Southwestern University

16th Annual

Research and Creative Works Symposium

From Every Voice

April 14, 2015

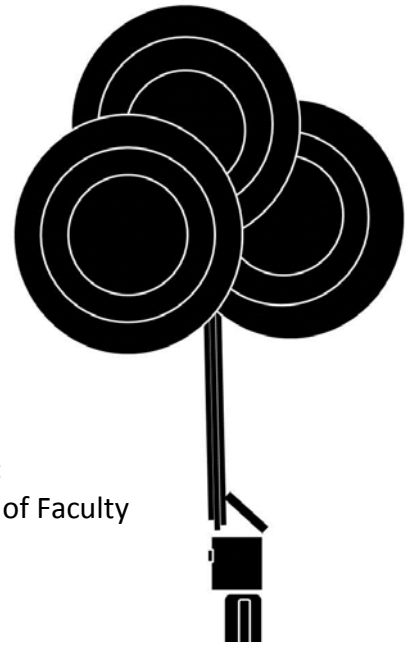
PROGRAM

2015
RESEARCH AND CREATIVE WORKS SYMPOSIUM
FROM EVERY VOICE

Southwestern University
Georgetown, Texas

EVENT PLANNER
Christine C. Vasquez
Office of the Dean of Faculty
Southwestern University

STUDENT PROGRAM CHAIR
Emma McDaniel, Class of 2016
English and Religion Departments
Southwestern University



Special Thanks To:
Office of the Dean of Faculty
Paideia

Southwestern University

OFFICE OF THE PRESIDENT

April 14, 2015

Welcome to the 2015 Research and Creative Works Symposium, a celebration of Southwestern University's distinctive commitment and success in moving the frontiers of human knowledge and creativity forward. The Symposium showcases the work of students, staff, and faculty through panel discussions, poster and oral presentations, creative works, and performances. Participating in this year's Symposium, we have 285 presenters proudly representing 27 departments, programs, and offices; and 61 students who are showcasing their capstone projects and results.

I extend a warm welcome to prospective students and their families and to members of the Georgetown community. In this Symposium, you see Southwestern at its very best. I hope you enjoy the event as much as we enjoy having you on campus. You may find the following particularly interesting:

- Paideia Cluster Seminars' presentations;
  - Mediterranean Mingling panel presentation (Lynda McCombs Room)
  - Global Health Stress Free Zone (Bishop's Lounge)
  - Representing Gender poster presentation (Bishop's Lounge)
- Political Science Capstone Presentations (Mood Bridwell Atrium);
- Award-winning oral presentations (throughout the Olin Building); and
- Individual performances by students (Caldwell-Carvey Foyer).

Thank you to all who have worked diligently to make this year's Research and Creative Works Symposium an outstanding celebration of Southwestern University's commitment to student inquiry and the creation of new knowledge. This Symposium is one of my favorite events of the year—I hope you, too, will enjoy it; and more importantly, I hope the day will inform, educate, challenge, enlighten, and inspire you.

Sincerely yours,

Edward Burger
President and Professor

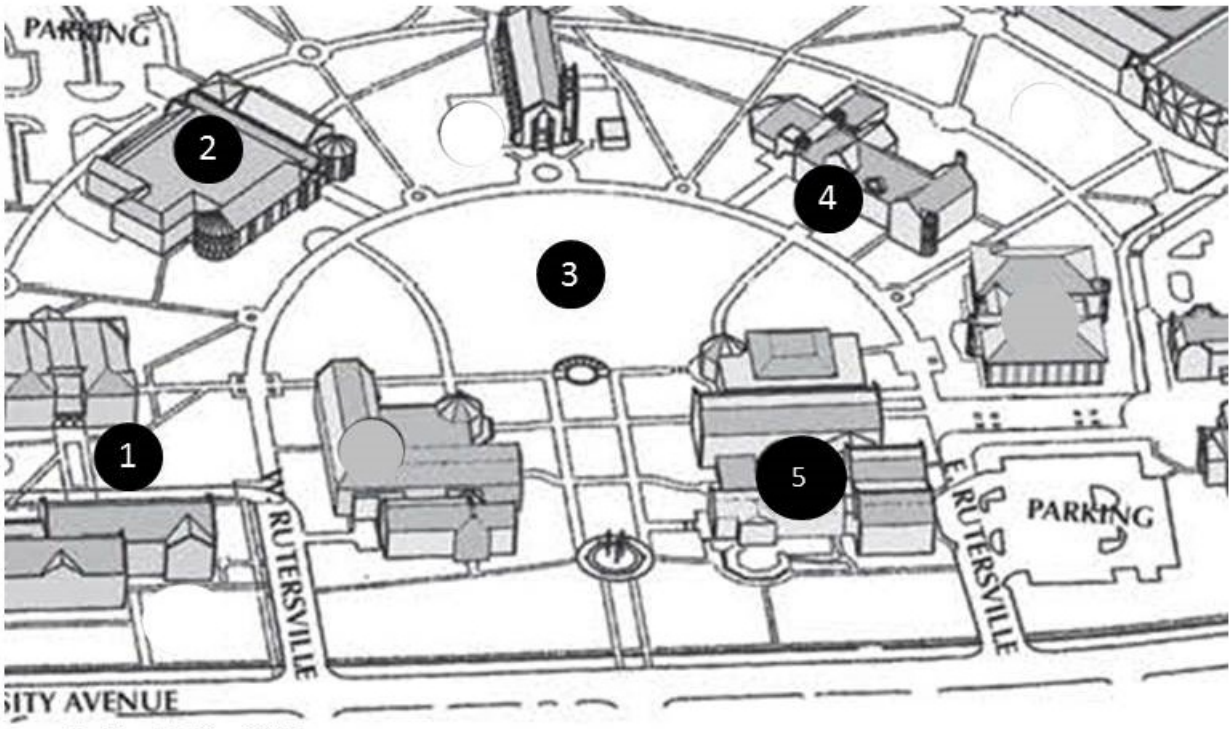
P.O. Box 770 · Georgetown, Texas 78627-0770
512.863.6511 · www.southwestern.edu

Table of Contents

SCHEDULE AT A GLANCE

MONDAY, APRIL 13, 2015		
3:00-8:00	Registration	Alma Thomas Fine Arts Center
TUESDAY, APRIL 14, 2015		
8:30-5:00	Information and Volunteer Check-in Table	Bishops Lounge
9:00-9:45	PANEL The Linguistic Landscapes of Texas	Lynda McCombs Room
9:00-3:00	Creative Works and Exhibition Stress Free Zone: Global Health Paideia Cluster	Bishops Lounge
10:00-10:45	PANEL A World of Its Own: Mediterranean Mingling	Lynda McCombs Room
10:10-10:30	Orchestral Excerpts Michael Martinez, Class of 2015	Caldwell-Carvey Foyer
10:45-11:00	Introduction and Welcoming Remarks Edward Burger, President of Southwestern University	Main Lawn
11:00-11:15	Insulin: A Musical Composition Joshua Page, Class of 2015	Caldwell-Carvey Foyer
11:00-12:00	Creative Works and Exhibitions	Alma Thomas Fine Arts Center
11:00-12:00	Senior Art Exhibition	Fine Arts Gallery
11:00-12:00	PANEL Political Science Capstone	Mood Bridwell Atrium
12:00-1:00	Lunch Break	Commons Dining Hall
1:00-2:00	PANEL Political Science Capstone	Mood Bridwell Atrium
1:15-4:00	Oral Presentations	FW Olin Building
2:15-2:45	*Refreshments*	Various Locations
2:00-3:00	PANEL SU Bioneers: Student Activism for Change	Lynda McCombs Room
3:30-3:45	An Interpretation of the Legend of Zelda Through Dance Abby Miller, Class of 2015	Bishops Lounge
4:00-5:00	Poster Presentations	Bishops Lounge
5:15-6:15	Celebration Hosted by Emma McDaniel, Class of 2016 Awards Presented by President Burger *Light meal*	Bishops Lounge

MAP OF ACTIVITIES



1. **<u>Mood Bridwell Atrium</u>**
   Political Science Panels
   Refreshments (p.m.)

2. **<u>Red & Charline McCombs Campus Center</u>**
   Information / Volunteer Table
   Various Panels
   Stress Free Zone
   Lunch
   Refreshments (a.m. & p.m.)
   Creative Works and Exhibits
   Performance
   Poster Presentations
   Celebration and Awards

3. **<u>Main Lawn</u>**
   Introduction and Welcoming Remarks
   Creative Works and Exhibition

4. **<u>FW Olin Building</u>**
   Oral Presentations
   Refreshments (p.m.)

5. **<u>Alma Thomas Fine Arts Center</u>**
   Monday Registration
   Performances
   Creative Works and Exhibits
   Fine Art Exhibits
   Refreshments (a.m.)

PROGRAM AGENDA

PANEL PRESENTATIONS

Lynda McCombs Room

9:00 1. Morgan Gallo, Class of 2015; Iris Klotz, Class of 2015; Melina Cantú, Class of 2015; Omeed Azmoudeh, Class of 2016; Jose Chapa, Class of 2016; Chase Eastland, Class of 2016; Abby Frels, Class of 2016; Emmett Gonzalez, Class of 2016; John Semlitsch, Class of 2016; Karla Cruz, Class of 2017; Kaylie Meek, Class of 2017; Dani Lilly, Class of 2017; Isaiah Galvan, Class of 2017; Hector Aleman, Class of 2018; Ashlyn Coleman, Class of 2018; Juan Guarneros, Class of 2018; Carolina M. Treviño, Class of 2018; Alexandra Vásquez, Class of 2018; Yesenia Rivera, Class of 2018; Luz Zamora, Class of 2018; Hector Aleman, Class of 2018; Carlos Huntley-Jiménez, Class of 2018; Taylor Lewis, Class of 2018; Jessie Rivera, Class of 2018; Matt Amerie, Class of 2018; Alex Van Stippen, Class of 2018
The Linguistic Landscapes of Texas

10:00 2. Bryony McLaughlin, Class of 2015; Meili Criezis, Class of 2016; Alexandria Larson, Class of 2017; Emily Grover, Class of 2017; Lydia Au, Class of 2015
A World of Its Own: Mediterranean Mingling

2:00 3. Ben Galindo, Class of 2016; Meredith Foster, Class of 2016; Adrienne Dodd, Class of 2015; Sam Guess, Class of 2017
SU Bioneers: Student Activism for Change

PERFORMANCES

Caldwell-Carvey Foyer

10:10 4. Michael Martinez, Class of 2015
Orchestral Excerpts

11:00 5. Joshua Page, Class of 2015
Insulin: A Musical Composition

Bishops Lounge

3:30 6. Abby Miller, Class of 2015
An Interpretation of the Legend of Zelda Through Dance

CREATIVE WORKS AND EXHIBITIONS

Alma Thomas Fine Arts Center

11:00 7. Mary Rouhiainen, Class of 2018; Keeley Coburn, Class of 2016; Victoria Gore, Class of 2018
Laminar Flow Fountain

8. Aimee Slagle, Class of 2015; Christina Crandall, Class of 2016; Raeneisha Cole, Class of 2017; Alex Detmar, Class of 2015; Nova Mebane, Class of 2017
Global Health Paideia Seminar Stress Free Zone

9. Amy Miller, Class of 2016
You Heard What? The Technical and Creative Aspects of Designing the Sound for *Rumors*
10. Dr. Mary Visser and Dr. Andrew Rechnitz
Can You Really Print That?
11. Kalyn Kane, Class of 2017
Lil' Red Ate the Wolf
12. Jordan Banks, Class of 2015; Diana Beltran, Class of 2018; Susana Beltran, Class of 2018; Brett Berdinsky, Class of 2018; Carly Dennis, Class of 2015; Joshua Frankel, Class of 2018; Ana Gutierrez, Class of 2018; Joseph Heid, Class of 2015; Sarah Hethershaw, Class of 2018; Meredith Horning, Class of 2016; Kylie Hunt, Class of 2018; Madeline McLeod, Class of 2016; Mattie Mills, Class of 2017; Seth Nicholas, Class of 2018; Cody Schindler, Class of 2018; Natalie Tonner, Class of 2016; Thomas White, Class of 2018; Esteban Woo Kee, Class of 2017
Native Books, Images and Objects
13. Carly Ammel, Class of 2018; Charlie Fisher, Class of 2016; Madison Martin, Class of 2017; Sarah Orsak, Class of 2018; Margaret Rowand, Class of 2018; Mary-Caroline Trevino, Class of 2018
Fulgentia Paideia: Latin Alive
14. Taylor Hutchinson, Class of 2016
Etching the Stars
15. Amir Hessabi, Class of 2016
3D Display Project
16. Amir Hessabi, Class of 2016
SOLeisure
17. Francis MacInnis, Class of 2015; Angelyn Convertino, Class of 2015; Eric Oden, Class of 2016
Kinetic Kicks Shoe Generator
18. Francis MacInnis, Class of 2015; Stephan Meyer, Class of 2016
Maze Runner
19. Ross Warkentin, Class of 2015; Garth Ornelas, Class of 2015
Omnidirectional Rover
20. Mason Ford, Class of 2017; Laith Tucker, Class of 2017; Andrew Meyning, Class of 2017; Coleman Counihan, Class of 2017; Brennan Sooter, Class of 2017; Will Devine, Class of 2017; Alexander Lee, Class of 2017; Alex Kotlarz, Class of 2017; Garrett West, Class of 2017
Transformational Blended Learning Through Digital Story Telling

SENIOR ART EXHIBITIONS

Fine Arts Gallery

11:00
21. Victoria Gadson, Class of 2015
Beyond the Sea, oil on canvas, 2013, 36" x 42"
22. Alexandra Bonnet, Class of 2015
Am I proud of who I am?, mixed media, 2015
23. Megan Adams, Class of 2015
The Language of Octopi, mixed media, 2015
24. Kelsi Walters, Class of 2015
Hijack, acrylic on mylar, 2014, 35 ¼" X 48 ½"

