

GUS 2017

Guilford Undergraduate Symposium

► CELEBRATING 10 YEARS



APRIL 21, 2017

A MESSAGE FROM THE PRESIDENT

Dear Guilford College community:
The Guilford Undergraduate Symposium (GUS) is one of our most anticipated events of the year—and for good reason. I am thoroughly impressed by the depth of our students research scholarship and the remarkable poise they demonstrate in presenting their fascinating work.

In addition to revealing the considerable academic rigor and resolve of our students, GUS vividly illustrates the profound impact of faculty mentorship on student success at Guilford College. Working side-by-side with faculty, our students are gaining invaluable insights and highly practical problem-solving experience that will give them tremendous advantages in competing for graduate school and/or their first career endeavor.



" I AM THOROUGHLY IMPRESSED BY THE DEPTH OF OUR STUDENTS RESEARCH SCHOLARSHIP AND THE REMARKABLE POISE THEY DEMONSTRATE IN PRESENTING THEIR FASCINATING WORK."

As president, I am extremely proud of all the students showcasing their great work at GUS. Congratulations to each of you on your considerable academic achievements. I trust the work you are sharing with us this week will be among the many treasured memories of your life-shaping Guilford educational experience.

On this Tenth Annual GUS, I applaud Melanie Lee Brown, Director of Research and Creative Endeavors, and the GUS Planning Committee for their vision and steadfast commitment to quality undergraduate scholarship opportunities. Just think about the plethora of student work created and developed over the past decade! And thank you to all the students, faculty and staff who have worked so hard this year, and over the past ten years, to create an inspiring celebration of student scholarship, creativity and research. You help Guilford College shine with distinction!

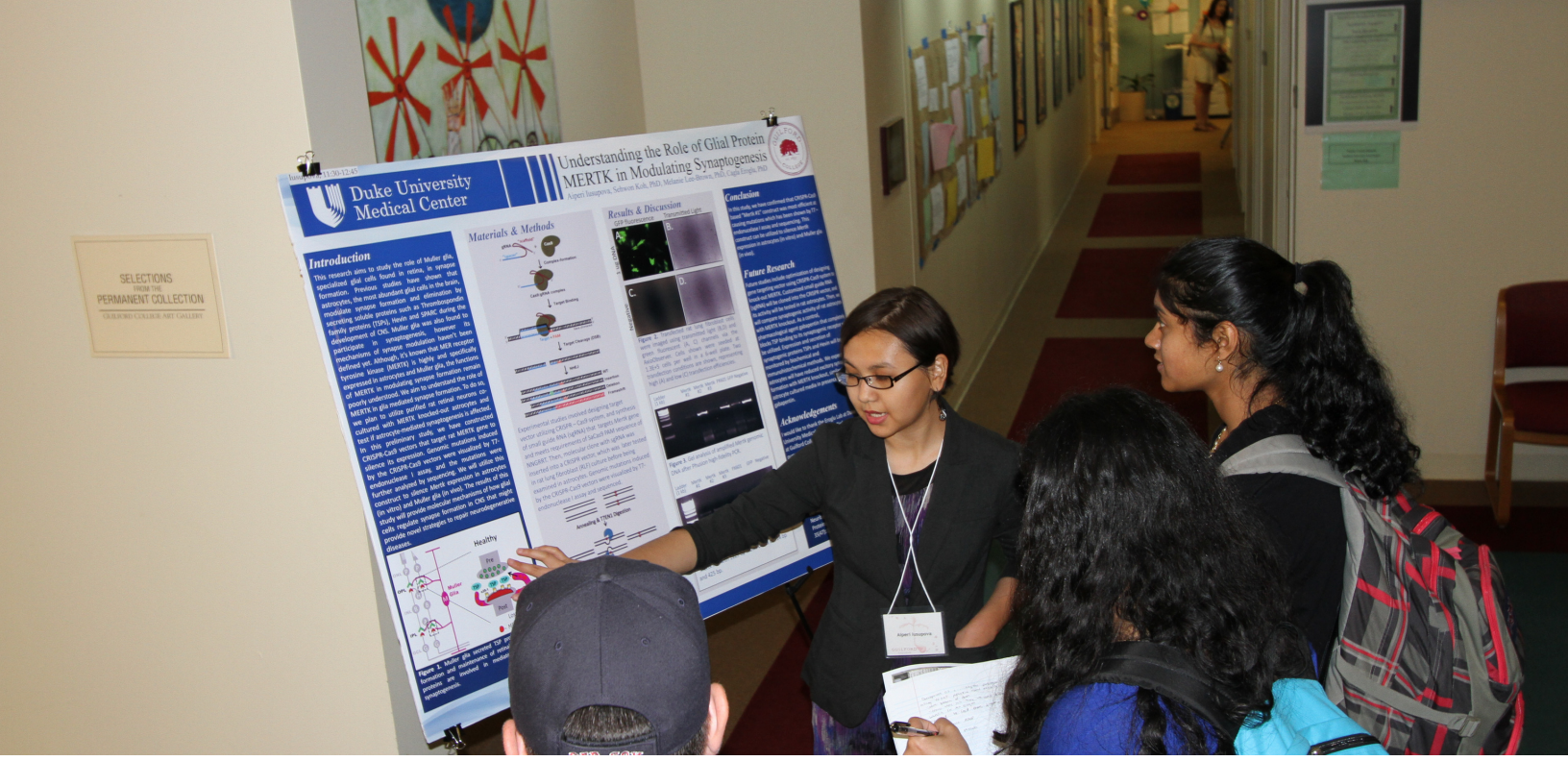
Sincerely,
Jane K. Fernandes
President



WELCOME

Welcome to the Tenth Annual Guilford Undergraduate Symposium (GUS). More than 100 Guilford students representing a wide variety of departments and programs will be giving performances, exhibiting creative works, reciting original poetry, presenting original research, and leading panel discussions and group presentations throughout the day. This symposium is an exciting opportunity to highlight our collective academic achievements across all majors, programs, departments, divisions and classifications.

We thank you for coming together in appreciation of scholarship across disciplines. We hope that you see many of the presentations this afternoon to celebrate the diversity and depth that helps Guilford College students shape the future. We wish to thank the Guilford College Board of Visitors, and Institutional Advancement for providing financial support for this event. We also would also like to thank the entire community for their support of the GUS. Thanks also to the participants and the many faculty who have sponsored student presentations and otherwise assisted students in their work. We further appreciate the efforts of students and staff members from the departments who have helped organize and setup the symposium. Thank you again for your participation in this tenth annual celebration of Guilford students' work. GUS is a unique opportunity for students to present their work to a diverse group of students, faculty, and members of the community. We hope you find your experience rewarding!



SUMMARY SCHEDULE

- This program gives the detailed schedule and abstracts or summaries for all student presentations.
- Short talks and panel discussions Duke 202, 203, 204, 213, M-L; King 123: 11:30 am-4:00 pm.
- Posters and exhibits Carnegie Room and other locations, Hege Library: Posters and exhibits will be on display from 11:30 am-4 pm.
- Presenters will be available at one of three sessions as noted in the schedule.
- Readings by authors of this year's GreenLeaf Review (2:30pm) will be in the Art Gallery.
- Refer to the calendars on this Sway to easily add events times to your calendar.
- Refreshments for all attendees will be available in the Academic Commons in Hege Library.
- Thank you again for your participation in this seventh annual celebration of Guilford students' work.

GUS ORGANIZING COMMITTEE

1. Melanie Lee-Brown:
Associate Professor of
Biology and Director of
Research & Creative
Endeavors



2. Dave Limburg:
Professor of Foreign
Languages



3. Rachel Riskind:
Assistant Professor of
Psychology



4. Kathryn Shields:
Associate Professor of Art



5. Rob Whitnell: Professor
of Chemistry

6. Lavon Williams:
Professor of Sport Studies



Special thanks to the
Guilford College librarians
for their assistance with
GUS 2017

