Junior***Digital Media - Game Design Concentration: Todd Emma***Procedural Environment & Gore-Based Combat System in a 3D Game Engine**

A unique and interesting game-play experience was developed by creating procedurally generated dungeons populated with dynamically generated content. Creation and implementation of a gore-based combat system, to include fractured skeletal meshes, creates a unique combat experience every time the game is played.

**ROOM 130/11:00 am****AUD 137A/1:55 pm****AUD 137B/10:45 am****ROOM 130/10:30 am****MILLENNIUM LOBBY****Amber Rookstool, Sophomore***English: Martha Michieka***Portrayal of Women in Hanan al-Shaykh's Fairy Tales**

In her work *One Thousand and One Nights: A Retelling*, Hanan al-Shaykh creates strong-willed, empowered, pious, morally good, and morally evil women who are demeaned and relegated by the men in the society. Al-Shaykh retells the oral stories of her childhood with a feminist perspective and transports fairy tales into the modern era. This presentation investigates the feminist qualities of her work and explores the influence of culture and the feminist movement on her adaptations.

**Sydney Ross, Junior***Anthropology: Melissa Schrift***The Social Justice System of Cuba**

The purpose of this project, to be conducted this summer, is to reveal the social impacts of Cuba's unique legal system in under-served communities within Havana. Cuba's legal system consists of the following: an emphasis on substantive measures of justice, the use of the legal system to promote socialist development, etc. For this project, I will be traveling to Cuba and focusing on how these aspects affect the economy, quality of education, and way of life in under-served communities.

**Olivia Rowell, Senior***Dental Hygiene: Deborah Dotson***ETSU Dental Hygiene Students' Interest in and Perceived Preparedness for Nontraditional or Expanded Roles after Graduation**

Nontraditional roles for dental hygienists could increase Americans' access to dental care; however, there is little information about dental hygiene students' attitudes toward nontraditional career paths. A voluntary simple survey was used to assess East Tennessee State University dental hygiene students' attitudes toward their careers after graduation in relation to under-served populations' lack of access to dental care and nontraditional roles for dental hygienists. Differences in responses based upon student classification were investigated using an independent samples test.

**Ciara Russell, Senior***Art History: Vida Hull***The Depiction of Bacchus in the Renaissance**

For my paper, I provide different works of Art where Bacchus is the subject. Bacchus is not seen much throughout the Renaissance and he is depicted in a certain way. I discuss why this weak form of Bacchus was chosen and why the past views of Bacchus were abandoned.

**Samuel Sevigny, Senior***Communication Studies: Wesley Buerkle***The Implications of Student-Faculty Interaction and Mentorship in Higher Education**

Given the falling retention rate of undergraduate students in higher education across the United States, this study extensively reviews research on how student-faculty interaction and mentoring relationship contribute to persistence to graduation. This review of the literature discusses the impact of such educational collaboration between students and faculty while exposing the different barriers to creating positive and frequent interactions inside and outside of the classroom.

**AUD 137A/9:15 am****AUD 137B/1:30 pm****AUD 137B/10:20 am****AUD 137A/8:05 am****AUD 137A/1:30 pm**

**Benjamin Siffring, Senior (co-presenter)***Digital Media - Game Design Concentration: Todd Emma***Procedural Environment & Gore-Based Combat System in a 3D Game Engine**

A unique and interesting game-play experience was developed by creating procedurally generated dungeons populated with dynamically generated content. Creation and implementation of a gore-based combat system, to include fractured skeletal meshes, creates a unique combat experience every time the game is played.

**Zakery Simpson, Senior***Physics: Gerald Deehan***The Enduring Effects of Adolescent Alcohol Exposure on Glutamate Levels****in the Prefrontal Cortex**

A large majority of individuals begin consuming alcohol (EtOH) during adolescence which represents a period of dynamic brain maturation. Preclinical data suggest that EtOH exposure during this period produces long-term behavioral and neurobiological alterations. Further, glutamate (GLU) transmission in the medial prefrontal cortex (mPFC) is believed to contribute to inhibitory and excitatory aspects of drug-seeking. Therefore, the current research examined the effects of adolescent EtOH consumption on subsequent glutamate levels within the mPFC during adulthood.