POSTER PRESENTATIONS

Bishops Lounge

4:00

25. Hillary Richard, Class of 2015
Making Connections: Integrated Learning in the World Through Internships
26. Valerie Logan, Class of 2015
Making Connections: Integrated Learning in the World Through Internships in Healthcare
27. Emily Shortt, Class of 2016
Some Reservations: An Examination of Anthony Bourdain's Favorite Travel Destinations
28. Alexandra Morris, Class of 2017
Lovin' it to Death?: Spatial Distribution of Fast Food and Death by Heart Disease and Diabetes
29. Farrell Stucky, Class of 2017; Sophie Elias, Class of 2018
Palm Oil Contradictions: Deforestation and Consumerism
30. Isaiah Galvan, Class of 2018; Matt Amerie, Class of 2018; Alex Van Stippen, Class of 2018; Ashlyn Coleman, Class of 2018; Jessie Rivera, Class of 2018
Signs of Change: A GIS Evaluation of US Census Data through Spanish Linguistic Landscape of Georgetown, TX
31. Jonathan Sandoval, Class of 2015
Green Study Abroad: An Analysis of Southwestern University Study Abroad Programs
32. Jordan Armeriv, Class of 2015
The Rise and Fall of Real Estate in Austin
33. Kron Heilman, Class of 2016
Texas Droughts and Environmental Degradation Caused by Dammed Lakes
34. Marta Selby, Class of 2016
Geographic Clustering of Employment Discrimination and Suicide
35. Sylvain Mauduit, Class of 2015
A Swiss Glacier Taking Its Last Glimpse of Sunlight
36. Travis Kurtz, Class of 2015
Funding and Implementing a Solar Photovoltaic Array for a Small Scale Greenhouse
37. William Teague, Class of 2016
Farmers Markets: A Variety of Locations for a Small Demographic
38. Brandee Knight, Class of 2015; Dakota McDurham, Class of 2016
Virtual Environments and Spatial Awareness in Adolescents: A Study in Virtual Tours at Southwestern University
39. Brandee Knight, Class of 2015
Interactive Memory: Chronicling Sustainability Efforts at Southwestern University
40. Adriana Guadarrama Lee, Class of 2015
Athletics Transforming SUstainability
41. Cassandra Crabtree, Class of 2015
A Lean, Green, Growing Machine: Installing a Solar Thermal Heating System in the Greenhouse
42. Daniel Lenihan, Class of 2015
Acquisition and Retention of Conditioned Defensive Behavior Across Metamorphosis in the Aquatic Clawed Frog (*Xenopus leavis*): Experiment Two
43. Rachel Terry, Class of 2015
Donating Responsibility: A Partnership Between Southwestern and the Caring Place
44. Adrienne Dodd, Class of 2015
Options for University Food Sourcing

45. Jessica Morales Valenzuela, Class of 2015; Jeanette Brown, Class of 2015; Morgan Drake, Class of 2015; Adrienne Dodd, Class of 2015; Dani Green, Class of 2015; Victoria Hughes, Class of 2015; Megan Mosele, Class of 2015; Eowyn Scott, Class of 2015; Rachel Terry, Class of 2015
Animals are Good to Think
46. Kaylyn Evans, Class of 2015; Victoria Hughes, Class of 2015; Shannon Paulson, Class of 2015; Phil Ricker, Class of 2016; Osiris Stockton, Class of 2015; Rachel Terry, Class of 2015
Is the Relationship Between Psychopathy and Attachment Security Mediated by Personality Pathology?
47. Janae Nordwall, Class of 2016; Laura Steed, Class of 2016; Stacy Rosengren, Class of 2016; John Wall, Class of 2016; Chelsea Peterson, Class of 2016
END7: Slowing Down Snail Fever
48. Olivia Drummond, Class of 2016; Sarah Coe, Class of 2017
Examination of Triplex Structures Through the Use of Thermal Denaturation and Oxidative Damage Studies
49. Averi Segrest, Class of 2016; Vanna Tran, Class of 2017; Meghan Rayford, Class of 2016; Katelyn Kimble, Class of 2016
END7: Don't Be Blind to the Effects of Onchocersiasis
50. Amy Gu, Class of 2017; Vanna Tran, Class of 2017
Engaging in Global Change
51. Maria Reyes, Class of 2015; Allie Watts, Class of 2015; Mustafa Tajkhanji, Class of 2016; Taylor Vickers, Class of 2016
END7: Hey! Get Out My Intestines: Hookworms and the Affordable Cure
52. Rebecca Norcini, Class of 2015; Taylore Meyer, Class of 2015; Josh Mann, Class of 2016; Neva Mebane, Class of 2016
END7: Eradicating Whipworm
53. Audrey Garcia, Class of 2015; Audry Helburn, Class of 2015; Nicole Gibbs, Class of 2017; Walker Lawrence, Class of 2015
END7: Roundworm: A Biological Humanitarian Crisis
54. Kylie Borden, Class of 2017; Audrey Garcia, Class of 2015
Transcriptional Regulation of ICE R391 RumA'2B DNA Polymerase V by SetR
55. Anna Hartmann, Class of 2015; Kylie Borden, Class of 2017; Gabri Copenhaver, Class of 2016; Emilie Evans, Class of 2015; Togla Gulyasar, Class of 2015
END7: The Elephantiasis in the Room
56. Anna Hartmann, Class of 2015
When Sex Isn't the Answer: Examining Sexual Compliance, Restraint, and Stress
57. Kaylyn Evans, Class of 2015; Bella Alfaro, Class of 2015; Madison Doty, Class of 2017; Catherine Cerna, Class of 2016; Beulah Agyemang-Barimah, Class of 2017
END7: I Can See Clearly Now, Trachoma is Gone
58. Brianna Turney, Class of 2016; Cameron Smeltzer, Class of 2016; Michael Gallegos, Class of 2017
Opening Doors: Perceived Marginalization and Openness to Experience in Dating Relationships
59. Estrella Thomas, Class of 2015; Annelise Carlin '14; Michelle Cincunegui '14
Is All Stressed Created Equal? The Impact of Attachment on Reactions to Positive and Negative Relationships Events

60. Marieke Visser, Class of 2017; Courtney Crawford, Class of 2016
Organizational Commitment and Social Support
61. Olivia Martin, Class of 2017; Mattie Mills, Class of 2017;
Najmu Mohseen, Class of 2017; Nikki Welch, Class of 2016
It's Not You, It's Me: Personality Traits and Long-Distance Dating
62. Caitlin Lacker, Class of 2016
The Synthesis of a Gold-Cleavable Protecting Group
63. James Alleyn, Class of 2015; Simon Gersib, Class of 2016
Titanium-Mediated Synthesis of Cyclobutanols
64. Angelyn Convertino, Class of 2015; Stephan Meyer, Class of 2017
Analyzing Super Storm Sandy
65. Ross Warkentin, Class of 2015
Modification of Local Roughness Length by Advancing Storm Surge in
Landfalling Tropical Cyclones
66. Rebecca Wilson, Class of 2015; Matt Krall, Class of 2015; Kristin Stuckey, Class of 2015;
Ross Warkentin, Class of 2015
Hunting with Pirates: Building a Web App in Ruby on Rails
67. Christian Bullock, Class of 2015; Anna Zolten, Class of 2015; James Bram, Class of 2015;
Jordan King, Class of 2015
Integrating Off-the-Shelf and Original Code in Software Development
68. Jake Balderama, Class of 2015; Natalia Rodriguez, Class of 2015;
Michael Morris, Class of 2015; Brittany Pugh, Class of 2015
Keeping a Pirate's Data Safe: Data Architecture within a Scavenger Hunt Application
69. Natalia Rodriguez, Class of 2015
Mapping Body Image with Instagram Data
70. Mareah Lucio, Class of 2015; Antonio Lopez, Class of 2015; Penny Wong, Class of 2015;
Brandon Hudson, Class of 2016; Julie Han, Class of 2016; Kyle Bauernschmitt,
Class of 2016; Ryan Beeman, Class of 2017; Veronica Pardo, Class of 2018;
Greer Miller, Class of 2018; Abby Toppins, Class of 2018; Chickie Murphy, Class of 2018;
Claire Schumann, Class of 2018
Mitchell Elementary School Students: Aileen Castro, Bailey Chapman, Samantha
Collins, Hannah Deazvedo, Savannah Gonzales, Avery Haley, Jadyn Mazuk, Abilene
Stearns, Macy Stearns, and Mikayla Vinyard
Science and Math Achiever Teams Achievement Party
71. Garrett Banister, Class of 2017
Application of Sensors in Robotics
72. Isabella Ferranti, Class of 2017
Redirection of Lightening Through an Ionized Pathway
73. Keeley Coburn, Class of 2016; Amir Hessabi, Class of 2016
Robotics SCOPE
74. Kelsey Abel, Class of 2015; Ilka Vega, Class of 2017
Two–Tiered Green Roof
75. Danielle King, Class of 2017; Charles Payne, Class of 2016
Measles: From Physical Data to Virtual Simulation
76. Arie Angeledes, Class of 2016
Synthesis and Characterization of a Novel Hydrozone Thiophene Ligand

77. Emma McDaniel, Class of 2016; Drew Kotlarczyk, Class of 2016; Samantha Weaver, Class of 2017; Sarah Matthews, Class of 2017; Katherine Protil, Class of 2016; Jordyn Goodman, Class of 2017; Sarah Surgeoner, Class of 2017; Meredith Murphy, Class of 2017
Paideia Connections: Angela Davis and Interdisciplinarity
78. Omeed Azmoudeh, Class of 2016
One Industry Succeeding During a Failing Economy
79. Olivia Stephenson, Class of 2016
Art History's Diversity Failure
80. Kalyn Kane, Class of 2017
Interconnectedness Through Recycling
81. Nolan Klein, Class of 2015
The Freshman 15: Comparing Change in Weight of Male and Female Student Athletes During the First Year of College
82. Annalise Kohrs, Class of 2015
Feminist Theology in Amsterdam, the Netherlands
83. Julia Estrada, Class of 2015
You Ahead of the Game: Exotic Dancers, Ambition, Community, and Exploitation
84. Kaylynn Guerra, Class of 2015
Group Exercise and Well-Being in Kumming, China
85. Rowan Prothro, Class of 2015
Baytown, Texas: Where Oil and Water Really Do Mix
86. Cadie Pullig, Class of 2017
Student Versus Professor: What Qualities Make an Effective Teacher?
87. Kelly McKeon, Class of 2017
How Students and Professors Define Effective Teaching at Two Different Liberal Arts Colleges
88. Dr. Sandi Nenga, Associate Professor of Sociology
Defining Effective Teaching at Two (Really Three) Private Liberal Arts Colleges
89. Ashley Moulder, Class of 2016; Ariana Weeks, Class of 2017
Effect of Starting Block Design on Competitive Swim Start Performance
90. Carol Bentley, Class of 2015; Alexandra Dillion, Class of 2015
The Effects of Shoe Design on Lower Limb Running Kinematics
91. Virginia Stofer, Class of 2015
Wrist Immobilization: Does Elbow and Shoulder Overcompensation Occur When Performing Drinking and Hammering Tasks?

PANEL PRESENTATIONS (Political Science Capstone)

Mood-Bridwell Atrium

11:00 92. Lydia Au, Class of 2015
Withdrawing for Whose Peace? The United States and the Paris Peace Accords of 1973
93. Elizabeth Bell, Class of 2015
Can Alternative Affirmative Action Policies Retain Diverse College Campuses?
94. Kenneth Brooks, Class of 2015
The Moral Complications of U.S. Drone Strikes
95. Ricardo Gonzalez, Class of 2015
U.S. Foreign Policy in the Cold War Era: Interventions and the Guatemalan Coup in 1954

96. Mandy Koohi, Class of 2015
The Iraq War: Just or Unjust?

1:00 97. China Albin, Class of 2015
The Dragon's Claw: Ethics and Development Issues of China in Africa

98. Christina Manzanares, Class of 2015
A Utilitarianist View of Crimea's Annexation

99. Mary Rossi, Class of 2015
President Lee MyungBak and Nuclear Policies with North Korea

100. Jay Scheinman, Class of 2015
Non-Reconciliation and the Congo's Democratic Collapse

ORAL PRESENTATIONS

Olin 111

1:15 101. Courtney Nagel, Class of 2017; Paul Glasheen, Class of 2015
Beethoven's "Pathétique," 3rd Movement: Unification in Variation

1:30 102. Audrey Barrett, Class of 2015
Trauma, Cruelty, & Audience Reception: The Living Theatre's Paradise Now

1:45 103. Elise Gabriel, Class of 2015
The Independent Females: Women of the San Francisco Mime Troupe

2:00 104. Kristen Samuelson, Class of 2015
A Re-Examining of the Open Theatre and its Legacies Through the Lens of Play Theory

2:15 105. Kyle Sapienza, Class of 2015
Viva El Teatro Campesino

2:30 106. Madge Watson, Class of 2015
The Free Southern Theater: Where the Transformation Lay

2:45 107. Mallorie Tidwell, Class of 2015
Prodigious Puppets Protest Powerfully

3:00 108. Nick Kellogg, Class of 2015
All for One and One for All

3:15 109. Gideon Nelson, Class of 2016
Rethinking Digital Instruction: SU Guitar Tutorials

3:30 110. Melina Cantu, Class of 2015
La Fila India: Sexism, Corruption, and the Daily Struggle of Latin Americans

3:45 111. Keegan Taylor, Class of 2015
Sustainability Tracking Assessment and Rating System (STARS)

Olin 207

1:15 112. Hunter Jurgens, Class of 2017; Adrienne Dodd, Class of 2015
Climate Change, Politics, and Grassroots Environmentalism in Tibetan Areas of China

1:30 113. Andrew Cole, Class of 2015
The Effect of the Minimum Wage of Unemployment

1:45 114. Caleb Ruckel, Class of 2015
The Effects of Changes in Educational Funding on High School Graduation Rates

2:00 115. Egan Cornachione, Class of 2016
Does Higher Income Mean Worse Mental Health?