Program
Acknowledgements: Mika
Davis and Tierney
Steelberg





GUS SESSION CHAIRS

11:30am-12:45pm

Panel Discussion 1, Duke Leak Room, Gail Webster

Panel Discussion 2, Duke 204, Randy Gooch

Short Talks 1, Duke 202, Krista Craven

Short Talks 2, Duke 203, Rachel Riskind

1:00-2:15pm

PPS, King 126, Jennie Knight

Panel Discussion 3, King 123, Terry Hammond, Antoine Williams, Andrew Young

Short Talks 3, Duke 202, Holly Peterson

Short Talks 4, Duke 203, Maria Bobroff

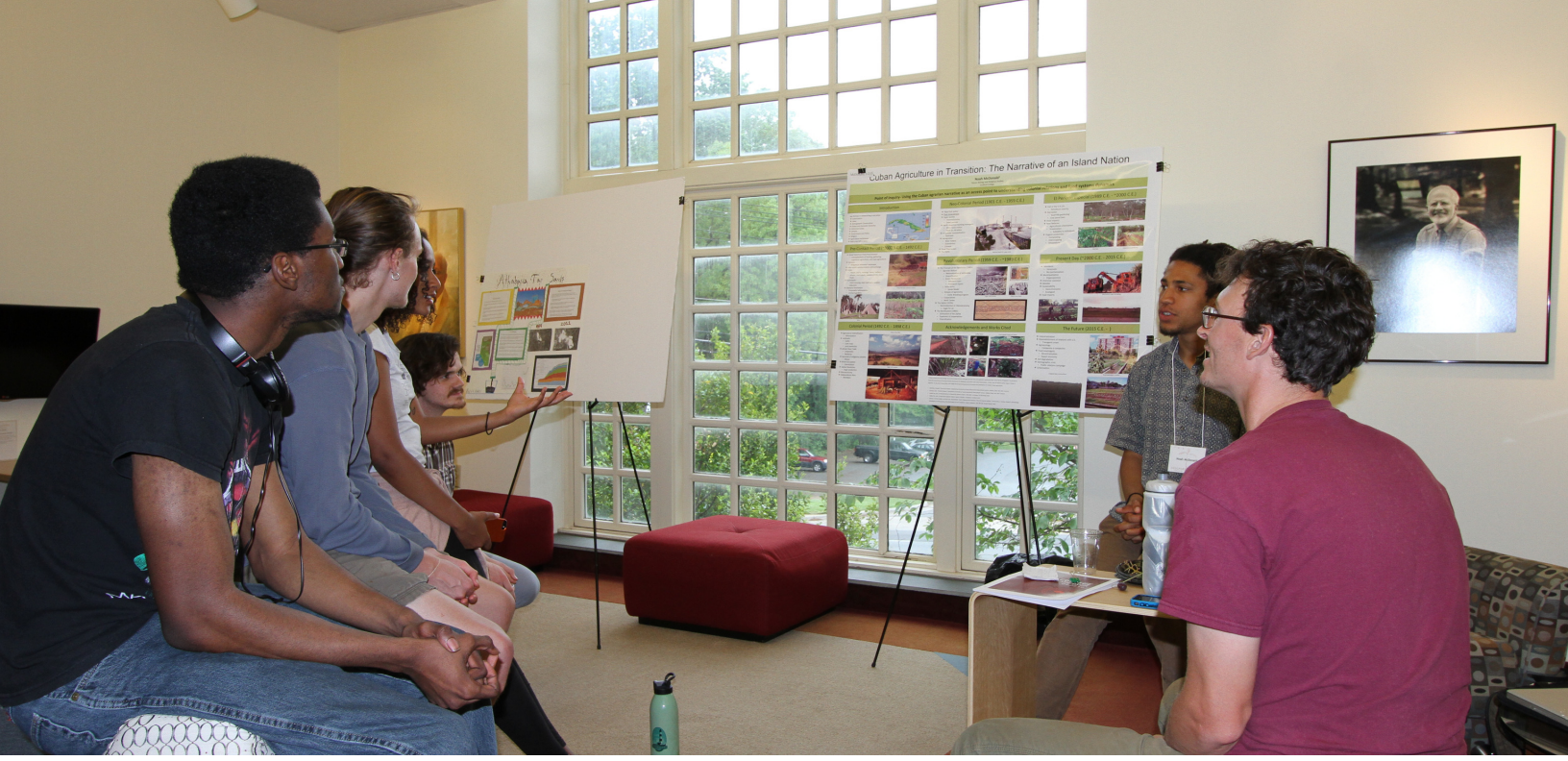
2:30-3:45pm

Panel Discussion 4, Duke Leak Room, Zhihong Chen

Short Talks 5, Duke 203, Maria Rosales

Short Talks 6, Duke 213, Marlene McCauley

Performance, Art Gallery, Sherry Giles



INFORMATION FOR GUS PRESENTERS

The Guilford Undergraduate Symposium (GUS) is a unique opportunity for students to present their work to a diverse group of students, faculty, and members of the community. We hope you find your experience rewarding! Although there is no dress code for GUS, most presenters will choose to dress in professional attire (in other words, no athletic wear, jeans, etc.). Some session chairs may require professional attire.

Attendance: Tell your professors and fellow Guilford students that you are presenting at GUS and encourage them to come. You are also welcome and encouraged to invite family members and friends outside the Guilford community to attend GUS.

Registration: Check in at the GUS registration table in the library prior to your session. This is where you will pick up your name tag and conference program. All presenters, sponsors, and session chairs will receive a token of appreciation for their participation in GUS. The registration table will be open from 9:30 am until 3 pm.

Before and/or after your presentation: Remember that there will be a lot of great presentations going on throughout the day. Attend as many presentations and performances as you can and support your colleagues in their work.



INFORMATION FOR POSTERS AND EXHIBITIONS

Set up your poster or exhibit in Hege Library anytime between 9:30 am and 11:30 am the morning of GUS. Your poster or exhibition will be available for view during the entire GUS event, but you should be present to discuss your work and answer questions during your assigned poster/exhibition session. Check in with one of the session chairs to find out where to set up. Check the schedule posted to Canvas or for your assigned session and be sure to arrive a few minutes early and stay throughout the session.



INFORMATION FOR SHORT TALKS, PANELS, AND PERFORMANCES

Check the schedule posted to SWAY (tinyurl.com/GuilfordUS10) for who will be your session chair, the start time of your session, and the assigned room.

Bring the file to your assigned session on a thumb/jump/usb drive.

Arrive at your room at least 15 minutes before your session to check in with your session chair, meet your fellow presenters, and load your presentation.

During the session:

Time your presentation according to the time allotted, and also allow time for questions.

For short talks, plan to present for 10-12 minutes and leave 3-5 minutes for Q & A.

For panels and performances, talk with your faculty sponsor about how the panel should be organized.

Stay for the entire session and listen courteously when others are presenting. Ask the other presenters questions about their work.



INFORMATION FOR AUDIENCE MEMBERS

- Plan to attend entire sessions instead of individual presentations whenever possible
- Do not enter or leave the room during anyone's presentation or performance. Instead, enter and leave the room at the beginning or end of the session. If you must leave mid-session, leave in between presentations.
- Questions for presenters should be short and respectful. Longer questions can be communicated to the presenter after the session.

PANEL DISCUSSIONS



PERFORMANCES AND POSTER EXHIBITIONS



PRINCIPLED PROBLEM SOLVING



SHORT TALKS

What is Narratology?

- The study of stories
- Derived from structuralism
- Can be applied to anything that contains any sort of narrative (film, video games etc.)



ADC
Lange
Chavez
DSS
40

Misalliance

by George Bernard Shaw

A COMEDY

about



THEATRE STUDIES PRODUCTION

- Tarilabo Koripamo and Emma Moreno (Senior Theses performances). Serafina Besecker, Caleb Carson, Riva Fairhall, Anna Fox, Lana Heltzel, Sarah Hutton, Elliott Jarrett, Tawanna Maryland, Tabitha Mocherman, Maya Moore, Xavier Parris-Turner, Madison Pointer, Nathan Ray, Max Shumate, Ari Smith, Madison Stranahan, Jeremy Toda-Ambaras, Lindsey Zeritis (Design, Tech, Management, and Performance practicums)
Misalliance, a comedy by George Bernard Shaw
Theatre Studies
Faculty sponsors: Brian Coleman, David Hammond, and Robin Vest
(Theatre Studies Production, 8 pm, Sternberger Auditorium)

In Theatre Studies productions students apply techniques learned in the classroom to the creative problem solving involved in designing, mounting, rehearsing, marketing and presenting a fully realized production to the community. Each project is a collaboration of dozens of students working with faculty guidance in many areas: acting, directing, dramaturgy, stage management, scenic art and construction, costuming, properties design and execution, lighting and electrics, sound, publicity and marketing, box-office, and business and house management. Over their four years in the department, students take on increasingly challenging production and performance responsibilities, concluding with final senior theses projects in their areas of focus. They document their achievements in digital portfolios and regularly assess their progress in the development of their creative processes.

Research for each production involves extensive study of the “world of the play,” including the societal influences affecting the characters; study of the circumstances that shaped the playwright’s development and views; analysis of the dramatic structure of the material and the methods the writer utilized in achieving it; and identification and pursuit of the purposeful transaction in which the production hopes to involve its audience. Theatre unites a community in a shared experience that can promote understanding and prompt change. Misalliance addresses issues of gender expectation and social hierarchy and is as relevant to audiences today as it was when first produced in 1910.

GUS participants may receive free tickets to tonight's performance by showing their name badges at the box office.

GUS 2017

PRESENTATIONS





Aarushi Ahuja

Water as a Filter: An Evaluation of the Effectiveness of Local Best Management Practices in Preventing Water Quality Degradation

Biology; Environmental Studies

Faculty Sponsor: Dani Moran

Project Mentor: Dr. Shea Tuberty

Session: Short Talks 6

Time: 2:45pm

Location: Duke 213

Despite extensive efforts of the EPA to combat the issue of nonpoint source pollution, it is the primary modern water quality dilemma in the U.S. Across impervious surfaces stormwater runoff accumulates potential pollutants including sediment, nutrients from fertilizers, bacteria from waste, pesticides, metals from rooftops and roadways, petroleum by-products, and transfer of thermal pollution from paved surfaces. Structural best management practices have become a common solution to preventing the degradation of water quality in at risk waters since EPA became authorized to specify BMP Effluent Guidelines. This study evaluates the effectiveness of retention ponds in retaining heavy metals in water, sediment, and thermal pollution before they threaten nearby bodies of water. Following a performance evaluation of water quality and suspended metal concentration data for three local retention ponds and their receiving waters, it was concluded that retention pond BMPs are successful in attenuating stormwater runoff and providing water quality treatment through storage capacity. Based on current literature, implementation of preemptive maintenance structures would be much less expensive than restoration, so attributing funding and skilled labor towards the effort of installing a monitored BMP in a growing city before a water quality issue erupts is highly recommended by the authors.



Fidaa Almuhaysh

Metal cage capture of Aspirin and UV-Vis spectroscopy

Chemistry

Faculty Sponsor: Dave Millican

Session: Poster/Exhibition 3

Time: 2:30-3:45pm

Location: Hege Library

We examined the ability of Iron in capturing certain molecules to clean polluted water to safe living organisms especially see life. Iron ions will self-assemble around specific groups in aqueous solutions allowing for the capture of certain molecules because of the tetrahedral cage that can captures small and have tetrahydrofuran or cyclohexane. Dissolved compounds in water are harmful to see life because of the amount of concentrated chemicals in the water, which then are transferred to human bodies by consuming seafood. Here, we are testing the capacity of iron in capturing Aspirin, which one of the most commonly consumed human medications that then is eliminated from the body in urine. This is a type of host-guest chemistry, commonly characterized and analyzed with H1 NMR. These reactions can also be analyzed with UV-Vis spectroscopy, but there is currently no standardized method of characterization. We used UV-Vis spectroscopy to monitor the change in the characteristics, such as assembly, presence of guest, and guest because of the difference in the absorbance between an unassembled or an empty cage and a captured guest at the same concentration.

Caleb Amstutz

Changes in Fish Biodiversity on St. John, USVI

Biology; Environmental Studies

Faculty Sponsor: Christine Stracey

Session: Poster/Exhibition 2

Time: 1:00-2:15pm

Location: Hege Library

Marine biodiversity and health is influenced by structure and location. Our study compared fish biodiversity and abundance patterns in two habitat types (mangrove and reef) on St. John from 2016 to 2017. Twelve sites were surveyed by collecting 30 minute biodiversity samples. Species as well as relative abundance patterns were noted. Species numbers decreased from 2016 to 2017 and the percent of abundant and common species increased while occasional and rare species decreased. Of the species present, more of them were increasing in abundance. In 2017 the largest percentage of species in both reef and mangrove were classified as rare with fewer species classified as abundant. We also compared the biodiversity numbers with rugosity scores and coral abundance; there was no correlation between the fish biodiversity and rugosity or coral. These patterns are of interest and this data provides a valuable baseline for comparison of diversity in future years in a changing ecosystem.



