The ETSU Undergraduate Research Symposium honors Dr. Jay Boland who began his career at ETSU in 1991 as a visiting assistant professor. In 1996 he was promoted to assistant professor and, in the same year, received the Distinguished Faculty Award for Excellence in Training and the College of Arts and Sciences Teaching Award.

A mathematician at heart, Boland not only taught several courses in mathematics at ETSU and elsewhere but published multiple works in advanced mathematics. Jay was also a strong supporter of undergraduate research. In addition to advising University Honors Scholars and Midway Honors Scholars, Jay mentored numerous undergraduate and graduate students in mathematics.

As with other areas of the Honors College, innovation remains a major characteristic of the progress made in ETSU Undergraduate Research (e.g., donor funding for summer research fellowships; creation of and continual updates to a unique Research Discovery Work Study; faculty scholarship and national involvement in the area of undergraduate research). The resources and research available to students contributes a great deal to their success as undergraduates. You can make a difference by creating a challenging learning environment in the life of a student by supporting Undergraduate Research at ETSU.

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Thank you for your support!

Dr. Jay Boland, Director
ETSU University Honors Scholars Program
2002-2006

Dr. James Boland

Our Gratitude

Many thanks to the Boland family for their continued support and endowed gift to The ETSU Undergraduate Research Symposium, dedicated to the memory of Dr. Jay Boland.

East Tennessee State University
2016 Boland Undergraduate Research Symposium

Student-Initiated Research & Creative Activities

Thursday, March 31, 2016
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

ETSU is an AA/EEO employee TBR 170-059-15.3M
Boland Undergraduate Research Symposium

The ETSU Boland Undergraduate Research Symposium is dedicated to the memory of Dr. Jay Boland, Director of the ETSU University Honors Scholars Program from 2002-2006. The Symposium is an event in which ETSU undergraduate students can present their research in an informal, non-competitive environment and is composed of oral presentations in various discipline-themed sessions. Performance artists (music, reading, theater) are encouraged to participate. Visual artists have the opportunity to discuss their creative endeavors with participants and visitors when displaying their work in the Millennium Centre lobby. All ETSU Undergraduate students may present their research for either work-in-progress or completed projects. By participating in this event, students will exchange ideas with peers and gather valuable feedback.

Presentation Sessions
Arts and Humanities
Social Sciences, Education, and Business
Science and Technology
Student Artworks

ETSU Steering Committee

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Dr. Jay Boland Honors Endowment

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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 supports faculty and student activities and service opportunities that make the world a classroom. With a variety of funding sources, our students as they pursue—and achieve—their individual passions and dreams.

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, TBR, and ETSU policies and regulations.

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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 Ph.Ds 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.

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Sponsors
Event Overview

**Millennium Centre Lobby**
- 8:00 am - Complimentary Breakfast
- 8:00 am - 5:00 pm - Student Art Display
- 12:45 pm - 1:30 pm - ETSU Bluegrass Ambassadors
- 1:00 pm - 1:30 pm - Meet the Visual Artists

**Room 220**
- Noon - 1:00 pm - Lunch

**Auditorium 137A**
- 8:45 am - 10:15 am - Arts & Humanities
- 10:30 am - 11:15 am - Sciences & Technology
- 11:30 am - 3:55 pm - Arts & Humanities

**Auditorium 137B**
- 9:00 am - 11:45 am - Sciences & Technology
- 1:30 pm - 2:35 pm - Arts & Humanities
- 2:50 pm - 4:00 pm - Social Sciences

**Room 120**
- 9:00 am - 11:45 am - Social Sciences
- 1:30 pm - 4:00 pm - Sciences & Technology

**Room 130**
- 1:30 pm - 4:20 pm - Sciences & Technology

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**TREMAINE SAILS-DUNBAR, Senior**
**AUD 137A/2:30 pm**
**Literature and Language: Robert Hassell**
**Letter From Birmingham Jail: The Transformative Actions Of Martin Luther King Jr.**

The pedagogical qualities of King's Letter from Birmingham Jail can be observed through the lens of Paulo Freire as his illustration of thematic universes can be used as a framework to further contextualize the conscious of King. What manifestations led to the writing of King's Letter from Birmingham Jail? What were King's transformative actions? Will an answer to the first help make sense of the second? I endeavor to briefly examine the transformative actions of Dr. Martin Luther King Jr.