2:15 116. Emmy Gradisar, Class of 2015
Did Compensation Affect Bank Performance During the Financial Crisis of 2008?

2:30 117. Joseph Ramirez, Class of 2015
The Minimum Wage: Its Relationship with Poverty and the Great Recession

2:45 118. Nicholas Sivon, Class of 2015
An Analysis of Depositor Behavior in Response to Banking Panics

3:00 119. Ryan Jones, Class of 2015
Financial Ratios and Their Effect on Share Prices

3:15 120. Yinlin Dai, Class of 2016
Do Women Do Better Than Men in Long-Term Investment?

3:30 121. Chelsea Allen, Class of 2016
"My Revenge Against Humanity": A Look at Misogyny, Mental Health, and Gun Culture, and their Role in the Sensationalism of the Media's Portrayal of the Santa Barbara Killings

3:45 122. Katie Morgan, Class of 2016
“Help in WilCo”: The 2014 Williamson County Growth Summit and Its More Recent Impacts

Olin 209

1:15 123. Antonio Lopez, Class of 2015
Synthesis and DNA Binding Studies of [Cu(phen)(4-amino-pteridino(6,7-f) phenanthroline)](PF6)2 and [Pt(triflate)2(4-amino-pteridino(6,7-f)phenanthroline)]

1:30 124. Penny Wong, Class of 2015
Investigation of DNA Binding and Photocleavage properties of [Zn(triflate) 2(4-amino-pteridino(6,7-f)phenanthroline)]

1:45 125. James Alleyn, Class of 2015
Titanium-Mediated Synthesis of Cyclobutanols

2:00 126. Jonathan Schulz, Class of 2015
Palladium Catalyzed sp2 C-H Bond Functionalization

2:15 127. Mareah Lucio, Class of 2015
Comparative Chemical Analysis of Basil (*Ocimum basilicum L*.) Commercially Available in Central Texas

2:30 128. Shelby Beem, Class of 2015
Nutrient Deprivation and the Cell Fate Decisions in Malignant and Non-Transformed Mouse Embryonic Fibroblasts

2:45 129. Zane Johnson, Class of 2015
Differential Effect of METH on DNA Damage Levels in Four Rat Brain Regions

3:00 130. Clark Fritsch, Class of 2015
Copper (II)-induced Prooxidant Activity of Rosmarinic and Caffeic Acids

3:15 131. Allie Watts, Class of 2015
The Nose Knows: Hatchling *Pomacea maculata* Behavioral Responses to Predator Chemical Cues

3:30 132. Areli Gutierrez, Class of 2015
Dispersal of the Georgetown Salamander (*Eurycea naufragia*) Within Two Springs Sites

3:45 133. Katie Lelinski, Class of 2015
Chasing Cultural Identities: A Statistical Analysis of the Chase from the United Kingdom and the United States

Olin 222

1:15 134. Jessica Jones, Class of 2015
This School Just Isn't Set Up for Me: The Experiences of Transfer Students from Community Colleges at Southwestern University

1:30 135. Jordan Richardson, Class of 2015
"It's All Fun and Shade": Identities, Community and Culture of Drag Performers in the US

1:45 136. Amy Gu, Class of 2017
The Quiet Leader as a Catalyst in Pre-Adolescent Education

2:00 137. Katheryn Reagan, Class of 2016
The BIG Event: Creating a System, Leaving a Legacy

2:15 138. Tony Irizarry, Class of 2015
Revolution in Retrospect: A Look Inside the Making and Re-Making of May '68 Forty Years Later

2:30 139. Mitchell Peterson, Class of 2016; Lucas Grisham, Class of 2015; Dakota McDurham, Class of 2016
An Exploratory Study of the Social Construction of LGBTQ Neighborhoods in London

2:45 140. Eryn Quinn, Class of 2016
A Comparative Study of Japanese and German Immigration Policy in Post-WWII World

3:00 141. Kevin Lentz, Class of 2015
Financialized Capitalism and Uneven Urban Geographical Development in the US

3:15 142. Victoria Flores, Class of 2015
My Education Played a Role: How a Liberal Arts Background Influences Teach for America Corps Members

3:30 143. Guillermo Alvarado, Class of 2015
Latina/os, Micro aggressions, and Positive Interpersonal Interactions on a College Campus

3:45 144. Helene Thompson, Class of 2015
"Screaming Like A Little Girl": A Dark Descent into Gender, Video Games, and Fear

Olin 226

1:15 145. Meili Criezis, Class of 2017
A Yellow Peril: Foreigner or Model Minority?

1:30 146. Iris Klotz, Class of 2015
Cinema and Marginalization in the Pacific Region of Colombia

1:45 147. Lauren Gieseke, Class of 2015
The World Outside: Images of the Balkans in British Travel Narratives, 1903-1907

2:00 148. Hunter Jurgens, Class of 2017
Environmental Policy Adherence in Germany and Japan

2:15 149. Elizabeth Spieckerman, Class of 2015
"From the Outside Looking In": Gendered Rhetoric About Sororities and Fraternities

2:30 150. Grace Garrigan, Class of 2015
Immigration Policy Divergence of Germany and Japan

2:45 151. Claire Blyth, Class of 2016
Identity Accommodation of Higher Education Latino Students

3:00 152. Indigo Morgan, Class of 2015
Tracing Black Gospel Music Through History

3:15 153. Sarah Coe, Class of 2017
Courts and Environmental Policy Making in Germany and Japan

3:30 154. Samuel Guess, Class of 2017
Rates of Recapture in *Eurycea naufragia* Salamanders at Swinbank Spring

3:45 155. Mary Eleanor Siff, Class of 2017
Community Engaged Learning in the Southwestern Garden

Olin 305

1:15 156. Dakota McDurham, Class of 2016; Caitlin Schneider, Class of 2017
Building a Foundation for SU Ecolab

1:30 157. Jessica Morales Valenzuela, Class of 2015; Jeanette Brown, Class of 2015; Kasera Greene, Class of 2015
The Short- and Long-Term Effects of Chronic Methylphenidate

1:45 158. Kaylyn Kane, Class of 2017
Seeing Trash Differently

2:00 159. Christine Harbour, Class of 2016; Jordan King, Class of 2015
An Empirical Evaluation of a 2-approximation for the K-Center Problem

2:15 160. Sam Ashley, Class of 2016
Innovation Creates: An Analysis of the Role of High-Technology Industries Within Modern Germany and Japan

2:30 161. Taylor Vickers, Class of 2016
Effect of Estradiol (E2) on the Invasive Capability of HEC-1A and HEC-1B Endometrial Adenocarcinoma Cell Lines

2:45 162. Morgan Gallo, Class of 2015
Effect of Estradiol on Occludin Expression in the Endometrial in the Endometrial Adenocarcinoma Cell Lines HEC-1A and HEC-1B

3:00 163. Carson Savrick, Class of 2015
Spread of Invasive *Pomacea maculata*, Perry, 1810 (*Ampullariidae*) in the Southwestern United States

3:15 164. Sofia Campos, Class of 2016
A Tale of Two Species: Comparative Phylogeography and Genetic Diversity of *Pomacea canaliculata* and a Putative Cryptic Congeneric in the Rio de la Plata Basin

3:30 165. Averi Segrest, Class of 2016
Cling on Me: Impacts of Settlement of Invasive *Limnoperna fortune* (Dunker, 1857) on the Native *Pomacea canaliculata* (Lamark, 1822) in Uruguay

3:45 166. Katie McCance, Class of 2015
Influence of Plant Maturity on Anthocyanin Levels, Phenolic Composition, and Antioxidant Properties of 3 Purple Basil (*Ocimum basilicum L*.) Cultivars

PANEL abstracts

1. The Linguistic Landscapes of Texas

Morgan Gallo, Class of 2015; Iris Klotz, Class of 2015; Melina Cantú, Class of 2015; Omeed Azmoudeh, Class of 2016; Jose Chapa, Class of 2016; Chase Eastland, Class of 2016; Abby Frels, Class of 2016; Emmett Gonzalez, Class of 2016; John Semlitsch, Class of 2016; Karla Cruz, Class of 2017; Kaylie Meek, Class of 2017; Dani Lilly, Class of 2017; Isaiah Galvan, Class of 2017; Hector Aleman, Class of 2018; Ashlyn Coleman, Class of 2018; Juan Guarneros, Class of 2018; Carolina M. Treviño, Class of 2018; Alexandra Vásquez, Class of 2018; Yesenia Rivera, Class of 2018; Luz Zamora, Class of 2018; Hector Aleman, Class of 2018; Carlos Huntley-Jiménez, Class of 2018; Taylor Lewis, Class of 2018; Jessie Rivera, Class of 2018; Matt Amerie, Class of 2018; Alex Van Stippen, Class of 2018
Sponsors: Dr. Abby Dings, Modern Languages and Literatures Department (Spanish) and Mr. Anwar Sounny-Slitine, Environmental Studies and Interdisciplinary Program

The linguistic landscape refers to the written language that surrounds us on store fronts, concert posters, billboards, road signs, official notices, etc. (Landry & Bourhis, 1997). Examination of the linguistic landscape can reveal information about the language backgrounds of the local inhabitants, as well as insights into attitudes about different languages, the consequences of language contact, and the ethnolinguistic vitality of minority languages (Backhaus, 2007). This panel showcases student linguistic landscape projects focusing on the following research questions: What are the languages on display in different linguistic landscapes throughout Texas and what are the linguistic characteristics of bilingual and multilingual signs? What is the relative distribution of English, Spanish, and other languages, and how does the distribution correlate with Census data concerning demographic characteristics of the surrounding area? How are community and identity constructed within places using linguistic resources? Through the use of digital photography, students in Spanish 734/Paideia 724: Spanish in the United States documented and analyzed the linguistic landscapes in cities throughout Texas, including Anglo-dominant cities such as Georgetown and Austin, as well as Latino-dominant cities along the border including Brownsville, Laredo, and McAllen. The Paideia students also collaborated with Situating Place Paideia students enrolled in Paideia 204: Environmental GIS to discover how the distribution of languages correlated with Census data concerning languages spoken at home, in part to reveal how the diversity of languages used in public spaces may be masked in the Census data since the Census references information to the household locations, not public spheres.

2. A World of Its Own: Mediterranean Mingling (Mediterranean Mingling Paideia Cluster)

Bryony McLaughlin, Class of 2015; Meili Criezis, Class of 2016; Alexandria Larson, Class of 2017; Emily Grover, Class of 2017; Lydia Au, Class of 2015
Sponsors: Dr. Melissa Byrnes, History Department and Dr. Eric Selbin, Political Science Department

“What do we mean by the Mediterranean?” “How do ideas and practices change as they move across putative boundaries - social, cultural, political, geologic, ecologic and more?” “How do migration and exchange create confluence and conflict?” These are just a few of the many questions we have contemplated while adopting a more holistic and interdisciplinary approach to our Paideia cluster theme of “Mediterranean Mingling.” This semester we have explored the interactions between cultures and traditions that over time have influenced the concept of the Mediterranean and how its past has shaped its present and how they might shape its future.

Through discussions and readings we have worked through the challenges of applying materials from our previous cluster courses to the topic and in doing so have found the organic threads of interdisciplinarity woven throughout. By dissecting the Mediterranean for what it was, is and could be, we've found that it holds a multitude of complexities with rich histories that show the Mediterranean is not easily broken into binary oppositions of land and sea or east and west; there is simply not one Mediterranean, but many. We also developed individual pedagogies for crafting our own flipped-seminars, in which we, the students, became the teachers. Now that we have developed a better understanding of our theme, we want to share our seminar experiences with the campus community. Specifically, we want to provide the audience with our own perspectives on the purpose of Paideia and the impact it has had on our overall educational experience here at Southwestern.

3. SU Bioneers: Student Activism for Change
2014 Annual Bioneers Conference Experience
Ben Galindo, Class of 2016; Meredith Foster, Class of 2016; Adrienne Dodd, Class of 2015; Sam Guess, Class of 2017
Sponsor: Mr. Anwar Sounny-Slitine, Environmental Studies and Interdisciplinary Program

The Bioneers Conference is an annual gathering of leaders and thinkers in the intersecting movements for environmental sustainability, social justice, and indigenous rights. This past October of 2014, several students from Southwestern University were able to attend this prestigious conference and experience its inspirational effects. In this panel, a few student representatives who attended the conference will gather in order to discuss shared and differing learning experiences, major themes found throughout the conference, and ideas for engaging the campus in environmental sustainability and activism. In particular, some of the topics up for discussion will include: indigenous grassroots movements for environmental consciousness, artistic expressions for environmental activism, eco-feminism and the intersections of social justice and bio-remediation of anthropogenically disturbed ecosystems, to name only a few. In this panel we hope to address issues of campus sustainability as well as encourage student leadership for environmental activism using concepts presented at the Bioneers Conference.

CREATIVE WORKS AND EXHIBITION abstracts

4. Orchestral Excerpts
Michael Martinez, Class of 2015
Sponsor: Dr. Eileen Meyer Russell, Music Department

When a musician prepares music for a performance or audition, the typical practice and performance consists of solo works with piano or ensembles with other musicians. There is one type of music, however, that is rarely seen by or performed for a public audience; this music is commonly referred to as orchestral excerpts. These excerpts are taken out of traditional orchestral repertoire (i.e. symphonies, tone poems, suites) and used to gauge the skill, experience, and knowledge of musicians. With the help of the Fleming Grant, I was able to gain further insight into this type of music and its importance. I will be discussing the importance of these excerpts for musicians and demonstrating traditional orchestral excerpts for tenor trombone.

5. *Insulin*: A Musical Composition
Joshua Page, Class of 2015
Sponsor: Dr. Davi Thornton, Communication Studies Department

Insulin: A Musical Composition is an original work for Oboe in which the amino acid sequence for the polypeptide hormone insulin has been transposed into musical notation (i.e., Glycine corresponds to G3). This work was inspired by the surprising similarities between proteins and musical compositions I discovered in doing philosophical work on the language and expression of genomics. Like music, the beauty of the proteome is in the variable expression and composition that can occur by combining a discrete set of units--musical notes and amino acids. For the Symposium I will begin by presenting more fully the beauty of the metaphorical power of music to look at proteins and genome sequences, as well as examining the methodology by which I composed the piece. I will conclude with the performance of *Insulin* for the Oboe.