Grace Bostic, Erin Kye, Ryan Tardiff, Nikka Hubert, Jessica Byrd, Chris Collins

TREES YES: The Foundations of Outdoor Education

Principled Problem Solving

Faculty Sponsor: Jennie Knight

Session: PPS

Time: 1:00pm

Location: King 126

Join six Principled Problem Solving Scholars for an information session on their work with planning and facilitating outdoor spaces on campus. Among these are a proposed rain garden, intended to help the health of the water table for trees on campus, as well as creating an outdoor classroom, an initiative favored by a plurality of the faculty and students on campus. Learn how these projects came together and about other efforts attempted to get more Guilford College students outside.

Chris Collins, Billie Dunn-McMartin

A Journey In Food Along the Silk Road

International Studies; Religious Studies

Faculty Sponsor: Eric Mortensen

Session: Poster/Exhibition 3

Time: Hege Library

Location: 2:30-3:45pm

What do you think of when I say “China”? Who do you think of when I say “China”? What do you think of when I say “Chinese food”? We would like to introduce a film that depicts a group of Guilford students’ eating experience through China’s ancient silk road routes. As we travel from major cosmopolitan cities in the east to the desertous Uyghur Autonomous region in the west and a few stops in between, how do our understandings of people, culture, and cuisine morph into something more complex? We would like to give you a taste of China’s diversity and attempt to expand Western perspectives of China and Chinese food through our documentation of food along China’s silk roads.

Eva Cosgrove, Merrill Daniels, Dan Hitesman

Community and Justice Studies Capstone: Board of Trustee Climate of Financial Responsibility

Community and Justice Studies; Economics

Faculty Sponsor: Krista Craven

Session: Short Talks 1

Time: 12:00pm

Location: Duke 202

We have been conducting research for the past few months to learn more about the climate of financial responsibility among Board of Trustee members as it pertains to endowment investments. This research aims to inform the Board of Trustee’s newly created Responsible Investment Team. We are conducting semi-structured interviews with the Board members to better understand the values that trustees hold as important to them and how the values relate to the Guilford College endowment investment decisions on an individual and collective basis. Using Critical Participatory Action Research frameworks individual interviews with the Guilford College Board of Trustee members on the values that are used to make Guilford’s financial decisions. We are analyzing the de-identified interview excerpts in small focus groups with the BoT members, Guilford students and faculty. We will be sharing our preliminary finding at our presentation.



Jacob Falzone

Continuities or Contradictions? The Role of Positivism in Antonio Gramsci's Theory of Political Organization (1917-1920)

History

Faculty Sponsor: Timothy Kircher

Project Mentor: Philip Slaby

Session: Short Talks 2

Time: 12:00pm

Location: Duke 203

This essay explores the relationship between Gramsci's theory of cultural hegemony and his theory of political organization between 1917-1920. Anglo-American historiography has isolated Gramsci's theories from their historical context and/or ignore the rhythm of Gramsci's theories as they developed as a part of a philosophical system. Historians such as Martin Clark have focused exclusively on the 1919-1920 period while paying little attention to Gramsci's philosophical endeavors and others such as James Cammet have looked at the whole of Gramsci's work only to establish a break, in 1918 to establish a non-Leninist perspective or in 1920 to establish a Leninist one. Through the analysis of Gramsci's writings in the Pre-Prison Notebooks and The Modern Prince and other writings this paper shows that Gramsci's theories rely on positivism (the belief that cultural progressing towards socialism due to material conditions brought about by capitalism). Gramsci's theory of cultural hegemony is the foundation for his theory of political organization and therefore Gramsci's theory of political organization is thusly inherently opposed to the anti-positivism of Leninism.

David Felipe, Logan Jones

Testing the Exercise Commitment Model and its Relationship to Athletes vs. Non-Athletes and Exercise Behavior

Exercise & Sport Sciences

Faculty Sponsor: Lavon Williams

Session: Poster/Exhibition 1

Time: 11:30am-12:45pm

Location: Hege Library

Background: Physical inactivity is a leading cause of global mortality (World Health Organization, 2010). Given the health benefits associated with physical activity, commitment to exercise is worthy of investigation. Purpose: 1) identify the strongest determinants of overall exercise commitment; 2) examine differences between exercise commitment types and the (a) determinants of commitment, (b) leisure time exercise and (c) athlete status. Methods: Guilford College students (n = 169) in randomly selected Sports Studies classes (n = 12) completed the Exercise Commitment Scale, the Gobin Leisure Time Exercise Recall Questionnaire, and several demographic and background questions. Results: Results revealed satisfaction, personal investments, involvement opportunities, and social constraints as the strongest predictors of exercise commitment. Independent t-tests revealed that individuals with volitional commitment reported greater levels of satisfaction, personal investments, and involvement opportunities whereas, those with non-volitional commitment reported greater levels of social constraints. Lastly, athletes scored higher in both volitional and non-volitional exercise commitment. Conclusion: This study provides support for the application of the Exercise Commitment Model to physical activity in traditional age college students and suggests that satisfaction, personal investments, involvement opportunities, and social constraints explain and predict exercise commitment.



Jocelyn C. Foshay

The Unwelcome Houseguest: An Autoethnographic Reflection on a Biracial Student Teacher's Experiences in Regards to Identity, Assimilation, and Voice

Education Studies

Faculty Sponsor: Anna Pennell

Session: Short Talks 5

Time: Duke 203

Location: 3:00pm

This paper explores the role of binaries and borders in racial identity as well as examines the role of the public school as an oppressive structure. This autoethnographic study examines how a biracial student teacher navigates the push and pull that is the white-centric nature of the school. This draws on the journals kept by the student teacher as well as the work of Theodora Regina Berry, bell hooks, Eduardo Bonilla-Silva, Gloria Anzaldua, and Bree Picower. Of the most prominent themes, this paper delves into what a student teacher gives up in an effort to assimilate to the host culture of the school. The overarching question asks what a biracial student teacher is asked to leave behind when in the classroom and how that impacts students.



Jocelyn C. Foshay

A Closer Examination of White Progressive Era Reformers' Approaches to Addressing Black and White Sex Work in Chicago 1906-1914

History

Faculty Sponsor: Timothy Kircher

Session: Short Talks 2

Time: 11:45am

Location: Duke 203

This research explores the racial differences between evangelical/progressive era reform in regards to black versus white brothels in Chicago's Levee District between 1906-1913. Other scholars have done work writing about evangelical/progressive era reformers' response to prostitution but not in regards to racialized commentary; this project contributes to or distinguishes from theirs in that it talks explicitly about race and coded phrases for race. The most important primary sources used are academic journals/writings from Ernest Bell, George Kibbe Turner, George Cleveland Hall, Jean Zimmerman-Turner and Samuel Paynter Wilson. The significance of the findings is the use of evangelicalism for racial and xenophobic agendas as well as a blatant disregard for humanist reform for black prostitutes.

Sahana Giridharan

Preferred Music as a Stimuli for Enhanced Brain Connectivity Between the Angular Gyrus and Hippocampus: Implications for Episodic Memory Recollection

Music; Computational Neuroscience

Faculty Sponsor: Rob Whitnell

Project Mentor: Dr. Robin Wilkins

Session: Short Talks 3

Time: 1:45pm

Location: Duke 202

Background: The mechanisms in the brain behind memory formation and recollection in response to preferred musical stimuli must be further studied. Understanding how memory systems in the brain function, from a brain connectivity standpoint, allows us to see connections between regions implicated in memory formation. Two of these regions are the hippocampus and angular gyrus. They are implicated in episodic memory, and music is an ideal stimuli to investigate episodic memory, as it is tied to a variety of human experiences. It is important to study the differences between brain connectivity of the hippocampus and angular gyrus when at rest and when preferred music is played.

Objective: To analyze the effects of preferred music on connectivity between the angular gyrus and hippocampus.

Methods: The subject was a healthy adult female. Two data sets were acquired from an MRI scanner. Data processing and then fMRI analyses were performed.

Results: Brain connectivity between two regions of interest significantly increased in rest and while songs were played after one year had passed since scanning.

Conclusions: Music preference is a driving factor in brain connectivity, and this can help us in multiple clinical applications with amnesic, Alzheimer's, and other neurodegenerative disease patients.

Jonathan Goffredi

Insights on Wealth Privilege: Poverty, Race, and Academic Performance in NYC Public Schools

Community and Justice Studies; Economics

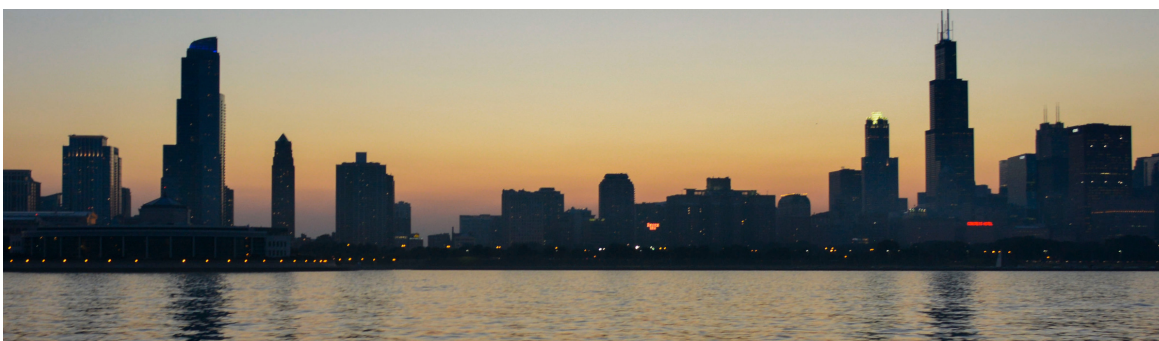
Faculty Sponsor: Bob Williams

Session: Short Talks 4

Time: 1:30pm

Location: Duke 203

New York City is a center in international finance. Wall Street is home to the New York Stock Exchange and the NASDAQ, two exchanges with the highest trading volume in the world. The massive influxes of wealth into New York City through financial markets are not dispersed evenly. The result is pockets of wealth in some communities and neighborhoods, and adversely pockets of advanced poverty in other communities and neighborhoods. Neighborhoods and communities in NYC's five boroughs are largely aligned by race and economic status. These geographic zones with high poverty rates and low academic performance intersect with higher populations of people of color. The dynamic of poverty and race/ethnicity inextricably linked to the school district's academic performance. It is the responsibility of the NYC Dept. of Education to provide a standard public education to its children that adequately prepares them for life and helps them fulfill their potential. The State and Federal Government have a responsibility must maintain some accountability over the quality education system that it finances. This research is important because it brings to light root causes of low academic performance and inter-generational poverty. It seeks to give insights on the effects of an absence of wealth, institutional racism, and the public school system's inability to provide equality of opportunities to students in New York City.