**JAMIE STEWART, Senior**
**AUD 137A/9:30 am**

**Communication and Performance: Kelly Dorgan**
**It’s Not You, It’s Me: An Investigation Of How Introsversion And Extroversion Affect A Person’s Willingness To Communicate In Romantic Relationships**

Though American couples report that maintaining good communication is the most important aspect of their relationships, partner-willingness to communicate is embedded in a person’s personality. In an effort to explore the relationship between these two variables, the researcher has conducted a quantitative study to investigate whether or not people who report high levels of introversion are more or less willing to communicate in their romantic relationships than individuals who report high levels of extroversion.

**BRIDGETT STILNTER, Senior**
**AUD 137A/10:30 am**

**Environmental Health: Phillip Scheuerman**
**Microbial Enzyme Activity In Surface Water And Sediments**

The EPA’s 303(d) list (CWA) identifies impaired or threatened waterbodies when the pollutants exceed the total daily maximum load (TDM). The TDM determines a waterbody’s pollution budget, in which excess pollutants result in impaired water quality. Point and Non-point sources are identified by assessing chemical, physical, and biological factors. Microbial Enzyme Activity (MEA) may be used to identify pollution sources by assessing microbial metabolism changes in the community. The MEA method could be used in remediation efforts of waterbodies.

**DEREK STUFFLE, Senior**
**AUD 137B/9:00 am**

**Biological Sciences: Aruna Kilaru**
**Identification And Characterization Of N-Acylethanolamine Hydrolyzing Enzyme In Solanum Lycopersicum**

In plants, N-acylethanolamines (NAEs) function as mediators of stress responses and fatty acid amide hydrolases (FAAH) are responsible for their catabolism. To understand the physiological implications of NAEs in tomato, it is important to elucidate their metabolic pathway. Here, identification, cloning and biochemical characterization of tomato FAAH will be discussed.

**LAURA TRAISTER, Senior**
**AUD 137A/3:30 pm**

**Literature and Language: Karen Kernandez**
**Immigration And Identity Translation: Characters In Bharati Mukherjee’s Jasmine And Jhumpa Lahiri’s The Namesake As Translators And Translated Beings**

Bharati Mukherjee’s Jasmine and Jhumpa Lahiri’s The Namesake both feature immigrant protagonists who experience name changes in the meeting space of Indian and American cultures. Using translation as a metaphor for their identity transformations, I argue that as they alter their identities to conform to cultural expectations, they act as both translators and translated texts. Although they struggle with untranslatability, they gain the ability to bypass the limitations of a foreign/native binary and enter a space of negotiation and growth.
KALYNN PIERCE, Senior  
Speech Communication: Kelly Dorgan  

Invigorating The Collaborative Process: A Reflexive Analysis  
Of Troubles And Take-Aways From A Novice Researcher  

This study examined the relationship between educational environment (teacher attributes, instructional methods,  
and physical classroom setting) and student engagement during reading instruction. The findings indicate  
that environment affects student reading engagement; classrooms with high levels of organization, novel reading  
areas, and opportunity for students to select reading material were found particularly effective for reading engagement.

MATTHEW PIERCE, Senior  

Investigating Presence And Personal Significance Of Appalachian English In Carter County  
This study aims to purvey a living portraiture of the presence and personal significance of Appalachian dialect  
across age cohorts for residents of Carter County, TN. Through the use of focus groups representing four age cohorts  
ranging from 14 – 65+, the research hopes to, using interview and self-report processes, create a narrative of  
Appalachian identity as it presents itself through language, across time, within the community.

DANIEL RABULINSKI, Senior  
Biomedical Sciences: Douglas Thebeke  

Modulation Of Osteogenic Gene Expression In Cultured  
Marine Vascular Smooth Muscle Cells By The Cannabinoid Receptor Type 2  
Calcification of atheroatherosclerotic lesions increases the risk of myocardial infarction (heart attack). The mechanism  
of lesion calcification involves osteogenic dedifferentiation of vascular smooth muscle cells (VSMC). Recent studies  
indicate that the type 2 cannabinoid receptor (CB2) may play a role in lesion calcification, however the mechanism  
is unclear. Here, we show that pharmacologically targeting CB2 receptors in cultured VSMC undergoing osteogenic  
dedifferentiation alters the expression of osteogenic genes, including Runx2, a master regulator of bone formation.