6. An Interpretation of The Legend of Zelda Through Dance
Abby Miller, Class of 2015
Sponsor: Ms. Judy Thompson-Price, Theatre Department

As a long-time fan of the game series, *The Legend of Zelda: Twilight Princess* "Orchestra Piece #1" moved me to creatively display the concepts I learned in Modern Dance for my final project. Modern movement is driven by emotion and embraces an individual's ideas, thoughts, and feelings in performance. Modern dance provides a medium for individuals to express these emotions and communicate an idea, a passion, or a story to an audience through movement. This particular piece allows me to embody a story of power, wisdom, and courage. Stylistically, the music flows through sustained phrases and abrupt changes which are reflected in my movements. The piece begins by setting a mysterious tone which prompts slow, thoughtful use of the body. Tension increases as the conflict emerges, causing an increase in the dance's pace and tempo. Finally, the dance exudes energy and inspiration through spins and aerial movements as the conflict is resolved, leaving participants feeling upbeat and moved.

7. Laminar Flow Fountain
Mary Rouhiainen, Class of 2018; Keeley Coburn, Class of 2016; Victoria Gore, Class of 2018
Sponsor: Dr. Steven Alexander, Physics Department

Our goal for the Symposium was to create a visually appealing project that illustrates several different applications of physics - a laminar flow fountain with a series of LED lights within the waterspouts. Laminar flow occurs when water moves in layers with high speed therefore creating a smooth flow of water through a tube or pipe. The LED lights provide the fountain with a pulsing and colorful appearance when lit at night. In order to accomplish our final goal, we researched how to create a laminar flow fountain using materials that were available to us or that we could purchase. Our process consisted of trial and error as we attempted different methods in order to create the most efficient fountain that provided a consistent laminar flow. Once we designed our final waterspout, we then incorporated the LED lights into the fountain. This project ultimately met our final goal, as it encompasses the ideas of fluid mechanics and fundamentals of design in a fully operational and visually appealing fountain.

8. Global Health Paideia Seminar Stress Free Zone (Global Health Paideia Cluster)
Aimee Slagle, Class of 2015; Christina Crandall, Class of 2016; Raeneisha Cole, Class of 2017; Alex Detmar, Class of 2015; Nova Mebane, Class of 2017
Sponsors: Drs. Fay Guarraci, Psychology Department and Dr. Maria Cuevas, Biology Department

The Global Health Paideia Seminar has a focus this semester on stress and its effects in terms of individual and global health. Using our research and expertise, the seminar is configuring a stress free zone during the Research and Creative Works Symposium for students, faculty, and visitors in order to aid in teaching healthy habits and practicing stress free activities.

9. You Heard What? The Technical and Creative Aspects of Designing the Sound for *Rumors*
Amy Miller, Class of 2016
Sponsor: Mr. John Ore, Theatre Department

Rumors, a Neil Simon comedy, has a realistic setting of a modern New York home in the 1980s. The action of the play begins quickly and refuses to pause until the end of each act, and the unceasing stage direction reinforces the play's farcical elements. This pace meshed with the realistic setting creates the dramatic context of the sound design. The phone and doorbell ring relentlessly, never giving the characters a chance to collect themselves and decide on the story they will tell. In fact, the moment clarification begins, a gunshot blasts from the bedroom of the party's host. These cued elements (along with cars arriving, toilets flushing, and crashes in the kitchen), despite their conducted nature, had to sound not just believable, but real in setting and character. Our techniques included hidden speakers on set, "homemade" doorbells, crash boxes, and a phone cued with a device to stop ringing when answered. Even when these cues stop, the framing effects (pre-show, intermission, and end of show music) included songs chosen by the actors to express their character, as directed by Everett Lunning. All of these sounds required us to use a plethora of sources, and through these, we created a cohesion of digital mastering and physical, live effects.

10. Can You Really Print That?
Dr. Mary Visser , Art and Art History Department and Dr. Andrew Rechnitz, Library Information Services

Students in my abstract sculpture class have designed sculptural models using a basic mesh modeler software. Andrew and I want to explore the limits of the Airwolf 3d printer by working with the students to see how accurate the printed form and how extreme a form it can print. Do the forms need to be booleaned if they are FDM printed versus SLS printed? Can one print in sections and glue extensions on? Are there issues of scale and weight for these forms if printed in various materials?

11. Lil' Red Ate the Wolf
Kalyn Kane, Class of 2017
Sponsor: Dr. Erika Berroth, Modern Languages and Literatures Department (German)

Americans live in a culture controlled by male hierarchy. Feminism and other forms of social justice have been successful in so many ways, but the inequality and struggle are still very real. The white male seems to stand the test of time with higher pay and better opportunities. The more mentally destructive issue involves the rape culture to which so many are blind. Rape culture is when rape or sexual assault are socially promoted, kept quiet, or disregarded within a culture that can be heard in music, seen on television. This makes survivors afraid to admit what happened in fear of victim blaming. These issues were seen long ago by 20th century feminist writer Angela Carter. Her most popular written work was *The Bloody Chamber* in which she rewrote fairytales into dark, feminist short stories. This sculpture is inspired by one of Carter's stories called *The Company of Wolves*, where little red riding hood is not afraid of the wolf and liberates herself from her "girly" role. Inequality and rape culture oppress women to live in fear and play a specific role. My role is creating sculptures from reclaimed, recycled, and found objects that present a strong statement. By using my personal experiences and beliefs, I draw upon abstract storytelling with items that would normally be tossed away to invite the viewer to step back and question the issues surrounding gender, race, class, nonhuman animals, and environmental justice.

12. Native Books, Images and Objects
Jordan Banks, Class of 2015; Diana Beltran, Class of 2018; Susana Beltran, Class of 2018; Brett Berdinsky, Class of 2018; Carly Dennis, Class of 2015; Joshua Frankel, Class of 2018; Ana Gutierrez, Class of 2018; Joseph Heid, Class of 2015; Sarah Hethershaw, Class of 2018; Meredith Horning, Class of 2016; Kylie Hunt, Class of 2018; Madeline McLeod, Class of 2016; Mattie Mills, Class of 2017; Seth Nicholas, Class of 2018; Cody Schindler, Class of 2018; Natalie Tonner, Class of 2016; Thomas White, Class of 2018; Esteban Woo Kee, Class of 2017
Sponsor: Dr. Patrick Hajovsky, Art and Art History Department

The Art History class "Native Books, Images & Objects" presents a collective online exhibition through *Omeka*, a web exhibition platform purchased by the A. Frank Smith, Jr. Library / Information Services this fall. "Native Books" explores the intersections of art and writing in indigenous Latin America in the sixteenth century as it critically engages with Eurocentric (Spanish) hierarchies of books and literacy. We challenge such European canons by examining how knowledge can be encoded in images and objects, by reading Mexican pictorial manuscripts and Peruvian quipu (knotted strings), and by analyzing accounts written by indigenous Americans who took to the pen to describe their own histories. This course is part of the Paideia cluster "Americas: North by South." The front page of the online exhibition features a collaborative student essay "What is a Book? Who gets to Say, and Why?" The interior exhibition is organized into the following galleries: "Timeline Histories," "Person-Centered Histories," "Place-Centered Histories," "Divinatory Almanacs," "Economic and Legal Documents," and "Cultural Encyclopedias." These galleries feature images from 18 different Mexican pictorial

manuscripts, each researched, analyzed, and explained by one of the students in the class.

13. *Fulgentia Paideia*: Latin Alive
Carly Ammel, Class of 2018; Charlie Fisher, Class of 2016; Madison Martin, Class of 2017; Sarah Orsak, Class of 2018; Margaret Rowand, Class of 2018; Mary-Caroline Trevino, Class of 2018
Sponsor: Dr. Hal Haskell, Classics Program

As students of Latin, we have come to experience Paideia during each of our class meetings, at times declaring passionately that we have just encountered a Paideia moment. "*Ecce! Fulgentia Paideia*!" we declare, "behold! Paideia flashes!" In our presentation, we will give personal accounts of the ways in which the study of the Latin language has shaped our understanding of other disciplines, and in turn, the ways that the study of other disciplines have enhanced our understanding of Latin. In effect, we would like to share what Paideia means to us.
Paideia flashes have come to us not only in humanities classes but also in other, perhaps unexpected, disciplines. One of us observed the influences of Roman culture in an accounting course; another found Latin-derived words in novels for English classes; sociology, communications, and World Civilizations have all been discussed during our translations of original Latin texts. Even chemistry and biology courses have been referenced during our discussions of Roman literature and culture. While our examples are separate, our experiences of Paideia through the study of Latin are anything but discrete. Rather, Paideia has become such a tangible influence on our study that Paideia flashes have become a routine aspect of our class time.

14. Etching the Stars
Taylor Hutchinson, Class of 2016
Sponsor: Mr. Lee Fellows, Physics Department

Photolithography, with respect to etching in metal, is a process which uses light to transfer a pattern onto chemically-coated metal in order to facilitate proper etching when placed in different chemical baths. The end result is an impressive copy of the pattern etched into the metal. I plan to use this method to etch beautiful astrophotography into sheets of shining aluminum, including images from the Hubble and some taken by myself and other astrophysics students.

15. 3D Display Project
Amir Hessabi, Class of 2016
Sponsor: Dr. Steven Alexander, Physics Department

The 3D Display Project is a programmable display that can display a variety of different shapes from a standing mathematical graph to any piece of art. This would be a 4 ft. *4 ft. *4 ft. display of lamps that are connected and programmed. There are two main components to this project: the circuitry of the display and the programming aspect. I will be writing different algorithms for the display to be able to manually input and display different shapes. This display also has the potential to display letters, so it could also act as an advertising piece on campus.

16. SOLeisure
Amir Hessabi, Class of 2016
Sponsor: Dr. Steven Alexander, Physics Department

SOLeisure encourages people to get outside by providing an electronic charging station. The solar powered lounge chairs convert the sun's energy to electricity to power your cell phone or laptop. A display gauge tells the user how much solar energy is available. The lounge chairs are ergonomically designed and have a flexible sheet of photovoltaic cells on the top to capture sunlight. A surge protector can allow multiple users to recharge at once, welcoming groups and encouraging conversations. The design is inherently beautiful and will add a natural, artistic aspect to Southwestern's already beautiful campus. The lounges will blend in with the surrounding area while also adding a touch of modern charm. More importantly, the chairs provide the campus with a renewable option for charging that remains off the grid where coal power and other nonrenewable energy sources provide electricity. Ideally the material of choice would be King ColorBoard®, a high density polyethylene sheet that is versatile, durable and colorfast. It's environmentally stabilized for a lifetime of worry-free use in harsh outdoor environments. Investing in this new material as well as solar panels pushes the concept of SOLeisure further into the field of green energy and sustainability. Originally a design concept, the solar lounge chair has evolved into an innovative product that has incorporated many realms of our Southwestern education.

17. Kinetic Kicks Shoe Generator
Francis MacInnis, Class of 2015; Angelyn Convertino, Class of 2015; Eric Oden, Class of 2016
Sponsor: Dr. Steven Alexander, Physics Department

Access to energy is one of the principal issues across the globe. People everywhere have become dependent on electronic devices, yet the ability to power these devices largely remains out of the user's hands. If a blackout occurs, or if you are far from an electrical source, you simply have to do without power. The solution of independent, portable electricity generators is becoming increasingly studied, especially wearable devices. Our project was to design and develop a wearable shoe that can harvest the energy of walking and convert it into usable electric energy, enough to charge a cell phone. We considered a variety of methods and settled on piezoelectric generators as having the best combination of power output and portability. We built a board that takes energy from a capacitor and outputs it through a USB port, so most phone chargers would be compatible with it. The other half of the design was putting two piezoelectric generators underneath a gel insert. This allows the device to be attached to any shoe. With our device, we successfully charged a phone for half a minute off of ten minutes of walking. This is enough to make it useful for emergencies, as several hours of walking would give enough extra power to allow for a phone call or a text conversation. It is also a proof of concept, showing that with continued improvements in efficiency and miniaturization a device like this could serve as a portable socket for all manner of electronics.

18. Maze Runner
Francis MacInnis, Class of 2015; Stephan Meyer, Class of 2016
Sponsor: Dr. Steven Alexander, Physics Department

Autonomous robots are a rapidly developing area of interest, as the need for machines that can react to their environment without needing the aid of a person is being felt in fields as diverse as healthcare and space travel. One example is a robot that can move through an unfamiliar area, seeing and avoiding obstacles as they come. Our goal was to design a small rover that could navigate a maze involving turns, intersections, switchbacks and dead ends. We used an Arduino board and software to program the robot's actions, and three ultrasonic sensors to act as the "eyes." We also built several tracks, each with particular twists and turns, to test the robot against while we were working out the maze solving algorithm. The final course was designed to

have at least one of every type of intersection one could encounter in a maze. With the final design, the robot will try to follow the right hand wall and, based on whether or not it sees anything to the right, left, or in front of it, will make a decision on how to move. This is a fairly simple example of the type of rover that could pick its way across uncharted terrain on Mars without having to wait several minutes for each instruction to travel from earth.

19. Omnidirectional Rover
Ross Warkentin, Class of 2015; Garth Ornelas, Class of 2015
Sponsor: Dr. Steven Alexander, Physics Department

This project utilized the standard Arduino microcontroller to demonstrate its vast capabilities and demonstrate a variety of inputs and outputs that it can handle. The Omnidirectional Rover is controlled via an infrared remote the signals of which are processed by the microcontroller, allowing the user to communicate instructions to the rover wirelessly. The electric motors are controlled with Pulse Width Modulation, allowing each wheel to spin independently at a variable velocity. In addition, the wheels of the rover are omnidirectional, allowing the platform to move in every direction without the need to turn.