Jeniffer Gonzalez Reyes, Hector Rivera, H'lois Mlo, Risuin Ksor, Mohamed Togol, Roberto Mojica
The Impact Community Service has on Children's Higher Education Goals
Community and Justice Studies; Education Studies
Faculty Sponsor: Andrew Young
Session: Panel Discussion 4
Time: 3:00pm
Location: Duke M-L

Education today is not seen as important as it should be by the parents at Glen Haven, Newcomers School, Soy un Lider, Oakwood Forest and Ashton Woods. There is an increased lack of experience in the local education system about these communities. On a daily basis we site and project coordinators promote higher education by mentoring and motivating them. By being involved, we act as models that give the K-12 students different opportunities to be successful in their future careers. The students who attend the tutoring centers, conferences, and other events are benefiting from our guidance. They are building the idea of going to college and pursuing their dreams because of our continued involvement. We are motivating them to continue working hard at school. At the end of this discussion the audience will know: (1) Most of the students we work with are refugee/immigrant students. (2) It's possible for them to get into higher ed. (3) We have a strong relationship with them to guide them along to further their education.

Haley Griffith
Break it down! The effect of moisture on decomposition rates
Biology; Environmental Studies
Faculty Sponsor: Melanie Lee-Brown
Session: Poster/Exhibition 1
Time: 11:30am-12:45pm
Location: Hege Library

The decomposition of leaf litter is the physical and chemical breakdown of its organic material. Many factors can contribute to the rate of decomposition of leaf litter, including the organic and inorganic composition of the litter, chemical and physical conditions, and the nature and abundance of the decomposing organisms (primarily insects and microbes). This study explores the effect of moisture on decomposition rates and describes the aerobically culturable bacteria in the decomposing leaf litter. The hypothesis was that increasing moisture would increase the rate of decomposition. The experimental design included 30 mesh leaf litter bags that were spread throughout the Guilford College woods; 300 acres of new and old growth forest. Ten of the mesh bags are watered regularly, ten are kept dry except for natural precipitation, and ten were placed along a documented natural moisture gradient. Bacterial samples of the leaf litter were cultured on nutrient agar and incubated at 23°C for 24 hours. Bacteria were identified (to the genus level) by BLAST analysis of the sequence of 16S rDNAs. Preliminary data confirms our hypothesis; higher rates of decomposition are correlated to greater moisture levels. BLAST analysis confirms the presence of bacterial species commonly found in healthy soils.



Isabel Gutierrez, Jeniffer Gonzalez Reyes, Ashley Siddle, Carrington Smith, Daniel De la Rosa, Lillian Santoro

Guilford STEM Partners

Education Studies; Bonner

Faculty Sponsor: Gail Webster

Project Mentor: Gail Webster

Session: Panel Discussion 1

Time: 11:30am

Location: Duke M-L

Isabel Gutierrez, K'la Sanders, Nathaniel McManus, Veronica Zambrano Coffie, Fernando Jimenez, Robert Elliott Jarrett

Inspiring the Community

Bonner

Faculty Sponsor: Andrew Young

Project Mentor: Andrew Young

Session: Panel Discussion 2

Time: 12:15pm

Location: Duke 204

Byron Hamilton

What's an old book good for? Testing an Ayurvedic Cure for Acne

Biology

Faculty Sponsor: Melanie Lee-Brown

Session: Poster/Exhibition 3

Time: 2:30-3:45pm

Location: Hege Library

Ancient remedies made from natural products are proving to be potential antimicrobials to fight bacteria that have become resistant to mainstream antibiotics. The Sushruta Samhita is one of the oldest Indian texts describing the use of natural products for medicinal purposes. A treatment for acne described in Sushruta Samhita, titled Yuvana-Pidaka, is a mixture of four plants: *Coriandrum sativum* (coriander), *Saussurea lappa* (costus), *Acorus calamus* (sweet flag), and *Symplocos racemosa* (lodhra). Acne is most commonly caused by *Propionibacterium acnes*, a Gram positive, rod-shaped, aerotolerant bacterium, that readily acquires resistance to antibiotic treatments. This study evaluates multiple methods for testing raw plant materials for their antibiotic properties, including a Kirby Bauer-like (KBL) assay, utilizing plant-plugs, and a diffusion-dependent antimicrobial assay, utilizing a multi-layered filtration environment. These methods are being utilized to determine the sensitivity of *Propionibacterium acnes* to whole plant derivatives described in Yuvana-Pidaka.



Rebecca Hamilton-Levi, Nolan Ross
The Binge: Irritability and Media Binge Type
English; Psychology
Faculty Sponsor: Rachel Riskind
Session: Poster/Exhibition 2
Time: 1:00-2:15pm
Location: Hege Library

For the January Term class, "The Binge," students collected information on mood, physical activity, calorie consumption, and type of media binged. Students then conducted their own research projects. This video project looks at the correlation between levels of irritability and type of media binged (watching tv, reading a book, or playing a video game).

Michelle Harris, Nick Fakhoury
HB 318: Impact on North Carolina Immigrant Communities
Community and Justice Studies
Faculty Sponsor: Krista Craven
Session: Short Talks 1
Time: 11:30am
Location: Duke 202

Since September, 2016, we have engaged in the Critical Participatory Action Research framework to research all 100 North Carolina counties' Register of Deeds offices to determine their identification requirements as they are related to HB 318. Additionally, we interviewed undocumented immigrants, specifically in Guilford and Forsyth counties, concerning their awareness of HB 318 and their ability to access critical public services, such as marriage licenses and birth certificates. We are utilizing the Snowball sampling technique to access hidden populations within immigrant communities. We are conducting private, recorded oral interviews with our research participants. We are transcribing these recorded interviews in order to engage in a thorough process of grounded theory analysis, in which we will extract themes and formulate potential theories associated with our research questions. A discussion of our project and preliminary findings will be shared during our presentation.

Lauren Haymore
Testing antibiotic properties of plants used in traditional medicine
Biology
Faculty Sponsor: Melanie Lee-Brown
Session: Short Talks 6
Time: 3:15pm
Location: Duke 213



Meredith Hudson

Temporal Effect of Global Warming on Avian Nesting Phenology

Biology

Faculty Sponsor: Christine Stracey

Session: Poster/Exhibition 2

Time: 1:00-2:15pm

Location: Hege Library

Climate change is an increasing threat to organisms, affecting floral and faunal phenology. Global warming causes earlier peaks in insect abundance, which is the staple diet of passerine nestlings. If birds do not initiate nesting earlier, it could lead to trophic mismatches, causing population declines. Avian migrant populations could be especially sensitive to trophic mismatches because migration is initiated by photoperiod and is not affected by global warming. Therefore, food availability may no longer be in sync with their migration patterns. In this study, I assess the effect of global warming on avian nest initiation. I hypothesize that nesting will be initiated earlier as temperatures rise as a result of global warming. Data were collected at Winterthur Museum, Garden and Library, Winterthur, Delaware. Nest boxes were monitored once a week between 1984 and 2016. Data used in this study focused on the Eastern Bluebird, *Sialia sialis*, and the Tree Swallow, *Tachycineta bicolor*. Data collection included date of collection, presence of a nest, species, and number of eggs and nestlings. Using well-established incubation and brooding periods for each species, clutch completion date (CCD) was calculated for each nest. Regression analyses of average CCDs were performed for each species, and analyses of covariance compare this information across migratory and nonmigratory species. Preliminary results show correlations between year/temperature and the species' average CCD.



Richard Hugh Connor Huntwork

Exploitation of Iron Catalyzed Hydroboration for the Hydrogenation of Unsaturated Primary Aminoalkene Substrates
Chemistry

Faculty Sponsor: Anne Glenn

Session: Short Talks 2

Time: 12:30pm

Location: Duke 203

Iron remains an attractive option for use in organometallic catalysis due to its sustainability, inexpensive cost, and non-toxicity. This is why unlocking new and relevant reactivity within the realm of iron mediated catalysis is a hot area of research both among academics and industry alike. We report on an iron catalyzed hydroboration-hydrogenation of unsaturated primary aminoalkene substrates. Through the use of a low-coordinated Fe(II) 2,6-diisopropylphenyl- β -diketiminato catalyst we demonstrate the hydroboration of primary amines followed by an unexpected hydrogenation of the substrate's alkene bond. For sterically unencumbered substrates (with terminal alkene bonds) this reaction proceeds to completion under mild conditions (25°C, no excess reagents or additives). Furthermore, this reactivity was demonstrated on a number of sterically encumbered motifs containing internal alkene bonds (rather than terminal) between 60 – 90°C. This synthetic route offers stable saturated aminoboronate esters that have the propensity for further functionalization. Spectroscopic yields up to 100% and isolated yields (after cleavage of the N-B bond) ranging between 33%-70% were obtained.

Mechanistic studies were performed. Here, further complexity was revealed with the observation of two competing pathways. Insights from the mechanistic studies suggest a radical process that heavily favors one of the two pathways. The substrate scope and a postulated mechanism are reported.

Rebecca Hyman, Abby Horn, Megan Gaeth

Experiments in North Carolina Clay

Art

Faculty Sponsor: Charlie Tefft

Session: Poster/Exhibition 2

Time: 1:00-2:15pm

Location: Hege Library

Aiperi Iusupova

Does MERTK Modulate Synaptogenic Function of Glia?