**Gavin Skelton, Junior, (co-presenter)***Human Services: Joyce Duncan***The Power of Performing Arts**

The undergraduate research featured a study of POP Arts, an all-inclusive program for students with and without disabilities. POP Arts emphasizes implementation of theatrical skills to improve behavioral, physical, and mental capabilities. Throughout the study, the researchers observed skill development through the eyes of volunteers and parents of participants in the program. Findings indicated that parents and volunteers noted enormous differences in socialization and skill acquisition and emphasized the importance of adding or continuing arts programs in the school system.

**Allison Smith, Senior***Human Services: Joyce Duncan***The Power of Performing Arts**

The undergraduate research featured a study of POP Arts, an all-inclusive program for students with and without disabilities. POP Arts emphasizes implementation of theatrical skills to improve behavioral, physical, and mental capabilities. Throughout the study, the researchers observed skill development through the eyes of volunteers and parents of participants in the program. Findings indicated that parents and volunteers noted enormous differences in socialization and skill acquisition and emphasized the importance of adding or continuing arts programs in the school system.

**Patrick South, Senior***Chemistry: Abbas Shilabin***Discovery of a Novel Inhibitory Compound Produced by Soil Bacterium Rhodococcus MTM3W5.2**

Due to increases in antibiotic drug resistance in many pathogenic bacterial strains stemming from the overuse of commercial antibiotics, the need to discover novel antibacterial compounds is becoming more urgent. A species of Rhodococcus, MTM3W5.2, has been discovered and was found to produce a secondary metabolite with inhibitory activity against closely related bacterial species. The aim of this study is to elucidate the structure of the inhibitory secondary metabolite by isolating and purifying it; then characterizing it using spectroscopic techniques.

**MILLENNIUM LOBBY****ROOM 120/9:20 am****AUD 137B/3:20 pm****Rose Stephens, Senior***Psychology: Andrea Clements***The Prevalence of Adverse Childhood Experiences Among Women with Postpartum Psychotic Symptoms**

Psychological and environmental stressors predict increased risk for Postpartum Psychosis (PP). Adverse Childhood Experiences (ACEs) predict poor mental health outcomes reminiscent of symptomatology of PP. Predicted results of this study would indicate that data collected via self-report in trauma-sensitive postpartum care, would show that number of ACEs predicts both prevalence and severity of psychotic symptoms in postpartum women. Screening for PP in regular postpartum care may identify women with clinically significant PP that are not captured by hospital admission alone.

**AUD 137A/3:55 pm****ROOM 120/10:40 am****Brittney Stubbs, Junior***Nutrition: Andrea Clements***Psychosocial Well-Being and Efforts to Quit Smoking in Pregnant Women of Appalachia**

Stress, self-esteem, depression, and disordered eating were analyzed among three groups of pregnant women in the Tennessee Intervention for Pregnant Smokers (TIPS) program: pregnant women who never smoked, smoked but quit prior to birth, and smoked but did not quit prior to birth. Smokers who quit were lower in stress and higher in self-esteem than those who did not quit. Non-smokers were lowest in stress and depression, and highest in self-esteem. There were no differences in disordered eating across groups.

**AUD 137A/3:55 pm****AUD 137A/8:35 am****Braden Trent, Sophomore***Communications Studies: Laughton Messmer***Cultural Competency in the Army: Training for Peace with Tomorrow's Societies**

The United States Army has recognized the need for cultural awareness in its officer training program. This change of pace from combat focus to key leader interaction highlights the results of years of "boots on the ground" experience in the Middle East. This presentation will discuss the importance of this shift and why cultural competency is crucial to the long term success of the United States military.

**ROOM 120/2:10 pm****AUD 137A/3:30 pm****Caitlin Tripp, Senior***History: Henry Antkiewicz***The American Impact on the Evolution of the Japanese Women's Rights Movement**

Japanese women's rights efforts experienced significant changes during the twentieth century in which the United States played a notable role. The study of the Women's Christian Temperance Union's arrival in the nineteenth century to the American occupation post World War II demonstrates important moments where America had an impact on Japanese women's rights efforts. This research aims to examine the correlation between American influence and the advancement of Japanese women's rights.

**ROOM 120/2:10 pm****AUD 137A/2:20 pm****Rebekah Voiles, Senior***English: Clay Matthews***Greed and Parrots: Examining the Emergence of Pirate Tropes in Treasure Island**

The current study, a textual analysis, will examine the popularized pirate novel *Treasure Island* and compare its tropes to the first pirate biography collection, *A General History of Pyrates*. The study will also utilize New Historicism approach. Through New Historicism, the researcher will examine what historical accounts, including political, cultural, and economic strife, would lead *Treasure Island* to emerge as the most well-known pirate novel, rather than its predecessors.