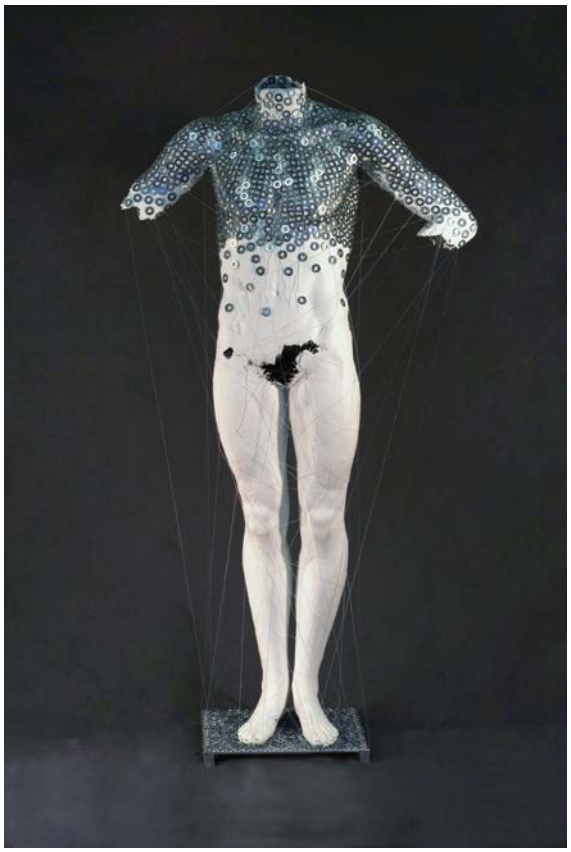
20. Transformational Blended Learning Through Digital Story Telling
Mason Ford, Class of 2017; Laith Tucker, Class of 2017; Andrew Meyning, Class of 2017; Coleman Counihan, Class of 2017; Brennan Sooter, Class of 2017; Will Devine, Class of 2017; Alexander Lee, Class of 2017; Alex Kotlarz, Class of 2017; Garrett West, Class of 2017
Sponsor: Dr. Erika Berroth, Modern Languages and Literatures Department (German)

In the summer of 2014, Southwestern University inaugurated an innovative short term embedded study abroad program designed for student-athletes: Blended Learning for Global Players: Leadership, Football, and Intercultural Learning in Germany. Twenty-three members of the Southwestern University's football team prepared for their experience abroad in an intensive pre-departure seminar, traveled to Germany to continue their learning and cultural exploration, and completed a series of critical, analytical, reflective, and creative assignments during the re-entry component of the program. This exhibit showcases the Transformational Blended Learning in this program. Football Head Coach Joe Austin, MA, and Dr. Erika Berroth, Associate Professor of German, collaborated on this project, for which they earned a Blended Learning Grant awarded by the Associated Colleges of the South. The project showcases how students integrate three components into their digital story telling projects: 1. Pre-departure seminar learning outcomes regarding cultural differences, memory cultures, dark tourism, German Mittelstand enterprises, and Germany's commitments to sustainable practices. 2. Personal experiences in the culture. 3. Critical, analytical, reflective, and creative thought processes during the re-entry phase of the program. Dr. Berroth introduces the program components, learning outcomes, and assessments on an informative poster. Selected students demonstrate their transformational learning processes by sharing their insights on their digital story telling projects and PechaKucha presentations. The projects will be played from an on-line archive and students will engage questions from the audience.

SENIOR ART EXHIBITION abstracts

21. *Beyond the Sea*
oil on canvas, 2013
36" x 42"
Victoria Gadson, Class of 2015
Sponsor: Ms. Star Varner

22. *Am I proud of who I am?*
mixed media, 2015
Alexandra Bonnet, Class of 2015
Sponsor: Ms. Star Varner



23. The Language of Octopi
mixed media, 2015
Megan Adams, Class of 2015
Sponsor: Ms. Star Varner

24. *Hijack,* acrylic on mylar
2014, 35 ¼" X 48 ½"
Kelsi Walters, Class of 2015
Sponsor: Ms. Star Varner

25. Making Connections: Integrated Learning in the World Through Internships
Hillary Richard, Class of 2015
Sponsor: Ms. Maria Kruger, Office of Career Services

A journey of 800 days towards creating professional success has been a worthwhile adventure. As graduation nears and the career world quickly approaches, reflecting on the meaningful experiences of three unique internships with The Georgetown Palace Theatre, The Long Center for the Performing Arts, and The Daytripper, showcase the importance experiential learning provides within a liberal arts education. The strategy of seeking specific internship opportunities to build skills and create connections to academics allowed me to shape how to approach learning in new environments.

26. Making Connections: Integrated Learning in the World Through Internships in Healthcare
Valerie Logan, Class of 2015
Sponsor: Ms. Maria Kruger, Office of Career Services

St. David's Cardiac Rehabilitation Center serves as an integrated learning site that provides experience to work within the issues of healthcare. The opportunity to interact with clients from all walks of life recovering from heart attacks, stents, catheterization, heart surgery, or a diagnosis of heart disease, provides an internship experience that incorporates learning from Kinesiology courses and application of those skills in a rehabilitation center. The invaluable lessons learned serve as the basis of reflection for this poster presentation in making connections within a liberal arts education.

27. Some Reservations: An Examination of Anthony Bourdain's Favorite Travel Destinations
Emily Shortt, Class of 2016
Sponsor: Mr. Anwar Sounny-Slitine, Environmental Studies Interdisciplinary Program

In his hit TV show, *No Reservations*, Anthony Bourdain travels to locations that are off the beaten path to have experiences that the typical tourist misses out on. Within this show, Bourdain delves into many different cultures and explains (in very colorful language) his likes and dislikes about the cultures and their locations. By examining both geographic and social factors, we gain a better understanding as to why Bourdain favors certain places over others. Geographical attributes consist of factors such as the distance from beaches, size, and climate, while social attributes consist of income level, educational attainment, immigrant populations, and population density. By watching the first season of this show, an index was created that contains all of the geographical and social attributes that Bourdain likes and dislikes about certain regions. These preferences were then given values which were turned into a choropleth map that displays how likely it is that Bourdain will prefer a certain region over another. For further research, Bourdain's preferences have been compared to preferences found on tourist websites such as Trip Advisor to examine any similarities between Bourdain and the common tourist. Ultimately, this map demonstrates one man's preferred travel destinations and the reasoning behind why certain locations are more favored than others, demonstrating that while Bourdain claims to have "no reservations," his holds some of his own biases when it comes to traveling, though admittedly distinct from the biases of typical tourists.

28. Lovin' it to Death?: Spatial Distribution of Fast Food and Death by Heart Disease and Diabetes
Alexandra Morris, Class of 2017
Sponsor: Mr. Anwar Sounny-Slitine, Environmental Studies Interdisciplinary Program

Lack of fresh food resources and increasing food prices are two of the main factors that have led to the health issues that are prevalent in the United States. Poor nutrition is one of the leading causes of heart disease, diabetes, and obesity. One issue that could be contributing to these diseases is the convenience and appeal of fast food restaurants. These restaurants provide food that is low in cost, while being high in calories, fat, and sodium and usually low in nutrition. As a result of their appeal, fast food restaurants are a huge industry in the U.S., as well as globally, and about half of Americans say they eat fast food at least once a week. This study looks at the death rates caused by heart disease and diabetes in Bexar County, Texas, and compares these rates to the location of fast food restaurants in the county in order to see if there is any connection between the abundance of fast food and deaths from these diseases. Heart disease and diabetes are two diseases that can be linked to obesity rates, which also links them to a poor diet. Four different types of fast food chains are mapped using Geographic Information Systems (GIS) to see if there could be a difference between the type of food served at a fast food restaurant and the health of individuals in that area.

29. Palm Oil Contradictions: Deforestation and Consumerism
Farrell Stucky, Class of 2017; Sophie Elias, Class of 2018
Sponsor: Mr. Anwar Sounny-Slitine, Environmental Studies Interdisciplinary Program

The impending doom of climate change has an ever-progressing parallel to the global market demand for palm oil. Palm oil derives from the edible pulp of the fruit from the oil palm tree. These trees only grow within a ten-degree boundary north and south of the equator. Therefore, there is a high yield of the crop from a small area of land. Oil palm tree monoculture requires large forested areas to be cleared, resulting in loss of biodiversity and land degradation. In this project, we used Geographic Information Systems (GIS) such as modis/landsat with image classification and land use change modeling in order to map and compare 1990's deforestation and land degradation patterns in the top three palm oil producing nations to the 2000's. These nations include Indonesia, Malaysia, and Thailand. Then we analyzed the relationship between the socio-economic status of these three nations and the impact of palm oil production on their economy and environment.

30. Signs of Change: A GIS evaluation of US Census data through Spanish Linguistic Landscape of Georgetown, TX
Isaiah Galvan, Class of 2018; Matt Amerie, Class of 2018; Alex Van Stippen, Class of 2018; Ashlyn Coleman, Class of 2018; Jessie Rivera, Class of 2018
Sponsor: Mr. Anwar Sounny-Slitine, Environmental Studies Interdisciplinary Program

A linguistic landscape is described as a new approach to multilingualism that surrounds us. As different languages are spoken within homes around the world, many languages, other than English, have to be placed on shop windows, commercial signs, posters, official notes, and become more integrated into the world around us. This project will analyze the distribution of language spoken at homes collected by the U.S. Census. This will then be compared to the linguistic landscape created through the mapping of signs around Georgetown, TX. Through Geographical Information System (GIS) this project analyzes photos collected by students in the Spanish in the United States course. GIS will be used to implement a geo-tagging process that shows the correlation between the distribution of languages and the linguistic landscape.

Through this new information, Georgetown can be mapped out in a way that has not yet been provided. This map of Georgetown will provide a comparison of reliability and validity a census provides when compared to the actual linguistic interactions that happen within Georgetown. In the project we will find out how well Georgetown, TX correlates with the information the U.S census provides.

31. Green Study Abroad: An Analysis of Southwestern University Study Abroad Programs
Jonathan Sandoval, Class of 2015
Sponsor: Mr. Anwar Sounny-Slitine, Environmental Studies Interdisciplinary Program

A significant percentage of Southwestern students will study abroad in their undergraduate careers at Southwestern University and international programs are considered an integral part of the University fabric. Travel makes an important contribution to the core values and liberal arts atmosphere of the University. However, international travel also makes large contributions to carbon emissions through air travel. This project is a comprehensive eco-analysis of the Southwestern University Study Abroad Programs. Data were made available from the Study Abroad office. This included destinations, numbers of students, and term of study. This allowed the whole study abroad system to be mapped through Geographic Information Systems (GIS). One map uses the number of students per location to simply see an overview of the program in terms of where students travel most. The second map displays carbon usage per student. It maps the most efficient and inefficient locations. By using the same information, the total energy usage was quantified through the use of carbon calculating programs. Creating visual and numerical representations of Study Abroad allowed comprehensive analysis. The goal of analyzing the data was to determine if there are any programs that can be implemented that increase Study Abroad's sustainability.

32. The Rise and Fall of Real Estate in Austin
Jordan Armeriv, Class of 2015
Sponsor: Mr. Anwar Sounny-Slitine, Environmental Studies Interdisciplinary Program

Austin is one of the fastest growing cities in the United States with 110 new residents moving to Austin every day. This growth rate is linked to Austin's booming economy, which impacts the real estate market. This study will track how much rent for an apartment has increased over time; along with the appreciation of owning a home. This study will focus in downtown Austin because this is a diverse area in terms of rent and home prices. There will be three maps to track the price variances for rent and owning a home. The first map will be in 2000, when strong economic growth began. The next will be in 2008 during the start of the Great Recession. Finally, the last map will be in 2015 to track the recovery after the recession. This will highlight the diversity of price changes in Austin along with the overall trend of growth through a boom and bust cycle in the world economy.

33. Texas Droughts and Environmental Degradation Caused by Dammed Lakes
Kron Heilman, Class of 2016
Sponsor: Mr. Anwar Sounny-Slitine, Environmental Studies Interdisciplinary Program

There is only one natural lake in Texas; the other 300 navigable lakes are man-made through damming. Recently water levels in these lakes have dropped due to droughts and the controlled release of water for irrigation, generating electricity, or river flow. This study examines historical water levels of many Texas lakes and produces a drought vulnerability map for Texas as well as predictions of future conditions for lakes that could become depleted. Understanding the

impacts of low lake levels on the environment is important because the creation of lakes already has a negative impact through ecosystem disruption, emissions, and water shortages. Many regions in Texas rely on either aquifers or lakes for their water, leaving places that have no access to aquifers vulnerable when lake levels drop well below capacity. Using historical records we can determine which regions require stricter water regulations in order to prevent future droughts or severe water level drops in lakes such as Lake Travis.

34. Geographic Clustering of Employment Discrimination and Suicide
Marta Selby, Class of 2016
Sponsor: Mr. Anwar Sounny-Slitine, Environmental Studies Interdisciplinary Program

In the United States, suicide is the tenth leading cause of death in all age groups with 41,149 cases in 2013. However the research and organizations dedicated to prevention and care are limited and the resources are spread throughout the nation. While suicide has been examined on the regional and national level, regional research is limited and often overlooked. This analysis builds upon Durkheimian theories of anomie, or an individual's sense of normlessness in society, as a cause of suicide due to low social regulation. This study uses Geographic Information Systems (GIS) to analyze clustering of suicide in relation to employment-based anomie, using cases of employment discrimination. This study uses the 2013 Civil Rights Commission reports produced by state institutions, and the 2013 data on completed and attempted suicide released by the Center for Disease Control and Prevention. There is a clear geographic clustering throughout the counties, demonstrating the relationship between employment discrimination and suicide.