Biology

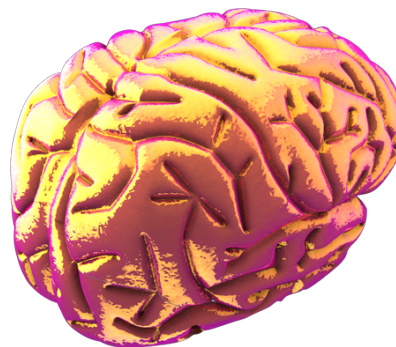
Faculty Sponsor: Melanie Lee-Brown

Project Mentor: Sehwon Koh

Session: Short Talks 3

Time: 1:00pm

Location: Duke 202



Synaptic dysfunction and synapse loss are the hallmarks of neurological and neurodegenerative disorders. In central nervous system (CNS), glial cells modulate synapse formation and elimination by secreting synaptogenic proteins and clearing synapses, respectively. Hence, understanding molecular mechanisms of how glial cells regulate synapses provides insight into potential regenerative approaches for neurodegenerative diseases. Previous studies have shown that MER receptor tyrosine kinase (MERTK) is highly and specifically expressed in glial cells, and it mediates synapse elimination during development. However, their functions in modulating synapse formation remain poorly understood. We aim to understand the role of MERTK in glia mediated synapse formation and how it affects other proteins involved in synapse formation. To do so, we plan to utilize purified rat retinal neurons co-cultured with MERTK knockout astrocytes and test if astrocyte-mediated synaptogenesis is affected. In this preliminary study, we have constructed CRISPR-Cas9 vectors that target rat MERTK gene to silence its expression. Genomic mutations induced by the CRISPR-Cas9 vectors were visualized by T7-endonuclease I assay, and the mutations were further analyzed by sequencing. The results of this study will provide molecular mechanisms of how glial cells regulate synapse formation in CNS that might provide novel strategies to repair neurodegenerative diseases.

Aquila Johnson

Lava Caves of the Galapagos: Geological and Ecological Significance

Biology

Faculty Sponsor: Holly Peterson

Session: Short Talks 3

Time: 1:30pm

Location: Duke 202

This research was conducted to provide information to the audience about the construction, features, and importance of lava caves, relative to the Galapagos islands. The Galapagos Islands are formed from a hot spot, and hot spot islands have distinct ecosystems. Lava caves are a type of geological feature that serves as and supports many of these ecosystems. Explaining the nature of lava caves, and their significance, helps emphasize the uniqueness of the Galapagos Islands, and why conservation of the natural habitats is important.

In constructing my research, I used sources of scientific literature (books and reports), as well as my own documentations of observations I kept while in the Galapagos. The information I have gathered on the formation, ecosystems, and organisms that utilize the lava cave furthers my perspective on not only their beauty, but their ecological relevance to the Galapagos animals.

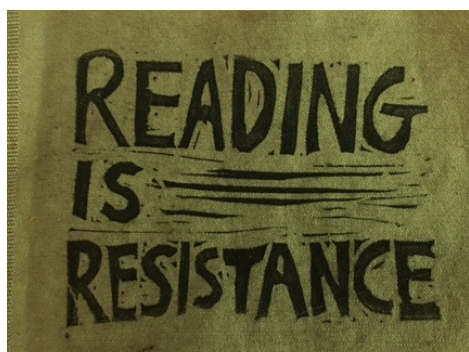
Abe Kenmore
Africa Coverage is Not a Victimless Crime
Political Science
Faculty Sponsor: Maria Rosales
Session: Short Talks 5
Time: 3:30pm
Location: Duke 203

My research examines American coverage of the Nigerian presidential election in 2015. American newspapers have a long history of sensationalized or stereotypical reporting on Africa. This makes stories easy to understand for an American audience, but the constant cynical narrative around governance in Africa has real political and economic consequences. By comparing Nigerian and American coverage of the same recent election, I hoped to see whether some of this sensationalism and cynicism has declined. Through quantitative and qualitative analysis, I showed that the American reporting on the 2015 election was more nuanced than previous coverage. Still, American reporters were more cynical and sensational than their Nigerian counterparts in their coverage of the election.

Darby Kozan
Identification of Gene Expression in the Interpeduncular Nucleus
Biology
Faculty Sponsor: Melanie Lee-Brown
Session: Poster/Exhibition 2
Time: 1:00-2:15pm
Location: Hege Library

The habenulo-interpeduncular (Hb-IPN) pathway is a forebrain to midbrain pathway in all invertebrates from the most primitive fish to humans. This pathway regulates behaviors of fear, anxiety, sleep, hunger, and drug withdrawal. Neurons in the dorsal habenula (dHb) project their axons down to the IPN in a conserved forebrain to midbrain pathway. While there is a lot known about the dHb, the IPN and its subregions are poorly understood. Transgenic tools were used to visualize the dHb-IPN pathway. The IPN was dissected from adult zebrafish brains. RNA was isolated for transcriptional profiling. RNA sequencing identified a list of 417 candidate genes enriched in the IPN. The goal of this study was to verify the expression of candidate genes in the IPN by RNA in situ hybridization to show sub-compartment localization of these neurons. Transcripts were identified that localized to discrete subregions of the IPN. 6 of the candidate genes analyzed were found to be enriched in the IPN. Transcripts for chemokine ligand 14, netrin 1b, and sulfatase 1 localized to the dorsal interpeduncular nucleus (dIPN). The growth differentiation factor 5, copine IVb, and milk fat globule-EGF factor 8 protein genes are expressed in the ventral interpeduncular nucleus (vIPN). Mapping of these genes helps to further explore the function of each specific neuronal population, how these regions of neurons within the IPN connect to other parts of the brain, and understanding their roles behavior regulation.

Erin Kye
Free Press: Community Art + Activism
Art
Faculty Sponsor: Terry Hammond
Project Mentor: Katy Collier
Session: Poster/Exhibition 1
Time: 11:30am-12:45pm
Location: Hege Library



The Art department and Creative Writing and English department collaborated after the Presidential election to host two events, a carving party and a print party, both aimed at creating activist posters, and providing an opportunity for the community to come together, share thoughts, and to voice their hopes and frustrations. All faculty, staff and students were invited, through flyers, banners, Buzz and Facebook announcements, to create individualized prints, posters, and stamps. Over the next few months, several events were held in which students, faculty and staff were able to learn about screen printing, block printing, and stamp making while making flyers, posters, patches, t-shirts, and more. Free Press events created a safe space for people to create and respond to current events. Hundreds from the Guilford community, including alumni, prospective students and visiting artists, have participated in more than seven printing parties.

Nathan Lee

The effect of a recombinant hydrolytic enzyme on hybrid biofilms of *Staphylococcus aureus* and *Candida albicans*

Biology; Chemistry

Faculty Sponsor: Melanie Lee-Brown

Session: Poster/Exhibition 3

Time: 2:30-3:45pm

Location: Hege Library

Staphylococcus aureus and *Candida albicans* are pathogens that frequently cause nosocomial infections often involving the formation of biofilms on implanted medical devices such as catheters. In addition to monospecies biofilms, these organisms have been reported to form multispecies biofilms in which *S. aureus* cells attach to *C. albicans* hyphal filaments to create a more robust structure. The hydrolytic enzyme Dispersin B has been shown to inhibit the formation of the *S. aureus* monospecies biofilms by degrading poly-N-acetylglucosamine (PNAG), a polysaccharide component of the *S. aureus* biofilm matrix. A recombinant enzyme with similar activity, β -N-Acetylhexosaminidasef, was used to assess the ability of PNAG degradation to inhibit multispecies biofilm formation. Monocultures and mixed cultures of *S. aureus* and *C. albicans* were grown for 12 hours at 37C in the presence or absence of the enzyme. Biofilm thickness for each culture was determined by optical absorbance. β -N-Acetylhexosaminidasef and Dispersin B are members of glycoside hydrolase family 20, which also includes the human beta-hexosaminidases Hex A and Hex B. Dispersin B and β -N-Acetylhexosaminidasef catalyze the hydrolysis of β (1,6)-linked N-acetylglucosamine, whereas Hex A and Hex B catalyze the hydrolysis of β (1,4)-linked N-acetylglucosamine. How this functional difference might arise from structural differences between the aforementioned enzymes was investigated using molecular modeling techniques.

Anna Lichtiger

A Personal Exploration of Medicine

Biology

Faculty Sponsor: Melanie Lee-Brown

Session: Poster/Exhibition 3

Time: 2:30-3:45pm

Location: Hege Library

An internship shadowing medical professionals is an excellent way to get a better sense of the profession. In my internship at Cone Health Hospital, I received insight into a particular field of medicine (palliative care) and into an effective operational model (team care). The team creates a sense of community at work and allows space for people with different perspectives and areas of expertise to learn from each other and combine their inputs to best serve patients. The team model is critical to palliative care, holistic medical care for patients with serious illnesses. The work of a palliative care team is to alleviate pain, create understanding of conditions and work toward the goals of the patient and family. It is a philosophical shift from the general model of medicine of doing everything that's possible. In changing the philosophy, palliative care brings attention to the realities of dying and the costs and effectiveness of medical care at the end of life.



Ro Lutenbacher

Latino Students' Family Values and Sense of Belonging in Higher Education

Psychology

Faculty Sponsor: Eva Lawrence

Session: Thesis Defense

Time: 9:00am

Location: King B24

Familism and a sense of belonging in the higher education setting were examined in Caucasian and Latino participants. Study 1 involved 25 Caucasians and 18 Latinos responding to an online survey designed to measure Sense of Belonging, Familism, and proximity. Results suggested significance between Latinos and Caucasians in Familism and Proximity with no significance in Sense of Belonging.

Study 2 Involved 10 Latino students. Participants were chosen through those who completed the survey and agreed to participate in an in-depth interview concerning responses to survey questions. 12-14 additional questions were asked. Results suggested money as a big factor in attending college, strong feelings about college overall, mixed views on community in the Latino student population and in the overall college community, and a strong appreciation for the Hispanics club on campus as a safe-haven during college transition. Further research interests include an in-depth exploration of the high school community and its effect on higher education choice for the Latino population.



Molly Marcotte

Medical Research at a Clinic for the Underserved: Why We Need to Take a Holistic, Qualitative Approach

Health Sciences

Faculty Sponsor: Anne Glenn

Project Mentor: Collin Mueller

Session: Short Talks 5

Time: 3:15pm

Location: Duke 203

In this presentation, I will be discussing the database and coding design that I have conducted for an integrative health project at Alliance Medical Ministry. This non-profit clinic provides low-cost healthcare to members of the county that cannot afford insurance due to a number of social barriers. It is within the Counseling Department that the Care Coordination Questionnaire, designed by Collin Mueller, my supervisor, was born. Originally a short questionnaire designed to evaluate patients' basic quality of life and need for referral to counseling services, the survey has developed into a 13 page comprehensive interview of every structural health determinant that could provide barriers to healthcare access or adherence. I will discuss my role in the methodology, to design a database for patient responses, design codes for the survey items (most of which are narrative/open ended), and code each qualitative interview survey into an analyzable format. This project was designed to increase the clinic's capacity to identify the most salient unmet needs of each patient, and more efficiently connect them with resources.