RACHEL REECE, Senior  
Communications: Kelly Dorgan  

Being The Visible Other: A Study Of Cultural Immersion In Japan  
An opportunity to study in Japan led to my autoethnographical research on what it means to be the visible other in  
a presumably homogeneous society. This presentation will be used to discuss my findings in the discourse of race  
within foreign culture. Using interpretive theoretical perspective and standpoint theory, I will discuss how I became  
acclimated to Japan and was able to experience what it’s like to be considered the other.

LAUREN REED, Senior  

Literature and Language / Early Childhood Education (for thesis): Rosemary Galen  

Vertical Examination Of Reading Environment And Student  
Engagement In 1St-3Rd Grade Classrooms  
This study examined the relationship between instructional environment (teacher attributes, instructional methods,  
and physical classroom setting) and student engagement during reading instruction. The findings indicate that  
environment affects student reading engagement; classrooms with high levels of organization, novel reading  
areas, and opportunity for students to select reading material were found particularly effective for reading engagement.
It has been well documented that childhood trauma leads to unfavorable outcomes later. The present study examines the relationship between various trauma, psychiatric symptoms, and socio-ecological factors in responses to offender behavior in the forensic mental health system. It was hypothesized that arrest precedes hospitalization, and that specific diagnoses of a mental illness are related to outcome. It was also hypothesized that early exposure to environmental adversity would impact whether offenders were hospitalized or arrested first.

**Chemistry: Doug Thewke**

In vitro investigation of the effect of exogenous ubiquitin on processes associated with atherosclerosis. 

Atherosclerosis, characterized by the build-up of cholesterol and debris within arterial walls, is accelerated following myocardial infarction by poorly understood mechanisms. Ubiquitin, a well-studied intracellular protein, has recently been shown to exert extracellular effects on cardiac myocytes, in vitro, and in mice undergoing myocardial remodeling. This study investigates the potential role of extracellular ubiquitin in atherosclerosis by determining its effects on two critical atherosclerotic processes; the migration of vascular smooth muscle cells and the uptake of modified LDL by monocytes/macrophages.
**Social Sciences**

**Room 120 - Morning Session**

Welcome - Dr. Judith Slagle, Dean, Honors College

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**Student/Presentation Title**

**Department**

**Advisor**

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**Biomedical Sciences:** Krishna Singh

**Room 120/3:35 pm**

**Kritstina Lim, Sophomore**

**Role Of Exogenous Ubiquitin (Ex-Ub) In Myocardial Ischemia/Reperfusion Injury (IRi)**

Myocardial IRi refers to the myocyte death resulting from the cessation and subsequent restoration of blood flow to the heart muscle. Intracellular ubiquitin, a conserved protein, regulates protein turnover via the ubiquitin-proteasome pathway. Our lab demonstrated that β-adrenergic receptor (β-AR) stimulation in myocytes increases extracellular levels of Ub, and Ex-UB plays a protective role in β-AR-stimulated myocyte apoptosis in vitro and in vivo. This study investigates the effects of Ex-UB in mouse myocardial IRi, specifically myocyte apoptosis, inflammation and fibrosis.

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**AARON LIVELY, Senior**

**Communication and Performance:** Kelly Dorgan

**Maintaining Group Cohesiveness Despite Individual Goals**

Co-presenter: Hailey Patrick. This presentation focuses on how a research team can maintain a collective vision throughout the qualitative process. Members have a wide range of personal goals that may interfere with the completion of a multiphase study. Consequently, it is vital to understand how the team functions and maintains cohesiveness. Informed by collaborative qualitative research conducted by the presenters, we discuss techniques for motivating study teams to set aside individual goals and anxieties in favor of accomplishing shared goals.

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**Morgan Lockhart, Senior**

**Mass Communication:** Tommy Hughes

Tracing Hollywood’s Legacy Of Self-Censorship Through A Comparative Analysis Of The Film “Baby Face” (1933) In Its Censored And Uncensored Forms

In the early 1930s, the film business was booming and filled with sex, drugs, and scandal. All of that changed in 1934 with the enforcement of the Hollywood Production Code which effectively cleaned up the business into what most people today remember as classic Hollywood. By analyzing films from the Pre-Code era, and specifically “Baby Face” (1933), the roots of self-censorship in Hollywood can be traced to their current incarnation in the film business today.