35. A Swiss Glacier Taking Its Last Glimpse of Sunlight
Sylvain Mauduit, Class of 2015
Sponsor: Mr. Anwar Sounny-Slitine, Environmental Studies Interdisciplinary Program

Global warming has caused the poles and glaciers to melt and as a result, oceans levels have increased. Since the last Ice Age, a rise in industry has accelerated the warming and melting of ice by increasing CO2 in the atmosphere. As a consequence glaciers have become an endangered species. In Switzerland, there is a well-known glacier that was the longest Swiss glacier during the Ice Age. It shaped one of the greatest and most beautiful valleys of Switzerland. The study area, The Rhône Glacier, is also sadly known for being the fastest melting Swiss glacier. This project collected historic ground paintings and pictures in order to draw the border of the glacier over the years from visual interpretation of paintings and thus showed the glacier retreat on a map. It also calculated the surface area of ice retreat over the years and graphed it to demonstrate the anthropogenic impact. To conclude, the project will talk about the different issues regarding ice melting in connection to Switzerland being both preeminent in outdoor activities and the "reservoir" of central Europe.

36. Funding and Implementing a Solar Photovoltaic Array for a Small Scale Greenhouse
Travis Kurtz, Class of 2015
Sponsor: Mr. Anwar Sounny-Slitine, Environmental Studies Interdisciplinary Program

Southwestern's community garden is a place where members of the campus community intersect to conduct experiments, grow natural and locally-sourced food, and create a culture of sustainability and environmental consciousness. However, the operation of the greenhouse uses more energy per square foot than any other building on campus. One viable solution to this problem of energy consumption is the implementation of a solar photovoltaic panel array to

decrease the greenhouse's reliance on the university's power and make it a greener, more sustainable building. Analyses of solar energy potential and long-term financial benefit support the assertion that this project will positively contribute to the environmental, social, and economic sustainability of Southwestern University. Additionally, having the panels mounted on the greenhouse roof will contribute to the university's marketing efforts as the greenest school in Texas by increasing the visibility of such sustainability initiatives.

37. Farmers Markets: A Variety of Locations for a Small Demographic
William Teague, Class of 2016
Sponsor: Mr. Anwar Sounny-Slitine, Environmental Studies Interdisciplinary Program

Farmers markets are a more environmentally conscious option than big-name, commercial supermarkets. As a result of "green" movements across the country, farmers markets have experienced constant growth over the past 20 years. This increase has resulted in popularity that has created both an increase in the number of farmers markets and also in the number of people who routinely visit these markets. In order to obtain a better knowledge of the types of people who visit farmers markets, the scope of this study focused on the Austin MSA due to its increasing popularity among individuals who prefer farmers markets over commercial supermarkets. The main objective of this study was to estimate and display certain demographics of individuals who visited farmers markets in Georgetown, Cedar Park, and Austin, Texas. The demographics that were analyzed were median individual income, highest attained education level (bachelor's degrees or higher), and white alone population. These three factors provided a better understanding of which populations are more likely to visit farmers markets. Before any research was done, a hypothesis was made: farmers markets would be centered around wealthy, educated white citizens. Moving forward with that hypothesis, six maps were created using information from a study of three central Texas farmers markets. The specific information used in this project was initially gathered for an environmental studies capstone project on farmers markets and the people who visit them. The information from the study was then paired with data for median income, percent with bachelor's degree or higher, and percent of white alone populations across every zip code in Texas. Through the use of GIS all of this data was then converted to choropleth maps, which display information with the use of a color gradient. The results of this study supported the increased frequency of cities exhibiting stark social divisions based upon demographics such as income and education. Ultimately, the use of GIS confirmed the hypothesis that farmers markets tend to be found in locations with close proximity to the educated, mainly white, middle and upper-middle classes.

38. Virtual Environments and Spatial Awareness in Adolescents: A Study in Virtual Tours at Southwestern University
Brandee Knight, Class of 2015; Dakota McDurham, Class of 2016
Sponsor: Mr. Anwar Sounny-Slitine, Environmental Studies Interdisciplinary Program

Virtual environments, or reconstructions of reality in 3D GIS platforms like Google Maps Streetview, are reshaping the way human beings interact with the world around them. These technologies are now widely adopted across the internet and can have major implications to how spatial thinking is taught. Introducing virtual environments into classroom settings may enhance learning outcomes and create a better understanding of place, but the effectiveness of this hypothesis is still unknown. How do virtual spaces enhance or inhibit students in identifying, analyzing, and understanding location? This project seeks to answer these questions by looking at how virtually recreated environments impact adolescents' spatial thinking. In this study we will test spatial understanding through various means—self-guided tours through paper maps,

an in-person exposure to place, and virtual environments. After introducing a group of adolescents to a campus area through these means, we will test their ability to find places on campus through a scavenger hunt. This test will utilize a comparative analysis between adolescents' exposure to different means of understanding place to see which means is the most effective at creating special awareness.

39. Interactive Memory: Chronicling Sustainability Efforts at Southwestern University
Brandee Knight, Class of 2015
Sponsor: Dr. Joshua Long, Environmental Studies Interdisciplinary Program

Online access to information has reshaped the way information is passed. This is no different in the scope of higher education. Faculty and staff are hired and retire from positions and students turn over every four years creating an ever changing landscape. Each time this happens valuable knowledge is lost. To recover such information takes trial and error, using valuable time that could be more efficiently spent on furthering initiatives. To combat the loss of institutional knowledge at Southwestern University an interactive map was created to chronicle the past and present efforts of students, staff, and faculty. It will serve as a tool for future projects as well as helping alleviate the inefficiencies that occur within sustainability efforts at Southwestern. Furthermore, it will serve as a recruitment tool for perspective students who consider sustainability a factor when making their college decision.

40. Athletics Transforming SUstainability
Adriana Guadarrama Lee, Class of 2015
Sponsor: Dr. Joshua Long, Environmental Studies Interdisciplinary Program

I will be conducting a cost benefit analysis to propose a retrofit of the lighting in the Corbin J. Robertson Center, from incandescent lighting to LEDs. By comparing the current cost of energy use per kWh, versus the cost of updating to a lower kWh use in both Robertson and Walzel we can determine the savings and from there we will be able to calculate the payback period. My goal after completing the cost benefit analysis will be to find other areas throughout our athletic program where we can increase sustainability, save money, and reduce our carbon footprint. By completing an audit of the lighting in the Robertson Center and an audit of the athletic program as a whole I will be able to efficiently present a plan of action on how sports can transform SUstainability by leading the initiative to make large changes that are sustainable and positive for the university as a whole. Partnered with Joe LePage and Energy Saving Strategies I will be able to determine the estimated ROI for all projects being proposed.

41. A Lean, Green, Growing Machine: Installing a Solar Thermal Heating System in the Greenhouse
Cassandra Crabtree, Class of 2015
Sponsor: Dr. Joshua Long, Environmental Studies Interdisciplinary Program

Southwestern is a shining example of sustainability with LEED certified buildings such as the Prothro Center, grey water sprinkler system, solar panels to power our theaters, and an organic garden and greenhouse. While these and other sustainable features of campus are great there is always room for improvement. This project seeks to improve the efficiency and sustainability of Southwestern's greenhouse. The greenhouse consumes more energy per square foot than any other building on campus. I believe that installing a passive solar thermal heating system will be beneficial to the greenhouse and significantly reduce its energy use while reducing Southwestern's energy costs and carbon footprint. This system is relatively simple and affordable to build. The basic idea is to use troughs of warm water to keep the greenhouse at an

optimal temperature during the winter. A series of glass-fronted boxes will be painted black to better absorb the sun's heat. Copper pipes and coils within the box are heated by the sun both warming the box and shining through the glass. The water within the pipes is warmed and circulated to the troughs inside the greenhouse keeping its temperature stable. In this system the only energy input is the electricity used to run the water pump which requires significantly less energy to run than the heaters currently being used in the greenhouse. This project has the potential to minimize the environmental impacts of our greenhouse while setting a positive example for our peers and community.

42. Acquisition and Retention of Conditioned Defensive Behavior Across Metamorphosis in the Aquatic Clawed Frog (*Xenopus leavis*): Experiment Two
Daniel Lenihan, Class of 2015
Sponsor: Dr. Jesse Purdy, Animal Behavior Interdisciplinary Program

Animals must avoid predation to survive and pass on genetic information. The animal should be able to recognize a predatory threat and its preceding cues. Previous research has suggested that amphibians can learn information on predators as early as during the embryonic stage and later call upon this information later in development. For the present study, the acquisition and retention ability of learned defensive conditioned behavior in *X. leavis* frogs over metamorphosis is examined. This study continues a previous experiment that examined this conditioned behavior in tadpoles. The present study examined the matured subjects in order to analyze their retention ability over metamorphosis. Frogs were separated into paired or unpaired groups. Paired groups received an auditory conditioned stimulus (CS) shortly followed by an unconditioned stimulus (US) simulating an attacking predator. Unpaired groups received either the CS or US first, followed by a significant delay and the other stimulus. Additionally, paired and unpaired tadpole groups from the first experiment were evenly split into the paired and unpaired frog groups resulting in four experimental conditions. A main effect for the trials was found. The data trend suggests that administered learning could have occurred with further trials. Frogs that received paired group trials in both experiments would have likely learned at a faster rate which would suggest that learned defensive behaviors are carried over metamorphosis or that experiences prior would facilitate learning behaviors. Future studies should further examine the retention of different kinds of learned behavior across metamorphosis.

43. Donating Responsibility: A Partnership Between Southwestern and the Caring Place
Rachel Terry, Class of 2015
Sponsor: Dr. Joshua Long, Environmental Studies Interdisciplinary Program

According to the EPA's Office of Solid Waste Report in 2012, 251 million tons of municipal solid waste was produced by the United States. However, about 40% of that waste has the potential for extended use or redistribution (Harrell & McConocha, 1992). Sustainable methods of redistribution include donating unwanted items and purchasing secondhand goods. Redistribution reduces environmental impact by decreasing the amount of waste that would typically end up in landfills, instead allowing items to go to people who actually need or want them. The Caring Place is part of a charity organization that helps families with financial need in Georgetown and Williamson County. Specifically, the organization runs a thrift store dedicated to selling gently used items that have been donated by the community. Presently, Southwestern University lacks a centralized and organized effort to collect and donate items from the students, faculty, and staff at the end of the year. A single effort that incorporates the entire Southwestern community is more likely to be successful and would have a greater impact on the

Georgetown community. Therefore, the goal of the current study is to establish a more efficient and accessible method of donating unwanted items for the Southwestern community and to create a greater awareness of the Caring Place.

44. Options for University Food Sourcing
Adrienne Dodd, Class of 2015
Sponsor: Dr. Joshua Long, Environmental Studies Interdisciplinary Program

As Institutions of Higher Education (IHE) become more dedicated to sustainability, the question of how environmentally and socially sustainable the institution's food system is must ultimately come up. Due to the scale at which universities and colleges must work, it is difficult to find enough ethically sound let alone environmentally conscious food to fuel the entire institution. The Industrial Food System has been criticized for its abuse of water and soil resources, as well as its abundant pollution of chemicals in water ways, soils, neighborhoods and ecosystems. Large scale farms and processing plants, especially meat processing plants, have been identified by the Human Rights Watch, as well as other organizations, as having dangerous working environments that take advantage of immigrant and non-English speaking workers by illegally denying workers the right to unionize, refusing leave, and refusing payments for injuries sustained on the job. In an attempt to break away from this abusive system, students have demanded more local and sustainable food options in their schools. Different institutions have different food sourcing models; some take on the responsibility of food sourcing themselves, while many outsource that job to local companies, and still others outsource the job to national companies. Students have been able to make real change happen on their campuses through the creation of legislation, the creation of organic gardens and farms, the creation of student run nonprofits such as the Real Food Challenge, as well as through campaigns compelling their institutions to switch food providers completely. This paper will detail the options IHEs have in terms of food sourcing, why thinking about food sourcing is important for an IHE, and the many difficulties IHEs may find in making significant change happen.

45. Animals are Good to Think
Jessica Morales Valenzuela, Class of 2015; Jeanette Brown, Class of 2015;
Morgan Drake, Class of 2015; Adrienne Dodd, Class of 2015; Dani Green, Class of 2015;
Victoria Hughes, Class of 2015; Megan Mosele, Class of 2015; Eowyn Scott, Class of 2015;
Rachel Terry, Class of 2015
Sponsor: Dr. Laura Hobgood, Religion Department

The more we learn about animals, the more we realize how similar we all are. Animals make tools, build communities, dream, plan, care, think, communicate – in short, many other animals (not just humans) have cultures and emotions. What does this mean about who we (humans) are and how we relate to the rest of the animals who share Earth with us? Who are we? Who are they? For the last three years, a cohort of Paideia students have engaged critical animal studies from across a variety of disciplines in order to reflect on some of these questions. We also interacted with "real" animals as part of our community engaged learning, raising the ethical questions about how we co-exist in contemporary U.S. culture. As a culminating piece of this three-year academic experience, the cohort is creating a visual experiment/poster in critical animal studies that reveals the complicated relationships between humans and other animals.

46. Is the Relationship Between Psychopathy and Attachment Security Mediated by Personality Pathology?

Kaylyn Evans, Class of 2015; Victoria Hughes, Class of 2015; Shannon Paulson, Class of 2015; Phil Ricker, Class of 2016; Osiris Stockton, Class of 2015; Rachel Terry, Class of 2015
Sponsor: Dr. Bryan Neighbors, Psychology Department

Psychopathy is a personality dimension characterized by antisocial behavior, risky decision-making, and a lack of empathy (Aldao, 2014; Coid, 2009; Dean, 2013; Hare, 1999; Levenson, 1995). Previously, research on psychopathy focused on incarcerated individuals, but recent studies have found that psychopathy varies meaningfully within normal populations. Psychopathy is considered a problematic aspect of personality that negatively impacts interpersonal relationships (Mack, 2011). Furthermore, psychopathy is associated with emotional deficits, which are also linked to insecure attachment (Glaser, 2000; Mikulincer & Shaver, 2005). Previous research suggests that personality pathology may mediate the relationship between attachment and psychopathy. However, this relationship has not yet been fully explored. Therefore, the purpose of the current study is to investigate the correlation between attachment security and psychopathy, and the possibility that personality pathology mediates this relationship in a nonclinical sample. Participants included 210 undergraduate students (150 female, 60 male) at a university in the southern United States, who completed a confidential online survey. The mediational model will be tested with a series of linear regression equations, and full results will be presented.