**Anthony Walls, Senior, (co-presenter)**

*Human Services: Joyce Duncan*

**The Power of Performing Arts**

The undergraduate research featured a study of POP Arts, an all-inclusive program for students with and without disabilities. POP Arts emphasizes implementation of theatrical skills to improve behavioral, physical, and mental capabilities. Throughout the study, the researchers observed skill development through the eyes of volunteers and parents of participants in the program. Findings indicated that parents and volunteers noted enormous differences in socialization and skill acquisition and emphasized the importance of adding or continuing arts programs in the school system.

**Grayson White, Senior**

*Health Sciences-Microbiology: Allan Forsman*

**The Effects of Simulated Spaceflight Conditions on the Mucin Lining**

**of the Mouse Uterine Tube**

This research focuses on determining the effects of simulated spaceflight-simulated microgravity and radiation- on the thickness of the mucin lining of a mouse uterine tube. The study evaluates each three sections of uterine tube (isthmus, ampulla, and infundibulum) separately, and works to determine whether simulated microgravity, radiation, or a combination of the radiation and microgravity causes significant changes to the uterine tube.

**Elizabeth Wiederholt, Senior**

*Psychology: Jill Stinson*

**Sex Offenders, the Tennessee Public Registry, and Suicidality**

This paper explores the relationship between the Tennessee sex offender registry and suicidality. The research looks at the registry as a factor in suicidality among offenders by identifying cause of death of offenders on the Tennessee registry between 2011 and 2016. An Internet search engine was used to determine causes of death from a list of offenders from the TBI, which included 434 men and women who died while registered. Findings and implications for intervention and policy will be discussed.

**Carrie Williams, Senior**

*Graphic Design: Scott Contreras-Koterbay*

**The Negative Contributions of Factory Farming**

My thesis is an examination of the common practices of industrial farming which works in conjunction with a three-dimensional art piece depicting information about humane and sustainable farming.

**Emily Williams, Senior**

*English: Mark Baumgartner*

**Fairy-Tale Convention and Post-Modernism in Aimee Bender's "Off": A Critical Introduction**

Aimee Bender's short fiction work, *Off*, informs my story, *Sacrament*. Bender's work utilizes what Jo Carney, in *Aimee Bender's Fiction and the Intertextual Ingestion of Fairy Tales*, identifies as conventional fairy tale form and motifs to explore post-modern ideas of disconnect, self-articulation, and emotional powerlessness. *Off* borrows from fairy tales as it employs narrative flatness, the "transformation dress" motif, and the violence and mutilation motif to extrapolate the protagonist's disorientation. *Sacrament* aims to follow Bender's lead.

**AUD 137A/3:55 pm**

**ROOM 130/2:25 pm**

**Lindsey Wright, Senior**

*Mathematics: Michele Joyner*

**Classifying Textual Fast Food Restaurant Reviews Quantitatively**

**using Text Mining and Supervised Machine Learning Algorithms**

While companies seek to improve their business model through customer feedback readily available on social media, extracting such feedback is financially expensive and time consuming. Thus, our study extracts business intelligence by structuralizing opinionated textual data using text mining and classifying these reviews by the degree of customer satisfaction through predictive modeling. Specifically, we analyze Yelp reviews on fast food restaurants and attempt to predict the associated star rating in order to understand the important factors in customer satisfaction.

**AUD 137B/11:10 am**

**ROOM 120/4:20 pm**

**Sarah Zimmer, Senior**

*Biology: Ranjan Chakraborty*

**Identification of the HmuPSTUV Operon and Its Role in Heme Utilization**

**in Rhizobia Leguminosarum ATCC 14479**

Iron is an essential nutrient for the proper functioning of many bacterial physiological processes. A deficiency of iron in bacteria can cause inhibition of cell growth and changes in morphology. Under iron-restricted environments, microorganisms seek out different methods of acquiring iron. One such method is utilization of heme-bound iron. Our lab reported that *Rhizobia Leguminosarum ATCC 14479* utilizes heme as an iron source. We are now characterizing the genes possibly involved in heme utilization.

**ROOM 130/8:55 am**

**MILLENIUM LOBBY**

**AUD 137A/2:35 pm**

**Fairy-Tale Convention and Post-Modernism in Aimee Bender's "Off": A Critical Introduction**

Aimee Bender's short fiction work,