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**Rachel Lowry, Senior**

**Health Sciences:** Sean Fox

**Influence Of Mechanical Choices On Development And Persistence Of Osteoarthritis**

**How A Preventative Perspective Involving Alexander Technique Can Affect Treatment**

Does osteoarthritis occur by default, or is it a product of an individual’s mechanical choices? As this disease is chronic and its direct cause remains elusive, a multi-dimensional perspective for both cause and management is most effective. I would like to consider Alexander Technique as one dimension in management of this disease. This thesis will discuss how osteoarthritis can be impeded by a heightened consideration of how joints are treated, a consideration that can be developed with Alexander Technique.

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**Kaitlyn Mathis, Senior**

**Biological Sciences:** Rebecca Pyles

**Impact Of Reduced Calcium During Development In Snakes**

Repeatedly produce young by laying eggs or by live birth. Species that produce live offspring have eggs without the outer, calcium-rich eggshell. In the corn snake, an egg-laying species, experiments were completed to compare hatchlings from eggs with normal eggshells with those whose outer eggshell was removed. Would the loss of calcium during development impact the hatchlings? This study showed that reduced calcium resulted in smaller hatchlings, primarily due to smaller vertebral sizes and skull lengths.

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**ETSU offers numerous research and creative activities that prepare students to reflect on policy and culture, to advance scholarship, and to influence the world around them. Such activities provide the experiences that are shaping tomorrow’s leaders for effecting positive change.**

www.etsu.edu/honors/ug_research
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<thead>
<tr>
<th>Time</th>
<th>Name</th>
<th>Department</th>
<th>Advisor</th>
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<tbody>
<tr>
<td>1:30 pm</td>
<td>Michael Lee</td>
<td>Division of Theatre and Dance</td>
<td>Herb Parker</td>
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<td>An Actor's Growth: From Student to Professional, Tackling Collegiate Theatre with Michael Lee</td>
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<td>1:55 pm</td>
<td>Matthew Pierce</td>
<td>Literature and Language</td>
<td>Clay Matthews</td>
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<td>Investigating Presence and Personal Significance of Appalachian English in Carter County</td>
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<td>2:10 pm</td>
<td>Lauren Reed</td>
<td>Literature and Language/Early Childhood Education</td>
<td>Rosemary Geiken</td>
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<td>Vertical Examination Of Reading Environment And Student Engagement In 1st-3rd Grade Classrooms</td>
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<td>Break</td>
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<td>2:50 pm</td>
<td>Tremaine Suits-Dunbar</td>
<td>Literature and Language</td>
<td>Robert Russell</td>
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<td><em>Letter from Birmingham Jail</em>: The Transformative Actions of Martin Luther King Jr.</td>
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<td>3:05 pm</td>
<td>Kaleb Wentz</td>
<td>History</td>
<td>Stephen Fritz</td>
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<td>The Reality of COMBAT: An Analysis of Historical Memory in Broadcast Television</td>
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<td>3:30 pm</td>
<td>Laura Treister</td>
<td>Literature and Language</td>
<td>Karen Kornweibel</td>
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<td>Immigration and Identity Translation: Characters in Bharati Mukherjee's “Jasmine” and Jhumpa Lahiri's “The Namesake” as Translators and Translated Beings</td>
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**THANK YOU for your dedication to ETSU’s Undergraduate Research & Creative Activities Program:**

**Faculty Mentors**

Dr. Richard Ignace, Director

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**Johnathan Jones, Senior**

**Communication Studies: Kelly Ferguson**

The Manufacturing Of A Screenplay

Scriptwriting involves an often complicated process whereby a dominate narrative is constructed. In this presentation, I will draw on my personal experiences as a novice screenwriter, reflecting on that process, including the necessary elements of research and inspiration. Also included are my personal experiences with unexpected developments during the investigation, development, and writing of the script's dominant narrative. Ultimately, I learned that through research, writers are able to produce a script embedded with audience-oriented and engaging stories.