47. END7: Slowing Down Snail Fever

Janae Nordwall, Class of 2016; Laura Steed, Class of 2016; Stacy Rosengren, Class of 2016; John Wall, Class of 2016; Chelsea Peterson, Class of 2016
Sponsor: Dr. Martĩn Gonzalez, Biology Department

Neglected Tropical Diseases (NTDs), which include schistosomiasis or snail fever, among various other diseases, affect billions of people throughout the world. Most prevalent among the world's poor, these devastating diseases cause unnecessary suffering and significantly decrease affected individuals' quality of life. Like most NTDs, schistosomiasis is a low mortality and high morbidity disease, meaning that most cases result in severe disabilities, though few people die from it. The social ramifications of schistosomiasis are the most severe for women living with urogenital schistosomiasis, the most common gynecological disease among African women. In addition, intestinal and splenic diseases are very common in the presence of the organism. Co-infections of Hepatitis B also increase the host morbidity by accentuating the effects of liver cirrhosis and fibrosis. The most shocking and widely spread outcome is the prevalence of bladder cancer in endemic populations, in which schistosomiasis is a major risk factor. Snail fever is transmitted through infected water sources, where the larvae forms that were excreted by freshwater snails of the parasite, enter through the skin of a person upon contact with the contaminated water. After maturing in the lungs, the newly developed worms migrate to the portal venous system and mate. Female worms are then capable of releasing thousands of eggs over their lifespan, which are passed on by the host through urine or feces, into a freshwater source. However, most people do not realize that most NTDs, like schistosomiasis, are completely preventable. Simply by supplying individuals in underdeveloped countries with a medication proven to be effective in curing these diseases, by the year 2020, we can eliminate all 7 tropical diseases. By educating the Southwestern community about NTDs, such as Snail Fever, we can help increase the health and economic sectors of these countries and aid in ending the extreme poverty, to provide these people with hopeful futures.

48. Examination of Triplex Structures Through the Use of Thermal Denaturation and Oxidative Damage Studies
Olivia Drummond, Class of 2016; Sarah Coe, Class of 2017
Sponsor: Dr. Maha Zewail-Foote, Chemistry and Biochemistry Department

DNA most commonly adopts a double-stranded helical structure, forming Watson-Crick base pairs between the nitrogenous bases. However, DNA can also form alternative structures such as three-stranded helices, or triplexes, through Hoogsteen base pairing. DNA triplex structures form within palindromic sequences under physiological conditions and are stabilized in vitro by divalent metal ions. Sequences that can form these multi-stranded DNA structures have been identified in promoter regions of some disease-linked genes and have also been shown to be mutagenic in mammalian cells. The goal of this research is to determine if certain sequences found in the promoter regions can adopt a triplex DNA structure. Thermal denaturation experiments demonstrate that a sequence found in the human c-MYC promoter forms a unique structure that is dependent on magnesium ion concentration, suggesting triplex formation. In addition, we are examining if triplex structures are differentially susceptible to DNA damage induced by oxidizing agents when compared to double-stranded DNA. Furthermore, we are evaluating if damage to triplex structures impacts the mutation frequency in mammalian cells.

49. END7: Don't Be Blind to the Effects of Onchocersiasis
Averi Segrest, Class of 2016; Vanna Tran, Class of 2017; Meghan Rayford, Class of 2016; Katelyn Kimble, Class of 2016
Sponsor: Dr. Martĩn Gonzalez, Biology Department

Onchocersiasis, also known as River Blindness, is an eye and skin disease caused by a parasitic worm that is spread by an infected blackfly bite. The disease causing insect breeds and lives near fast-flowing rivers and streams. It is most prevalent in Africa, though there are also isolated areas in six countries in Latin America and in Yemen. The transmission process begins when a human is bitten by a blackfly, leaving larvae of the parasitic worm, Onchoceriasis volvulus. The worm grows, matures, and reproduces (up to 1000 microfilariae per female worm). As the worm spreads throughout the human body, they eventually die, causing the body's inflammatory response to react thus causing skin and eye conditions. Some symptoms include skin lesions that cause itching as well as pigmentary changes accompanied by eye lesions that cause visual impairments and often time's blindness. This illness is not spread from person to person via contact. A person must be infected by a blackfly in order for them to become infected. Onchocerciasis can be treated in infected individuals with a simple biannual dose of ivermectin. Although no vaccine currently exists to actively prevent this disease, minimization of transmission is possible through controlling the Simulian Black Fly with environmentally safe insecticides and continuing the education about this disease through the African Program for Onchocerciasis Control. Our goal is to spread awareness and further the education of River Blindness disease in collaboration with END7.

50. Engaging in Global Change
Amy Gu, Class of 2017; Vanna Tran, Class of 2017
Sponsor: Ms. Sarah Puffer, Office of Civic Engagement

The Global Engagement Hall (GEH) consists of sophomores who discuss and volunteer regarding social problems. Hall members were admitted by application and grouped into five co-ops, each focusing on a social concern. As a member of the Race and Ethnicity co-op, I worked with other members to contact and schedule an event with the Austin refugee shelter, Casa Marianella.

The poster presentation will focus on the GEH volunteer experience and reflection. In early February, a Casa Marianella volunteer led ten GEH students on a tour around the house and introduced us to several residents. Afterwards, students completed outdoor cleanup tasks. Some picked up trash and interacted with refugees while others raked leaves. All weeded the community garden until residents invited us to eat dinner with them. The following day, we engaged in an informal reflection discussion about the volunteer session and our observations. Students expressed discomfort with the lack of privacy resident's experience, such as changing clothes with the door open. We then considered the sacrifices that refugees make in addition to privacy. Some noted that many residents face guilt in exchange for imprisonment. We also noted that almost all residents frequently made phone calls in other languages, showing that not all refugees face complete excommunication from their families. Other positive refugee experiences included Casa's mostly successful commitment to help refugees find jobs and independent living spaces. In sum, the experience made real that though refugees obtain some political asylum in the USA, they nonetheless face culture shock, racism, and non-citizen disadvantages. Contrary to initial idealist impressions, philanthropic site shelters like Casa Marianella cannot enfranchise refugees. Refugees in the US nonetheless face culture shock, racism, and non-citizen disadvantages even despite obtaining some political asylum.

51. END7: Hey! Get Out My Intestines: Hookworms and the Affordable Cure
Maria Reyes, Class of 2015; Allie Watts, Class of 2015; Mustafa Tajkhanji, Class of 2016; Taylor Vickers, Class of 2016
Sponsor: Dr. Martĩn Gonzalez, Biology Department

Hookworm infection is considered a neglected tropical disease (NTD) as it affects many poverty stricken populations who are unable to obtain treatment. The infection is caused by two species of parasitic nematodes in humans, *Necator americanus* and *Anclostoma duodenale*. Generally, the larvae inhabit soil rich in infected fecal matter and the worms travel from the skin of the feet to the small intestines where they can mature and produce more eggs. Cases of hookworm are mainly found in areas with a warm, moist climate; typically the Americas and Australia, Middle East, parts of Asia, North Africa and southern Europe, with the most cases found in the Mbeya Region, Tanzania. Highly affected demographic groups included children of 5-15 years of age and agricultural workers who have regular close contact with the soil. Hookworm infection causes painful, short term effects starting with a small rash and itchiness, and leading to diarrhea, fever, abdominal pain, colic, and nausea. Long-term effects can consist of iron-deficient anemia and low protein levels. In children, long term effects can be more severe, consisting of slow growth, heart failure, and widespread tissue failure. Albendazole and Mebendazole, the two most common and effective medications used against hookworm infections, cause a significant reduction of eggs in infected children, and a high cure rate after treatment. Both medications are affordable options that are non-toxic, even during long term treatment, and multi-purpose, as they treat other soil-transmitted helminth diseases. Widespread understanding and awareness amongst the public about this disease (as well as the other NTD's) can significantly impact current efforts by organizations such as END7 to eliminate these diseases globally. Great progress has been made in reducing hookworm infections in affected areas, but more work needs to be done in order to completely eradicate the disease.

52. END7: Eradicating Whipworm
Rebecca Norcini, Class of 2015; Taylore Meyer, Class of 2015; Josh Mann, Class of 2016; Neva Mebane, Class of 2016
Sponsor: Dr. Martĩn Gonzalez, Biology Department

Whipworm, *Trichuris trichiura*, is a parasitic worm, responsible for the chronic parasitic infection known as Trichuriasis. In developing tropical countries, a collective of several chronic parasitic infections are referred to as Neglected Tropical Diseases (NTDs). NTDs affect nearly one billion people, with an estimated 9 million affected specifically by whipworm. Although the infection does not have as high as a mortality rate when compared to other diseases, Trichuriasis induces harmful side effects such as bloody diarrhea, painful defecation, anemia, and abdominal pain for the individual. Overall, the disease economically drains and hinders the development of a community. Families dealing with the chronic infection are often unable to work, and remain in poverty, unable to afford treatment. These parasitic infections are easily preventable with proper sanitation and public education, but many countries are unable to accommodate the costs. However, a primary method treatment involves mass drug administration. The two most common treatments, albendazole and mebendazole, are both equally effective at treating whipworm, with an efficacy rate of about 60% after a single dose. By clearing the organisms from the whole population, the risk for disease decreases dramatically as a form of herd immunization. END7 is an organization devoted to eradicating the 7 most common NTD's from the world by 2020. Since medication is readily available in the United States, citizens are unaware of the severity and prevalence of these diseases and the impact they can have on an individual's life. By raising awareness, we are one step closer to eradicating whipworm, as well as the 6 other NTD's.

53. END7: Roundworm: A Biological Humanitarian Crisis
Audrey Garcia, Class of 2015; Audry Helburn, Class of 2015; Nicole Gibbs, Class of 2017; Walker Lawrence, Class of 2015
Sponsor: Dr. Martĩn Gonzalez, Biology Department

Roundworm (*Ascaris lumbricoides*) afflicts over one billion people worldwide, including about half of the total population in tropical and sub-tropical areas. Infections are found in children of all ages; however children aged three to eight years old are most commonly infected. These worms can grow up to 40 centimeters long and tend to infect the lungs and small intestines. Lung infections are characterized by extreme shortness of breath and coughing, and intestinal infections cause stomach pain, distended abdomen, and vomiting. While not often fatal, severe cases may be debilitating enough to prevent patients' wage earning ability, and by extension roundworm contributes to perpetuating a cycle of poverty. People can become infected by consuming meat that contains roundworm eggs or by ingesting dirt that contains fecal matter from an infected organism. Roundworm can be easily prevented and treated using simple de-worming medication, but if left untreated, may require surgery to remove the worms. In order to make an impact on this malicious parasite, we plan to raise awareness about the END7 diseases throughout the Southwestern and Georgetown communities. With a donation of only fifty cents, one person can be treated for roundworm as well as an additional six other neglected diseases for an entire year. With the participation and engagement of the Southwestern and surrounding community, we can raise the necessary awareness needed to help END7 see the virtual eradication of the seven most common neglected tropical diseases by 2020.

54. Transcriptional Regulation of ICE R391 RumA'2B DNA Polymerase V by SetR
Kylie Borden, Class of 2017; Audrey Garcia, Class of 2015
Sponsor: Dr. Martĩn Gonzalez, Biology Department

The integrating conjugative element (ICE) R391 codes for the error-prone DNA polymerase V homolog, RumA'2B. DNA polV homologs have been shown to factor in cellular levels of

spontaneous and DNA damage-induced mutagenesis. Bacteria harboring R391 must be able to regulate mutagenesis in order to avoid needless and lethal mutations. In order to address the regulation of the rumAB operon, spontaneous mutagenesis assays and western blot analysis were performed to characterize the R391 encoded putative repressor designated SetR. *Escherichia coli* expressing SetR, a λcI repressor homolog, demonstrated a reduced level of RumA'2B–mediated spontaneous mutagenesis relative to *E. coli* cells lacking SetR. In addition, SetR was shown to be specific for the rumAB operon, while not for the homologous mucAB or umuDC operons. Similar to the λcI repressor, in vitro studies with putative SetR show that under alkaline conditions, as well as in the presence of activated RecA, SetR will undergo autocleavage. To further validate this finding, we created a non-cleavable mutant version of SetR. Mutagenesis assays in an activated RecA strain demonstrated nearly equal levels of RumA'2B-mediated spontaneous mutagenesis in *E. coli* with and without SetR. *E. coli* containing the non-cleavable version of SetR demonstrated a substantial reduction in spontaneous mutagenesis. While ICE R391 already carries genes that confer resistance to the antibiotic kanamycin, this RumA'2B–mediated mutagenic capability could potentially give rise to additional antibiotic resistance.

55. END7: The Elephantiasis in the Room
Anna Hartmann, Class of 2015; Kylie Borden, Class of 2017; Gabri Copenhaver, Class of 2016; Emilie Evans, Class of 2015; Togla Gulyasar, Class of 2015
Sponsor: Dr. Martĩn Gonzalez, Biology Department

Neglected tropical diseases (NTDs) are a group of diseases that affect nearly 1 in 6 people in the poorest areas of the world. NTDs significantly contribute to mortality and morbidity in these populations, as well as perpetuate the cycle of poverty. Together with our Microbiology class, our goal is to raise awareness among the Southwestern community of these terrible diseases and to help fundraise money to send to the END7 campaign, which aims to eliminate the seven most prevalent NTDs by 2020. Elephantiasis, or *Lymphatic filariasis*, affects over 120 million people. *Lymphatic filariasis* is caused by nematode worms (i.e., filariae). Filariae restrict normal lymph flow, damaging the lymphatic system, which can progress to inflammation of the skin, lymph nodes, and lymphatic vessels. If left unchecked, the disease can progress to swelling, discoloration, and thickening of the tissue in the limbs, breasts, and genitals. Contracting *Lymphatic filariasis* can have devastating implications, including the inability to provide for or improve the quality of life for their families, due to the disabling nature of the swelling. In addition, the swelling can lead to disfigurement and permanent disabilities, restricting the individual's normal functioning.