Molly Marcotte

Sexual violence response in K-12 schools: Discussion of the construction and implementation of a statewide district based mapping project

Health Sciences

Faculty Sponsor: Anne Glenn (Health Sci advisor)

Project Mentor: JP Przewoznik

Session: Short Talks 2

Time: 12:15pm

Location: Duke 203

Sexual violence response in K-12 schools: Discussion of the construction and implementation of a statewide district based mapping project

As an intern for the North Carolina Coalition Against Sexual Assault, I was tasked with the deliverable of researching the Title IX policy locations and grievance procedure protocols for every federally funded school district in the North Carolina K-12 system. This project, undertaken over a period of six months, resulted in my construction of an interactive pop up map for each district on how to find, on each district website, the district's Title IX policy (prohibiting sexual violence) and grievance procedures, which uncovered a larger question of accessing this information in an immediate way within each district. In this presentation, I will present the map I have constructed, and demonstrate how its interactive qualities allow for parents and loved ones of K-12 survivors to find a plethora of Title IX resources within their district, in a way that is accessible to individuals with different levels of technological literacy.

Jamie McCreary, Chloe Williams, Celene Warren, Brianna Randolph, Nathaniel Phillips

African and African American Studies

Faculty Sponsor: Irving Zavaleta

Session: Poster/Exhibition 3

Time: 2:30-3:45pm

Location: Hege Library



The Journey to My Natural Hair: Auto-ethnography on Natural Hair

Taryn McFadden

Biology; Chemistry

Faculty Sponsor: Melanie Lee-Brown

Session: Short Talks 3

Time: 2:00pm

Location: Duke 202

Disruption of a Complex Biofilm on Clinically Relevant Polymers

Nosocomial infections are commonly caused by biofilm-forming microbes. Biofilms are found on prosthetic joints, intrauterine devices, pacemakers and endotracheal tubes. Microbial biofilms form extracellular polymeric substances (EPS) that provide protection by restricting the penetration of lymphocytes and chemotherapeutics. *Candida albicans* (eukaryotic yeast) and *Staphylococcus aureus* (Gram-positive bacterium) form a complex synergistic biofilm that allows for increased stability, protection from the immune system and the sharing of antibiotic resistance genes. Currently, medical device biofilms are ineffectively treated with antibiotic cocktails, which could compromise the health of the patient, increase microbial antibiotic resistance and potentially require invasive removal of prosthetics. Recent studies report that ultrasonic in situ treatment of biofilms on medical implants has increased the bactericidal activity of antibiotic treatments. This study compares the stability of complex (*S. aureus* and *C. albicans*) biofilms and single-species biofilms on abiotic polymers after ultrasonication. My hypothesis is that complex biofilms are more resistant to ultrasonic disruption than single-species biofilms on implantable life science grade polymers. This research will determine which polymers will require ultrasonic therapies post implantation to disrupt potential biofilms and decrease implant related infections.

Tyler Miles
Environmental Studies; Geology
Faculty Sponsor: Holly Peterson
Session: Short Talks 3
Time: 1:15pm
Location: Duke 202

Water and Sediment Quality Assessment of a Potentially Impaired North Carolina Stream

A water and sediment quality assessment was conducted for a small North Carolina stream (Creek Site) that may include outflow water from a coal ash pond at an active power generation plant. Water (total and dissolved forms) and sediment samples were collected at the Creek Site and at a hydrologically disconnected stream (Control Site) from April 2016 through September 2016. Inductively coupled plasma mass spectrometry (ICP-MS) was used to determine elemental concentrations of arsenic, cadmium, chromium, copper, lead, selenium, and zinc in all samples. Preliminary results revealed that dissolved and total selenium and cadmium were consistently present in water samples in concentrations above the North Carolina Department of Environmental Quality standards for freshwater streams. Bioavailable selenium, arsenic, lead, cadmium, and zinc concentrations in soil samples exceeded US EPA Region 4 (Southeast) ecological screening standards regarding all receptors (i.e. plants, macroinvertebrates, fish, etc.) for at least one sample. Concentrations of elements were regularly measured below standards for all water and soil samples taken at the Control Site, suggesting that the high concentrations of elements found at the Creek Site are not solely due to natural occurrence, but may be from discharge or seepage from the coal ash pond into upstream waters. High concentrations of these elements have the potential to impact the aquatic ecosystem and ecological restoration can take decades.

Sel Mpang, Mamta Gurgung, Muhadisa Daqiq, Vung Ksor
Community and Justice Studies
Faculty Sponsor: Andrew Young
Session: Panel Discussion 4
Time: 2:30pm
Location: Duke M-L

What is community research and engagement? How do we build strong sustainable communities through research?

Making an impact to achieve systematic changes in low income and marginalized communities has its challenges, but they're worth it. With patience and through research, we want to deeply understand the needs of the communities we come from or for whom we have deep concerns. How can we build from the assets and talents that already exist in the community? As researchers it is not about us, it is about the platform we create to further support communities to grow from within. Change will continue in the hands of the people.

At the end of the presentation, audience members will understand:

- 1) How we learned community research methods and the importance of cultural preparation
- 2) How we feel we can make changes and help communities using research
- 3) What we observed as we interacted with community members, what we got out of it and what we think they got out of it.



Patrick Nachlas, Veronica Zambrano Coffie, Elliott Jarrett, Sophia Perlmutter

Sustainable Food Systems

Faculty Sponsor: Andrew Young

Project Mentor: Audrey Waggoner

Session: Panel Discussion 3

Time: 1:30pm

Location: Duke 204

From Food Insecurity to Food Sovereignty

The Food Justice Club (FJC) at Guilford operates multiple interconnected service learning sites to promote food sovereignty in Greensboro. The Mobile Market, Newcomers Garden Project, Quaker Cupboard, Community Kitchen, and the Farmstand are the five sites of the FJC. The Mobile Market drop off at Glen Haven delivers fresh vegetables and other goods once a week. Glen Haven is a community of Nepalese and Bhutanese refugees who live in a food desert and have limited access to fresh food. There is also a tutoring site at Glen Haven for the children afterschool. The Newcomers Garden Project is an English as a second language (ESL) program which teaches immigrant and refugee students English through gardening. The focus is on the Mobile Market drop off and Newcomers in order to show how these sites interconnect to promote ownership over ones food, and provide access to organic healthy vegetables for these underserved communities. These sites have all been built off of other sites through the Bonner Center, and they have been shaped in collaboration with members of these communities. Students run these programs which provide a boon to immigrant communities. They are also a wonderful opportunity for the new Sustainable Food systems major. This presentation has been done at the C-SNAP conference at University North Carolina Asheville and at the Food Storm Conference which the FJC organized here at Guilford.

Colin Nollet, Grace Vanfleet, Seth Premo, Martin Brown, Kate Mitchell

Art

Faculty Sponsor: Antoine Williams

Session: Panel Discussion 3

Time: 1:00pm

Location: King 123

Art Thesis Panel

Kate Nunke, Taryn Bonner, Savannah Yale, Desmond Marshall

Principled Problem Solving

Faculty Sponsor: Jennie Knight

Session: PPS

Time: 1:30pm

Location: King 126



Sharing Student Voices

There are many contemporary issues in education. One of the issues we found was that teachers aren't acknowledging students' prior knowledge when entering a classroom. We originally came up with the idea to create portfolios for students that travel with them from teacher to teacher and grade to grade. However, after more research and interviews with educators, we quickly learned that implementing such a time consuming task for teachers would be unattainable at that point. We revisited an idea we had in the past about working towards sharing student voices in order for students and teachers to feel inspired. Luckily, we were able to discuss with Ginger Hardy, the head of the ACES Program at Guilford Elementary, about our passion and ideas. She told us that the students are involved in service learning at ACES. Collaboratively, we decided that creating a video of the students working on their project, and of individual students talking about their project every semester would merge our ideas of sharing student voices and having a portfolio. The ACES Program and Guilford Elementary will be able to show students, parents, and teachers what ACES has accomplished within each semester.

Christopher Perez
Art
Faculty Sponsor: Kathryn Shields
Session: Poster/Exhibition 1
Time: 11:30am-12:45pm
Location: Hege Library

ART JAM at GUS 2017

Come join the Art Department for GUS with this year's ART JAM! Students and faculty from each of the art department's concentrations will be present throughout the day working on collaborative art projects. This year's theme is: Object and Identities in an Age of Resistance. From photo booths and portrait painting to ceramics and sculpting sessions, everyone is welcome to come and create with us. In addition, come by and get prints made from this year's Free Press events! Whether you make art, enjoy art, or just want to be a part of the conversation, this year's ART JAM is the place to be!

Sophia Perlmutter
Sustainable Food Systems
Faculty Sponsor: Bronwyn Tucker
Session: Poster/Exhibition 1
Time: 11:30am-12:45pm
Location: Hege Library

A Food Survey: Access, Literacy, Desired Changes

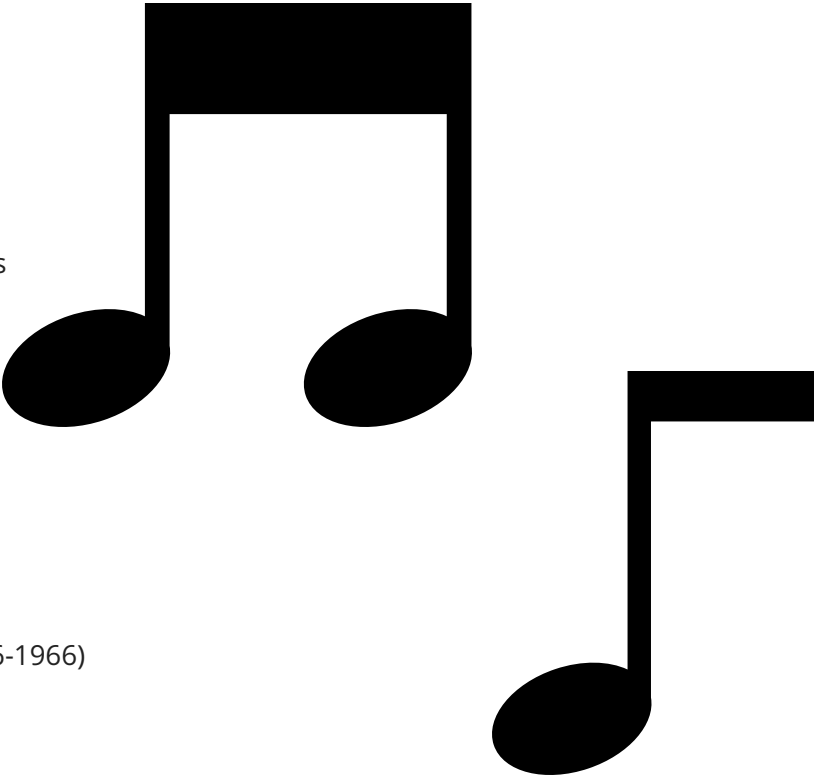
Eli Phillips
Music
Faculty Sponsor: Tim Lindeman
Session: Performance 1
Time: 3:00pm
Location: Art Gallery