**Rowdy Jones, Senior**

**Biomedical Science: Yu Zou**

**Pin1 Interaction In The Hyperphosphorylation Of Rpa**

RPA is a protein involved in several DNA metabolic reactions. This protein can be hyperphosphorylated in response to DNA damage. I hypothesize that Pin1 plays a regulatory role in this hyperphosphorylation reaction. To investigate this, Pin1 was knocked down from A549 cells using siRNA. The cells were then lysed, and the protein was visualized using western blotting.

**Hannah Justis, Junior**

**Art: Scott Contreras-Koterbay**

Deconstructed Growth

This drawing explores the comprehension of contemporary art through the eyes of an analytically minded artist. The art represents the self-referential process of understanding the creation of a contemporary style by deconstructing a rendered representation of a heart. By combining contrasting elements of organic forms and geometric angles, the idea of a mental growth and ongoing command of an abstracted idea begins to come into focus. This contemporary work literally deconstructs the idea of traditional art practices in ordered chaos.

**Michael Lee, Senior**

**Biomedical Science: Herb Parker**

An Actor's Growth: From Student to Professional, Tackling Collegiate Theatre with Michael Lee

This thesis presentation includes the journey of Michael Lee becoming a professional actor by performing several characters within two contrasting productions. The first, “The Trojan Women”, by Euripides, Michael portrayed Poseidon, Talthybius, and Hesiod in ETSU’s very own Bud Frank Theatre. Michael’s second production included the character of Charles in the modern drama “Race” by David Mamet, which was held in the newly renovated Studio 105. Michael documented his growth through daily journal entries and analyzing the final performances.

**James Lewis, Junior**

**Psychology: Chris Duke**

Predispositions To Drug Addiction: Does Childhood Malnutrition And Insecure Attachment In Adults Increase Substance Use?

This study will examine how past exposure to various levels and types of childhood maltreatment relate to attachment styles in adulthood, and how these two variables influence levels of alcohol/drug use and addiction issues. Understanding how predispositions of how one becomes an addict and/or alcoholic is significant for research and may assist in treating addicted individuals.
**Behavioral Effects Of Sub-Lethal Cadmium (Cd) Exposure**

The effects of heavy metals in aquatic systems on predators were investigated. Drosophila which were fed food laced with cadmium were fed to the spider, “Anelosimus studiosus.” Behavioral effects including exploratory activity, predator sensitivity, locomotor activity and respiration rate were monitored. Results confirmed uptake of cadmium by the test subjects and indicate that contaminated prey items have a significant impact on behavior.

**Responsive Ways Of Conducting Sensitive Research**

Qualitative researchers attend to the best interests of the participants, especially while dealing with sensitive research topics. Taking a personal storied approach, presenters (Harrill & Steinhardt) discuss emergent techniques for conducting sensitive qualitative research, by expanding the focus beyond participant-oriented techniques into researcher-oriented techniques. They reflectively examine how professionalism was maintained during study design, sampling, and data collection. Furthermore, presenters reflect on the debriefing techniques used after the study was concluded.

**Synthetic Overdrive Observed In Heart Failure**

Our primary goal is to understand how vagus nerve stimulation (VNS) works to benefit heart failure (HF) patients. HF disturbs the baroreflex response, which continuously monitors blood pressure conditions. We hypothesize that VNS corrects this disruption. To test this, I established a method to examine changes in activation of cardiovascular-related neurons in the medulla. C-Fos, a marker of neuronal activation, is used to stain the medullary neurons and should increase in tissue from HF vs controls and VNS-treated rats.

**3D Printed Food & Dysphagia: Food of the Future has a Purpose**

Perhaps you’ve heard about 3D printed food and are left wondering: is it real? is it practical? will I have a printer in my house? why would I 3D print something I can grow—or buy it at the store? It is real. It is cool. And it solves real problems particularly with the elderly with swallowing disorders in hospitals & institutions. An estimated 75 percent of nursing home residents experience some degree of dysphagia and 3D printed food can help them.

**Christian Legitimation**

Comparing the Utilization of the PEDS and the PSC-17 Screeners in a Pediatric Primary Care Clinic

**Predispositions to Drug Addiction: Does Childhood Maltreatment and Insecure Attachment in Adults Increase Substance Use?**

**Early Woodland Ceramics In Upper East Tennessee**

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give@etsu.edu
Psychology: Jodi Polaha  
Comparing the Utilization Of The Peds And The Psc-17 Screeners In A Pediatric Primary Care Clinic  
Pediatric behavioral and developmental health screeners are highly effective and time efficient methods of assessing behavioral concerns in a primary care setting. This study was designed to compare the utilization of two different screening tools and their impact on rates of referral to behavioral health interventions using an evaluative framework called the RE-AIM model (Reach, Effectiveness, Adoption, Implementation, and Maintenance). The study found that one screener was better at identification, and led to a greater referral rate than the other.