Marimba Performance
Furioso and Valse in D Minor by Earl Hatch (1906-1966)

Evan Poag, Carmen Mesa
Biology
Faculty Sponsor: Melanie Lee-Brown
Project Mentor: Melanie Lee-Brown
Session: Short Talks 6
Time: 3:00pm
Location: Duke 213

Eastern Bluebird Nest Sanitation

Nestling songbirds produce membrane-bound feces, or fecal sacs, that help with nest sanitation. It has been observed that several species of songbird parents consume their nestling's fecal sacs as a means of nest sanitation. We have observed in 2015 that Eastern Bluebird parents consume the fecal sacs when nestlings are young, and then transport them away from the nest as the nestlings mature. This transition in sanitation behavior has recently prompted a cross-discipline collaboration between microbiologists and ornithologists at Guilford College. We have hypothesized that Eastern Bluebird parents stop ingesting the fecal sacs because the microbial community of the fecal sac changes as the nestlings age and becomes harmful to the parents. During the 2016 nesting season, our research team continued fecal sac research with an aim to increase our sample size. Along with recording parent-nestling interactions from nestling age zero to twelve, we also gathered fecal sac samples for microbial characterization. As our research team makes observations by going through each video, the parent Eastern Bluebirds are displaying similar behaviors as they did last season, specifically in the transitioning from nestling fecal sac consumption to transportation outside of the nest. This study will build off last year's research and continue to investigate if the parental nest sanitation behaviors are mediated by the microbial community within the fecal sacs.



Rohini Rajnarayanan

Biology

Faculty Sponsor: Melanie Lee-Brown

Session: Poster/Exhibition 1

Time: 11:30am-12:45pm

Location: Hege Library

CRISPR/Cas9 Gene Modification of the FMN Riboswitch in *Klebsiella pneumoniae*

Antibiotic resistance is a growing health problem because of misuse and overuse in medicine and agriculture. New antibiotics with alternative targets must be discovered to maintain control of pathogenic organisms and prevent further development of resistance. In this study, I will use Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR), paired with the Cas9 enzyme, as a gene modifying system. Flavin MonoNucleotide (FMN) will be a potential target due to it being highly conserved in bacteria, but absent in eukaryotes. *Klebsiella pneumoniae*, an important nosocomial pathogen with a high resistance to mainstream antibiotics, will be used as the model target pathogen. I will verify the genotype of a fatal FMN mutant construct and test the potential of using this riboswitch to deactivate FMN biosynthetic genes and inhibit growth of the pathogen. This will assess whether the FMN riboswitch is a good candidate target for novel antimicrobials.

Anna "Kate" Rich, Rohini Rajnarayanan, Amani Hashim, Sarah Hammood

Chemistry

Faculty Sponsor: Uma Jejurkar

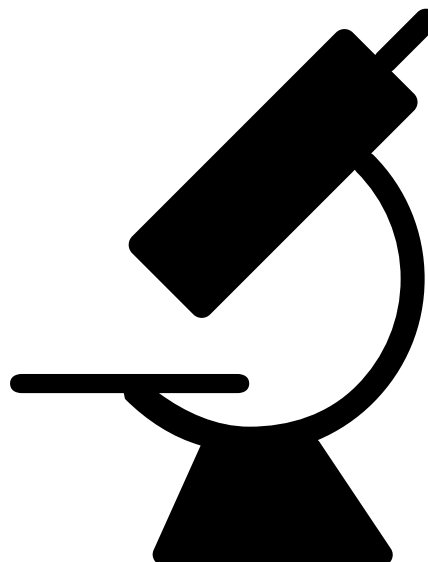
Session: Poster/Exhibition 2

Time: 1:00-2:15pm

Location: Hege Library

All About that Base

Food and water contaminated with *E. coli* carries severe health risks. Over the past Spring semester, our group aimed to improve the creation of a calorimetric liposome biosensor originally developed by West et al. (J. Chem. Educ., 2009) to detect such contaminations. Their procedure required the use of the highly toxic and corrosive base diisopropylethylamine. Our goal was to make the creation process safer, quicker, cheaper, and less photosensitive by altering the basic reagent used to form the amino acid product necessary in the creation of the liposome. Using sensitive materials became quite precarious as the nature of our product is photosensitive, and we describe how we carried out the synthesis in the dark. By testing bases with similar pKa values and steric hindrance but lower toxicity, we found that two other bases, diisopropylethylamine and triethylamine, were acceptable alternatives. A further benefit was that triethylamine decreased the reaction time. The results were verified using TLC, NMR, and IR.



Elena Robles, Olivia Winder, Rebecca Hamilton-Levi
Multicultural Leadership Scholars Program (MLSP)
Faculty Sponsor: Irving Zavaleta
Session: Poster/Exhibition 1
Time: 11:30am-12:45pm
Location: Hege Library

Student Efficacy at Guilford College

Over the last year, the three of us have worked in conjunction with administration and five different academic departments to assist in hiring more PhD-certified POC and culturally competent professors. We have worked over the last five committees in needs: Business, Peace and Conflict Studies, Theatre, Sports Management, and Religious Studies. During these meetings, we discuss our goals and desired outcomes with respect to each department and its needs. Additionally, we have been researching about diverse hiring practices at other colleges and universities around the country with the intention of improving Guilford's hiring practices.

We would like to share a brief and respectful reflection on our personal experiences as students of colour as well as what we've learned about vision and creating inclusive more effective academic spaces. We want to encourage students to also take hold of their own efficacy by creating an interactive video in our presentation where we interview students so as to have them uphold their Love for Guilford while asking them to share how they want Guilford to be better. The final videos will be published on a tumblr page for all of Guilford to interact with.

Danny Rodas, Lakshmi Premysler, Juliana Evans, Berenice Fuentes, Matthew Valdez
Bonner Center
Faculty Sponsor: Andrew Young
Session: Panel Discussion 2
Time: 11:45am
Location: King 123

Change Through Arts and Physical Activities

C.A.P.A Kids: Change through Art and Physical Activity is a student-led after school mentoring and cultural enrichment program at Jefferson Elementary School in Guilford County. We provide youth with a nurturing environment and the support to express themselves and develop as artists. As mentors, we offer fairer access to the arts and help youngsters develop their gross motor skills that will influence their school performance in such things like concentration, following instructions, sport skills, public speaking, and teamwork. Our team of Guilford students volunteer their time to inspire, empower, and unite children to maximize their potential in school, at home, and in their community. There are two objectives for this presentation: Audience members will understand the solid foundation we use at CAPA which incorporates social justice issues through arts and physical activities. Second, they will appreciate the arts and physical activities as influence positive behaviors in youth.



Nathan Rowe
Computing Technology and Information Systems
Faculty Sponsor: Richard Schilhavy
Session: Poster/Exhibition 2
Time: 1:00-2:15pm
Location: Hege Library

VoteAgenda, a Web App for Easy Group Collaboration

VoteAgenda.com is a web application that enables easy creation of agendas and itineraries. It facilitates collaboration inside of organizations which use the application. It does this by allowing group members to suggest agenda items and to vote up or down on other members' suggestions. This way, participants can track an agenda's progress with one web link instead of keeping track of plans through a series of email chains and messages. The completed agenda will be easy to share online and simple to print out to share in-person.

VoteAgenda has a wealth of potential uses, such as planning work conferences, scheduling out community meetings, and organizing family reunions. Potential users could include colleges, community organizations, meet-up groups, activist and non-profit groups, business managers, and family and friend groups.

The application is accessible to a wide variety of web browsers and mobile devices, and it will resize its content to fit a variety of screen types. It is coded using modern web technologies built around JavaScript and Node.js. All communication with the website is encrypted to ensure user privacy.



Mo Mo San
Political Science
Faculty Sponsor: Kyle Dell
Session: Poster/Exhibition 2
Time: 1:00-2:15pm
Location: Hege Library

Refugees and the American Healthcare System: Treating the Ill or Ill-Treatment?

The decades long, ongoing civil wars in Burma, now known as Myanmar, in Southeast Asia resulted in large numbers of its people, mostly ethnic minorities, being displaced internally and externally. The United States accepted an increasing number of refugees from Burma each year and many of those refugees resettled in North Carolina. One of the most burdensome aspects for refugees as they resettle in the United States is understanding and gaining access to the U.S. healthcare system. This qualitative study, part of a senior independent project, seeks to call attention to the difficulties encountered by the Karen ethnic group as they attempt to navigate the complicated, bureaucratic and ever-changing U.S. healthcare system that is heavily influenced by social, cultural, and political institutions. The insights gained from this study will lay the groundwork for future studies about policy changes that need to occur to improve access to and the quality of healthcare for refugees.

Sarah Scroggin
Computing Technology and Information Systems
Faculty Sponsor: Dave Dobson
Session: Poster/Exhibition 1
Time: 11:30am-12:45pm
Location: Hege Library

Guilford College Geodatabase

My project explores the use of a geodatabase to integrate the schools facilities, utility, and site specific academic research data into one comprehensive system. Currently the school uses CAD digital and paper files which are schematic, but not geographically referenced. For facility locations maps are generally not up to date, and for research done by students for the benefit of the campus community, files are sometimes located on the campus network. Recent public safety reports of individuals lost in the woods further validates the need for better mapping and data sharing in the Guilford community. This project aims consolidate data and provide geographically accurate visualization needed for better spatial awareness of facilities, infrastructure and collaborative research. To create a database, I started with data gathered from facilities, IT&S, and student research projects. I georeference these campus images with orthoimagery from Greensboro's new open-data forum and previous georeferenced facility layers using image processing and map making tools in ArcMap 10.3. My project is part of a capstone assignment for Images of The Earth and the scope of my research is exploratory. However, my results can potentially serve as groundwork for a functional interactive map and geodatabase system for Guilford College.