JAMES ELIOTT, Senior  
Chemistry: Cassandra Eagle  
Beta-Glucans From "Saccharomyces Cerevisiae": Progress Toward A Pure Extraction Protocol  
Extraction of pure (1,3/1,6)-beta-glucans from "Saccharomyces cerevisiae" was the research goal. Beta-glucans are immunomodulators, essentially turning on the immune system. Previously published methods produced beta-glucans with low side chain lengths and few branching occurrences. A multivariable approach employing reduced extraction steps, initial sample size, and concentrations of reagents was used. Producing greater yields of beta-glucans while maintaining high purity was the result. Analytical techniques confirmed the purity of the glucans. These results have applications for the pharmaceutical industry.

ROBBIE GARGETT, Senior  
A Cross-Cultural Study Of Mongolia And The United States Of America  
This research focuses on the relationship of the final and relatively less studied cultural dimension, indulgence vs. restraint (IVR), which will demonstrate how this dimension affects impulsive buying consumer habits in the U.S. and Mongolia. This project is the first research of IVR in Mongolia since the country is rarely studied and there is no data found for this cultural dimension.

DUSTIN GILMER, Junior  
Biomedical Sciences, Quillen College of Medicine: Carilion Clinic  
Focal Adhesion Kinase Mediates Adult Olfactory Stem Cell Proliferation Through Regulating Ciliary Neurotrophic Factor  
Focal Adhesion Kinase (FAK) is one component of integrin-extracellular matrix protein signaling and regulates stem cell adhesion and proliferation. The olfactory system maintains neurogenesis throughout life. We tested the hypothesis that inhibition of FAK initiates adult olfactory stem cell proliferation by measuring BrdU/EdU incorporation. FAK inhibition significantly increased BrdU+/EdU+ cells in the OI of C57BL/6 Ciliary Neurotrophic Factor (CNTF) wildtype but not CNTF knockout mice, indicating inhibition of FAK induces adult olfactory neural stem cell proliferation through CNTF.

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**Room 120 - Afternoon Session**  
**Welcome** - Michelle Hurley, Assistant Dir., Trio Outreach Sciences & Technology

**Students/Presentation Title**  
**Department**  
**Advisor**

<table>
<thead>
<tr>
<th>1:30 pm</th>
<th>Mackenzie Davenport</th>
<th>Biological Sciences</th>
<th>Dhirendra Kumar</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:45 pm</td>
<td>Bret Coggins</td>
<td>Biological Sciences</td>
<td>Lev Yampolsky</td>
</tr>
<tr>
<td>2:10 pm</td>
<td>Matthew Hinkle</td>
<td>Biological Sciences</td>
<td>Eric Beaumont</td>
</tr>
<tr>
<td>2:25 pm</td>
<td>Rowdy Jones</td>
<td>Biomedical Science</td>
<td>Yu Zou</td>
</tr>
</tbody>
</table>

**2:40 pm - 2:55 pm**  
**Break**

<table>
<thead>
<tr>
<th>2:55 pm</th>
<th>Gage Armstrong</th>
<th>Biomedical Science</th>
<th>Donald Hoover</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:20 pm</td>
<td>Virginia Ingram</td>
<td>Audiology &amp; Speech-Language Pathology</td>
<td>Gregory Ordway</td>
</tr>
<tr>
<td>3:35 pm</td>
<td>Kristina Lim</td>
<td>Biomedical Science</td>
<td>Krishina Singh</td>
</tr>
<tr>
<td>3:50 pm</td>
<td>Holden Dingus</td>
<td>Physics and Astronomy</td>
<td>Richard Ignace</td>
</tr>
</tbody>
</table>

**3:55 pm**  
**A Flickering Analysis of Chi Cygni using Kepler Data**

**Congratulations to all symposium presenters. Thank YOU for sharing your research and projects!**
BRET COGGINS, Senior
Biological Sciences: Lev Yampolsky

**Long-Term And Short-Term Physiological Changes In Daphnia Magna During Acclimation To High Temperature**

An important component for an organism's survival in a dynamic environment is an equally dynamic method of response. This study attempts to explain some mechanisms and interactions of variable phenotypes in response to high temperature using Daphnia as a model system. We found that temperature tolerance in Daphnia is probably due to antioxidant activity and that geographically distinct clones (genotypes) of the same species had different capacities to respond to a higher temperature in a non-genetic way.

MACKENZIE DAVENPORT, Senior
Biological Sciences: Abhendu Kumar

**RNA-Silencing Of A Putative Response To Dehydration 22 Like Gene In Nicotiana Tabacum To Assess Its Role In Stress Signaling**

SIP-355 is an interacting protein of salicylic acid binding protein (SABP), which is a critical component in plant defense against pathogens. SIP-355 is a putative response to dehydration 22 (RD22) like protein that is known to be expressed under water stress. To understand the role of SIP-355, transgenic Nicotiana tabacum plants silenced in SIP-355 were generated and tested for their response to various abiotic stresses.

CAYLYNN DE PRETER, Junior,
Psychology: Russell Brown

**Adolescent Methylphenidate Exposure Alters The Behavioral Response To Nicotine**

This study observed relationship between adolescent exposure to methylphenidate (MPH; Ritalin) and nicotine self-administration in rats. MPH is the most commonly prescribed medication for Attention Deficit-Hyperactivity Disorder (ADHD). Animals were treated with a 1mg/kg dose of MPH or saline beginning on postnatal day 28, and were given a school day dosing (five days on, two days off). Self-administration results revealed that rats given pre-exposure to saline demonstrated enhanced motivation to self-administer nicotine as compared to MPH-exposed rats.

ADAM DENTON, Senior
Psychology: Russell Brown

**The Effects Of Antipsychotic Treatment Upon Associative Learning In A Neonatal Quinpirole Model Of Schizophrenia**

The present research examined the effects of antipsychotic medication upon nicotine associative reward within a novel model of schizophrenia. A conditioned place preference paradigm was utilized to measure the associative reward of nicotine in rats either haloperidol or clozapine, which are commonly prescribed antipsychotics. We found that haloperidol pretreatment abolished the rewarding effects of nicotine, whereas clozapine merely reduced such rewarding effects. These findings implicate the role of dopaminergic D2 receptors in the rewarding effects of nicotine among schizophrenics.

HOLDEN DINGUS, Senior
Physics and Astronomy: Richard Ignace

**A Flickering Analysis Of CH Cygni Using Kepler Data**

Utilizing data from the Kepler Mission, we analyze a flickering phenomenon in the symbiotic variable star CH Cygni. We perform a spline interpolation of an averaged light curve and subtract the spline to acquire residual data. This allows us to analyze the deviations that are not caused by the star’s semi-regular periodic variations. We then histogram the residuals and perform moment calculations for variance, skewness, and kurtosis for the purpose of determining the nature of the flickering.

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**Room 130 - Afternoon Session**

**Welcome - Dinah DeFord, Academic Coordinator, McNair Program**

**Sciences & Technology**

<table>
<thead>
<tr>
<th>Student/Presentation Title</th>
<th>Department</th>
<th>Advisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30 pm</td>
<td>Megan Butler</td>
<td>Microbiology, Quillen COM</td>
</tr>
<tr>
<td>1:30 pm</td>
<td>Dustin Gilmer</td>
<td>Biomedical Sciences, Quillen COM</td>
</tr>
<tr>
<td>2:10 pm</td>
<td>Daniel Rablinski</td>
<td>Biomedical Sciences</td>
</tr>
<tr>
<td>2:35 pm</td>
<td>Rachelle Lowery</td>
<td>Health Sciences</td>
</tr>
</tbody>
</table>

**3:00 pm - 3:15 pm Break**

**3:15 pm**

| 3:15 pm | Sarah Zimmer | Health Sciences, Microbiology | Joy Wacha |
| 3:30 pm | Darrick Nanto | Engineering Technology, Surveying & Digital Media | Paul Sims |
| 3:35 pm | Ross Gargott | Computing | Jay Jarman |

**Lobby**

**Visual Arts - Meet the Artists**

| 1:00 pm | Elisa Askonas | Art | Scott Koterbay |
| 1:00 pm | Hannah Justis | Art | Scott Koterbay |
HEATHER ALEXANDER, Senior  
History: John Rankin  
Recreating Richard III: The Power Of Tudor Propaganda  
Because it signified the violent transition from the Plantagenet to Tudor dynasty, the death of King Richard III at the battle of Bosworth’s Field was a monumental event. After five centuries, his skeleton was rediscovered by an archaeological team at a site, formerly the location of the Greyfriars Priory Church. The presentation uses the forensic evidence to examine the extent to which the perceived image of Richard III is the result of Tudor propaganda.