Carrington Smith
Biology; Chemistry
Faculty Sponsor: Gail Webster
Session: Short Talks 5
Time: 2:30pm
Location: Duke 203

LGBTQ+ in STEM

It can be hard to get the job of your choosing when the entire field make you feel as if you're not good enough or unwanted because of how you identify. The LGBTQ+ community is almost a nonexistent group in the current STEM population. Groups such as NOGLSTP and oSTEM are some of the few, if not the only, organizations that strive to make the STEM field more inclusive and diverse in it's member. Chair of the Board Rochelle Diamond is one of the many people who wanted to provide a helping hand to a group of people who no longer want to be considered "invisible" in amongst their peers in their field of study.



Catherine Thomson, Yahel Flores, Belen Kouba
Principled Problem Solving
Faculty Sponsor: Jennie Knight
Session: PPS
Time: 2:00pm
Location: King 126

Marketing exChange: How Faith Action International House and Other Immigrant Services in Greensboro Can Expand Their Clientele

Jennifer Urdaneta
Community and Justice Studies; Criminal Justice
Faculty Sponsor: Will Pizio
Session: Short Talks 4
Time: 1:45pm
Location: Duke 203

Police perceptions of community relations in 2016 post-presidential election period
This study explores the intersection of politics and policing in the United States. Both politics and policing are connected to issues with race and discrimination. As such, this study will attempt to illustrate how recent political dynamics affect police-community relations in Oakland. This presentation will draw on an ethnographic study that I conducted in January 2017, in which I examined the ways in which the federal election and current political climate is having on police-community relations in Oakland, California. I conducted over 40 hours of participant observation with officers from the Oakland Police Department, discussing issues of policing and politics during ride-a- longs, check-ins at the department headquarters, etc. I also conducted 3 in-depth semi-structured interviews to add depth and nuance to the observational data I collected. Findings from this study suggest that the police perceive that current political dynamics will have a negative impact on police-community relations due to perceived increasing mistrust among community members of the police force.

Rebecca van de Beek
Criminal Justice; Forensic Biology
Faculty Sponsor: Bryan Brendley
Session: Short Talks 6
Time: 2:30pm
Location: Duke 213

Guilty as Charged? A Study into the Admission of Forensic DNA Evidence as it Pertains to Exonerations in a Court of Law.
The intention of this study is to expand upon the work published by the U.S. Department of Justice in 1996, titled, "Convicted by Juries, Exonerated by Science: Case Studies in the Use of DNA Evidence to Establish Innocence After Trial" (Connors, et al.). This study compares 23 cases in which the convicted individual was exonerated in 2015 or 2016 based on the use of DNA evidence. Each case was studied and compared in order to draw conclusions on the occurrence of false convictions. The cases were examined for type of crime committed, profile of the convicted individual, time served, date of conviction and whether or not the accused pled guilty. The results of this study produced conclusive evidence on a number of commonalities between the studied cases. Six points of similarity were identified – false confessions or admissions, informants, government misconduct, un-validated or improper forensic science, eyewitness misidentification, and inadequate defense. This study explores the implications of these similarities and ways to prevent the reoccurrence of false convictions.



**FORENSIC
SCIENCE**

Machala Vestal
Biology; Health Sciences
Faculty Sponsor: Melanie Lee-Brown
Session: Poster/Exhibition 1
Time: 11:30am-12:45pm
Location: Hege Library

Examination of Efficacy, Usage, and Research Limitations of OMM
Osteopathic medicine has been around for over 100 years though many Americans are unaware of the philosophies and practices of doctors of osteopathy (DOs). Osteopathic manipulative medicine (OMM or OMT) has been documented to improve health outcomes and decrease hospitalization length of stay. It has notably been effective in treating influenza, chronic obstructive pulmonary disease (COPD), and pneumonia. However, the use of OMM by osteopathic physicians is declining as well as the number of patients receiving this type of treatment. While there are over 74,000 DOs practicing in many different specialties today, very few actually implement OMM in their practices. Technological advancements, increased regulations and documentation, as well as red tape from third party insurance have made the practice of osteopathic medicine difficult in today's health care system.

In addition to these barriers, many DOs have their own perspective of OMM, and double blinded, placebo controlled studies are few and far between. The shortage of research and limitations of current studies make it difficult to examine osteopathic medicine in our "evidence based medicine" world. This research will examine the use of OMM by DOs, and validate existing trials and research to formulate a deeper understanding of osteopathic medicine in today's medical field.

The Greenleaf Review
English
Faculty Sponsor: Mylène Dressler
Session: Performance 1
Time: 2:30pm
Location: Art Gallery

@GreenleafReview

ON TWITTER

Reading from 2017 Greenleaf Review
Guilford's annual literary magazine will be reading from pieces in the 2017 edition. Authors will be reading their prose and poetry that was accepted into The Greenleaf Review as a sneak peek to the print edition!



The Greenleaf Review

Rehshetta Wells, Colin Miller, Davia Young, Dan Hitesman, Donza Pitre

Community and Justice Studies

Faculty Sponsor: Krista Craven

Session: Short Talks 1

Time: 11:45am

Location: Duke 202

Health and Housing in Cottage Grove

Our group's study seeks to identify the primary health concerns, especially as they relate to housing conditions, of residents of the Cottage Grove neighborhood in East Greensboro. Working in concert with the Greensboro Housing Coalition and community residents, we are utilizing the principles and practices of Critical Participatory Action Research (CPAR) to discern what these concerns are. This study is part of a larger body of research and actions that seek to improve the health and housing conditions of residents of Cottage Grove. We have engaged in multiple forms of data collection for this project, including canvassing, focus groups, and a structured survey. In choosing our sample to administer the survey to we have employed a stratified random sampling method to ensure we have a representative sample of those living in the neighborhood. Preliminary findings will be shared in our presentation.

Rehshetta Wells, Connor Pruit, Nicole Zelniker

Business; Community and Justice Studies

Faculty Sponsor: Andrew Young

Session: Short Talks 5

Time: 2:45pm

Location: Duke 203

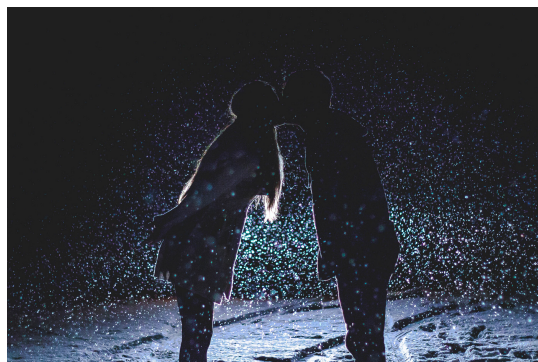
From 0 to 100: Starting/Restarting, and Maintaining a Bonner Site from the Ground Up!

Three Bonner Center Community Site Coordinators will share information about the process of either starting or restarting a Bonner Service Learning Site that did not previously have a strong connection to Guilford College. The presenters will discuss how they have established a connection with the organization, recruited student support for their sites, and connected Guilford faculty and staff to their endeavors. Presenters will also discuss the business and financial aspect of maintaining a site.



Chloe Williams
Psychology; Women's, Gender, and Sexuality Studies
Faculty Sponsor: Rachel Riskind
Session: Short Talks 2
Time: 11:30am
Location: Duke 203

Psychology senior thesis: Study of the Definitions of Bisexuality and the Impact of Social Climate on Bisexual Young Adults
Bisexual identity is understood and defined in varying ways. There has been a lack of research that explores the unique experiences of bisexual individuals. Capturing the experiences of bisexual young adults and examining a potential relationship between social climate and aspects of bisexual identity were the aims of this research study. I surveyed 120 bisexual participants between the ages of 18 and 24. The sample was 68.3% female, 12.5% male, and 4.2% another gender or agender. I collected data online, asking participants about their attractions, experiences, and questions. I analyzed the data with the goal of finding out about the participants' experiences and attractions, identity affirmation, anticipated binegativity, and if there is a correlation between the social climate in which bisexual people live/have lived and their anticipated binegativity and identity affirmation. Several findings were not significant and did not support hypotheses. However, all participants reported experiencing attractions to be people of at least two genders, while not all reported having sexual experiences with people of more than two genders. There was a significant correlation between more positive current social climate and lower anticipated binegativity. More research needs to be done to address the limitations of the current study and more aspects of identity (besides anticipated binegativity and identity affirmation) can be measured.



Christa York
Psychology
Faculty Sponsor: Chris Henry
Session: Poster/Exhibition 1
Time: 11:30am-12:45pm
Location: Hege Library

Anxious Attachment Styles and First Dates

Anxious attachment styles have been linked to behaviors that can be seen as nervous or negative in relation to relationships that those individuals are in. Previous research also indicates that attachment styles can be able to later see what types of relationships people put themselves in. The study conducted was done in order in order to examine anxious attachment styles and first dates. Likely anxious attachment style would allow for negative behaviors to be seen and felt during that encounter, in that same vein of thinking this study was created. A survey was given examining attachment styles as well as perceptions of attractiveness on a first date. The results did not indicate the hypothesis instead it found that anxious attachment styles and attraction scores allowed for a positive correlation to be found, $r = .33$, $p = .013$. Limitations are discussed further within the paper, noting the difficulties in measuring perception of attractiveness and nervousness rating.

Christa York
Psychology
Faculty Sponsor: Chris Henry
Session: Poster/Exhibition 1
Time: 11:30am-12:45pm
Location: Hege Library

Our Story: Immigration, not just Numbers

Najha Zigbi-Johnson
African and African American Studies; Religious Studies
Faculty Sponsor: Eric Mortensen
Session: Short Talks 4
Time: 2:00pm
Location: Duke 203

Reclamation, Usurpation and Commodification: Tracing the Black Diaspora Through Musico-Cultural Traditions of Cuba and the United States

Through centering both my experiences and my identity as I explore themes of the African-Atlantic Diaspora and engage with Blackness, I challenge the notion of assumed objectivity within ontological and historical studies. Diaspora is the nexus from which I make claims and understand global Blackness- particularly the culturally and racially syncretic musico-cultural traditions of Relga de Ocha-Ifá (Cuba) and Black-American jazz music of the 20th century. Exploring how both these musico-cultural traditions have been commodified and appropriated by nation-states, helps us understand how dynamics of nationalism, globalization, and imperialism reshape Blackness.