GAGE ARMSTRONG, Senior  
Biomedical Sciences: Donald Hoover  
Effect Of Sterile Peritonitis On The Expression Of Substance P In Primary Sensory Neurons And Nerves  
It has been shown that activation of macrophages in the gut contributes to stimulation of vagal sensory nerve through the release of pro-inflammatory cytokines. We hypothesize that primary spinal sensory nerves are also affected. Using an intraperitoneal injection of zymosan, sterile peritonitis was induced and the effect on sensory neurons was measured. An increase in the number of spinal sensory neurons expressing the nociceptive neuropeptide substance P (SP) and increased expression of SP in spinal cord sections were found.

ELISE ASKONAS, Sophomore  
Art: Scott Koterbay  
Kat  
My piece, “Kat”, is a portrait of a friend. I chose a grey scale palette so that the focus would be on the contrast of the light hitting her skin and illuminating the natural beauty in the moment. I chose to leave the wooden panel unfinished to accentuate the natural feel in the raw moment, as the painting exposes Kat in a natural state.

SAGE BLAOCK, Senior  
Philosophy: Keith Green  
Christian Legitimation  
This presentation explores the phenomenon of legitimation and its negative impacts with regard to the areas of philosophy and religious studies. Specifically, the author examines the problem of the legitimation of anti-Semitism by Christians in Nazi Germany.

DAVID BURTON, Senior  
Economics: Pranav Bhattacharjee  
Uncompensated Care After The ACA Medicaid Expansion  
The Affordable Care Act and its Medicaid expansion have caused many economic researchers to predict changes in the uncompensated care levels for hospitals. According to the American Hospital Association, uncompensated care is the total amount of care provided for which no payment was received from the individual or an insurer. This study compares uncompensated care costs for Medicaid expansion states versus non-expansion states by utilizing statistical tools such as distributional modeling and one way ANOVA testing.

MEGAN BUTLER, Senior  
Microbiology, Quillen COM: Jennifer Hall  
Influence Of Estrogen And Progesterone On Chlamydial Infections  
Chlamydia trachomatis genital infections are problematic for a large portion of the population, especially young women. While often asymptomatic, these infections can lead to complications such as pelvic inflammatory disease and infertility. Hormones such as estrogen and progesterone have been shown to influence the progression of Chlamydia infections. Focusing on the Wnt/B-catenin pathway in the female genital tract, this study hypothesized that estrogen promotes chlamydial infection by activating the Wnt/B-catenin pathway whereas progesterone acts as an inhibitor.

KEVIN CARLSON, Senior  
Philosophy, Economics: David Harker  
A Counterfactual Account Of Causal Mechanisms In The Philosophy Of Economics  
This paper is aimed at detailing two possible accounts of explanation in the Philosophy of Economics: a Woodwardian counterfactual account, and a causal mechanistic account. I argue that the two are best understood as overlapping and, when taken together, provide a more holistic means for understanding and explaining economic phenomena than a system which appeals to only one or the other.

ALEXANDER CASSELL, Junior  
History: Dinah Mayo-Bobee  
Formation Of Political Parties In The United States, 1790-1800  
I will be writing on the formation of the first two major political parties, the Democratic-Republicans and the Federalists, in the United States. I will discuss how these two parties changed the Presidential elections from 1796-1800, and therefore the American Presidency itself. Furthermore, I will examine the County and Court factions in England and how their opposing views on the scope and size of a central government influenced the thinking of Adams and Jefferson.

ALANA CLAXTON, Junior  
Communication Studies: Kelly Duran  
Telling Tales  
First-person narrated stories lend themselves to critique and interrogation, creating a lost sense of ownership and authority in one’s personal reality. Hoping to examine ways in which personal narratives can be molded to first-person narrative.