56. When Sex Isn't the Answer: Examining Sexual Compliance, Restraint, and Stress
Anna Hartmann, Class of 2015
Sponsor: Dr. Erin Crockett, Psychology Department

Despite the fact that most sexual activity takes place within romantic relationships, research on sex within relational contexts is limited. Thus, we evaluated how sexual desire and frequency interact to predict stress in passionate love relationships. Sixty-four participants (38 women, 26 men), who were in generally good health, provided salivary cortisol samples and completed questionnaires assessing sexual behavior. Multiple regression analyses confirmed that the interaction between desired and actual sexual frequency predicted salivary cortisol; participants who reported higher sexual frequency than desired (i.e., they were sexually compliant, or engaging in undesired sex) had higher cortisol than participants whose desired and actual frequency matched. Interestingly, participants who reported lower frequency than desired (i.e., they were sexually restrained) had cortisol levels similar to participants whose desired and

actual frequency matched. Overall, the results suggest that being sexually compliant (i.e., engaging in more frequent sex than desired) is stressful and has physiological consequences.

57. END7: I Can See Clearly Now, Trachoma is Gone
Kaylyn Evans, Class of 2015; Bella Alfaro, Class of 2015; Madison Doty, Class of 2017; Catherine Cerna, Class of 2016; Beulah Agyemang-Barimah, Class of 2017
Sponsor: Dr. Martĩn Gonzalez, Biology Department

Across the globe, 1 in 6 people are infected with neglected tropical diseases (NTDs) - primarily in places of poverty. The grassroots campaign END7 is working toward ending the seven most common NTDs plaguing our world. Along with END7, this presentation aims to raise awareness about one disease in particular - trachoma. Trachoma, the leading cause of preventable blindness worldwide, is a chronic, infectious disease caused by the bacterium *Chlamydia trachomatis* that results in severe eye irritation. Multiple infections are typical in those infected by *C. trachomatis* and this can lead to permanent corneal damage that can result in blindness. It is estimated that about 40 million people currently have active trachoma. Those infected are unable to work resulting in an economic loss of billions of dollars annually within the United States alone. A small donation can provide a combination of antibiotics and implementation of the SAFE strategy (surgery, antibiotics, facial cleanliness, and environmental improvements) to control and significantly reduce trachoma occurrences. END7's goal is to raise funds, 100% of which go toward educating and delivering medication to those in vulnerable areas in hopes to see the end of trachoma and the other diseases by 2020.

58. Opening Doors: Perceived Marginalization and Openness to Experience in Dating Relationships
Brianna Turney, Class of 2016; Cameron Smeltzer, Class of 2016; Michael Gallegos, Class of 2017
Sponsor: Dr. Erin Crockett, Psychology Department

A socially marginalized relationship is an intimate partnership that is generally disapproved of by society (e.g., interracial or same sex couples; Lehmiller & Agnew, 2006). Importantly, perceiving marginalization from others is associated with lower relationship quality and has negative implications for perceptions of social support (Lehmiller & Agnew, 2007). As such, it is important to determine which types of individuals are particularly vulnerable to perceiving disapproval about their relationship. Given that personality type, including the trait of openness to experience, has an effect on an individual's perception of social support (Branje, van Lieshout, & van Aken, 2004), we investigated whether openness to experience was related to perceived marginalization. Our sample included 104 students from a small, liberal arts university. Participants completed a survey assessing levels of openness to experience and perceived marginalization. We used a multiple regression analysis to assess our data and found that, when controlling for gender, openness to experience interacted with participants' levels of perceived marginalization. That is, participants who were in a socially marginalized relationship perceived more marginalization when they were less open to experience than when they were more open. By contrast, participants who were not in a marginalized relationship perceived the same levels of marginalization regardless of how open to experience they were. This information demonstrates how aspects of personality have the potential to influence the quality of socially marginalized relationships.

59. Is All Stressed Created Equal? The Impact of Attachment on Reactions to Positive and Negative Relationships Events
Estrella Thomas, Class of 2015; Annelise Carlin '14; Michelle Cincunegui '14
Sponsor: Dr. Erin Crockett, Psychology Department

The purpose of the present study was to investigate whether attachment styles are associated with cortisol reactivity levels in response to a distressful or stressful relationship prime. The sample included 57 undergraduate students (32 women, 25 men) who were currently involved in a romantic relationship from a small, liberal arts university in southern United States. The majority of participants were White/European-American college students with a mean age of 20.28 years. As part of a 1 x 3 between-subject experimental design, participants were randomly assigned to one of three conditions (i.e., friendship, passionate love, unrequited love) and taken through a guided imagery task to help them focus on their relationship with either their friend or partner, depending on their condition. Additionally, participants completed a survey that assessed participants' attachment style (Experiences in Close Relationship Scale: Wei, Russell, Mallinckrodt, & Vogel, 2007). Partially consistent with our hypothesis, results from a 1 x 3 ANOVA and multiple regressions revealed a significant main effect of anxious attachment, a significant main effect of avoidant attachment, and a significant interaction between anxious attachment and avoidant attachment after an unrequited love prime for women but not for men. Ultimately, the present study's findings suggest that counselors should inquire about clients' attachment style to help better understand effective ways to reduce relational stressors.

60. Organizational Commitment and Social Support
Marieke Visser, Class of 2017; Courtney Crawford, Class of 2016
Sponsor: Dr. Erin Crockett, Psychology Department

Entering a university as a first-year student is stressful; one way students can successfully cope with this stress is by building support networks (Cobb, 1976). As such, we investigated whether membership in student organizations can help increase perceptions of social support. Students (N = 104) at a small, liberal arts university in the southern United States completed a shortened version of the Perceived Organizational Support Survey (Eisenberg & Huntington, 1986), which measures students' perceived peer social support and organization commitment. Given that extraversion and agreeableness predict perceived social support (Bowling, Beehr, & Swader, 2005), students also completed a shortened version of the Big Five Personality Inventory (John & Srivastava, 1999), which we used as a control variable in our analyses. A Pearson Product Moment revealed a positive association between organizational commitment and perceived peer social support. Consistent with previous literature (Bowling, Beehr, & Swader, 2005), extraversion and agreeableness also predicted perceived social support within our sample. Importantly, the association between organizational commitment and perceived social support remained when we controlled for personality. That is, the more a student commits to an organization, the more social support the student feels. In short, although transitioning to college is stressful, joining organizations can make that transition easier.

61. It's Not You, It's Me: Personality Traits and Long-Distance Dating
Olivia Martin, Class of 2017; Mattie Mills, Class of 2017; Najmu Mohseen, Class of 2017; Nikki Welch, Class of 2016
Sponsor: Dr. Erin Crockett, Psychology Department

Maslow's Hierarchy of Needs puts relationships, including romantic ones, as the third most important achievement for human beings. It is no wonder why people are constantly seeking companionship. However, innate characteristics, such as personality traits, could play a role in the type of relationship that individuals seek. As such, the current study investigated how different personality types were associated with being willing to enter a long-distance dating relationship (LDDR). The sample included 104 (41 men, 60 women, 1 other, and 2 prefer not to say), predominately white college students. The average age of the participants was 19.92 years

old. Participants completed surveys that measured personality type (The Big Five; Gosling, Rentfrow, & Swann, 2003) and willingness to enter an LDDR. We ran a multiple regression in which the Big Five domains predicted willingness to enter an LDDR. Consistent with our first hypothesis, people who were more agreeable were more likely to enter into an LDDR; this association held when controlling for whether participants were currently in a LDDR. Inconsistent with our second hypothesis, people who were high in openness were less likely to enter into an LDDR. Taken together, this research gives us a snapshot of the type of person who is willing to enter a LDDR.

62. The Synthesis of a Gold-Cleavable Protecting Group
Caitlin Lacker, Class of 2016
Sponsor: Dr. Mike Gesinski, Chemistry and Biochemistry Department

Protecting groups are important tools used to create efficient syntheses of new compounds. They allow chemists to perform transformations on one part of a molecule without affecting other functional groups. Specifically, alcohol protecting groups prevent deprotonations and other deleterious side reactions in large molecules. This provides more freedom when developing syntheses of complex molecules allowing for more efficient routes to biologically interesting natural products. It is important that the protecting group be stable in a wide variety of reaction conditions so that it will not accidentally be cleaved from the alcohol during the reaction. Therefore, a novel aryloxymethyl acetal alcohol protecting group that is stable under basic, acidic, and reducing conditions and is selectively cleaved with mild gold(I) catalysts has been designed. The synthesis of the chloromethyl protecting group featured a copper-free Sonogashira cross coupling which was optimized in acetonitrile. The protecting group has been successfully coupled with a primary alcohol, and initial attempts at gold (I)-catalyzed deprotection have afforded 18% recovery of the alcohol. Further optimization of this reaction is underway.

63. Titanium-Mediated Synthesis of Cyclobutanols
James Alleyn, Class of 2015; Simon Gersib, Class of 2016
Sponsor: Dr. Michael Gesinski, Chemistry and Biochemistry Department

A novel synthesis for cyclobutanols from aldehydes and ketones is described. Cyclobutanols are functional groups found in many biological compounds that display interesting properties of potential medical interest. Additionally, these molecules have decreased bond angles, known as ring strain, that makes them quite reactive and therefore synthetically useful. In a two-step process an aldehyde was brominated at the α position and subsequently subject to conditions previously described by Kulinkovich known to form cyclopropanols from carboxylic esters. The cyclization reaction takes place via a titanium intermediate formed in-situ from EtMgBr and Ti(iPrO)4. This synthesis has the advantage of taking place under relatively mild conditions and produces the desired product in modest yield (20-30%).

64. Analyzing Super Storm Sandy
Angelyn Convertino, Class of 2015; Stephan Meyer, Class of 2017
Sponsor: Dr. Rebecca Edwards, Physics Department

Post-tropical Storm Sandy underwent extra tropical transition shortly before making landfall in southern New Jersey October 29 2012. Data from this system was compared with data from Hurricane Ike (2008) which represents a classic hurricane with a clear eye wall and symmetry after landfall. Storm Sandy collided with a low pressure system coming in from the north as the

hurricane made landfall on the US East coast. This contributed to Storm Sandy acting as a non-typical hurricane when it made landfall. Time histories of wind speed and wind direction were generated from data provided by Texas Tech's StickNet probes for both Storm Sandy and Hurricane Ike. The Ike time histories were used as a standard for a typical hurricane history. The shape and behavior of the wind speed and wind direction were compared between Hurricane Ike and Storm Sandy; probes from Storm Sandy which exhibited a time history resembling a classic hurricane were identified and separated from the less classic time histories. FFT graphs were generated of both the hurricane-like and non-hurricane-like histories for comparison. The NOAA Weather and Climate program was used to generate radar loops of reflectivity during the landfall for both storms; these loops were compared with time histories for both Hurricane Ike and Storm Sandy to identify a relationship between time series data and storm-scale features identified on radar.

- Angelyn Convertino received notable accomplishments and presentation of research by the Society of Physics Students on March 3rd 2015.

65. Modification of Local Roughness Length by Advancing Storm Surge in Landfalling Tropical Cyclones
Ross Warkentin, Class of 2015
Sponsor: Dr. Rebecca Edwards, Physics Department

Near-shore ocean conditions have been shown to vary with changing wind speeds (Zachry et al., 2013; Kennedy et al., 2011), which in turn influences the surface roughness (zo) felt by the wind approaching the coastline. At extreme wind speeds, like those observed in the hurricane environment, shear stress, drag coefficients, and zos have all been shown to decrease. Once the wind has moved over land its turbulent structure will be governed by the marine-land transition and then the local surface zo. When storm surge inundates a coastal region a third regime is possible in which underlying surface conditions are obscured by water, leading to an aerodynamically smoother exposure characterized by lower zos. In such a situation, the reduction in wind speed which would be expected as wind flows from a region of lower to higher zo would not be as large, meaning higher wind speeds could potentially penetrate further inland than anticipated. Current coastal building design criteria assign a roughness category to a structure based upon non-storm conditions. However, data collected by Texas Tech University's (TTU) StickNet project in Hurricane Ike suggest that inundation by storm surge may reduce surface zo locally, which may prompt additional design considerations for structures which are not coastal but may be inundated by storm surge during hurricane passages.

66. Hunting with Pirates: Building a Web App in Ruby on Rails
Rebecca Wilson, Class of 2015; Matt Krall, Class of 2015; Kristin Stuckey, Class of 2015; Ross Warkentin, Class of 2015
Sponsor: Dr. Barbara Anthony, Mathematics and Computer Science Department

This year, students in the Computer Science capstone have worked to develop a mobile web application with the programming language Ruby and the framework Rails. This application allows users to participate in interactive scavenger hunts on the Southwestern University campus. Team Engine has been responsible for establishing the boilerplate structure, and facilitating communications between users and the information database. To achieve this in Ruby, Engine focused on building routes for user-triggered HTTP requests that execute methods in the controllers. To ease collaboration amongst all developers, we used the version control system Git. With this tool, all teams were able to contribute code to a single shared repository throughout the spring semester. Development was done through the use of virtual machines in

a Vagrant environment. We implemented the user framework using an existing Ruby gem called Devise, which included functions that enabled user login and verification. Our application allows users both to participate in existing hunts and create their own. In the development process, testing has been emphasized, which will enable the application to be maintained in the future. We anticipate this software will be used for self-guided tours, special university events, and academic activities, allowing it to serve as a tool for the Southwestern community for years to come.

67. Integrating Off-the-Shelf and Original Code in Software Development
Christian Bullock, Class of 2015; Anna Zolten, Class of 2015; James Bram, Class of 2015; Jordan King, Class of 2015
Sponsor: Dr. Barbara Anthony, Mathematics and Computer Science Department

The Southwestern Computer Science capstone is developing a mobile-optimized scavenger hunt web application to acquaint students and visitors with the campus. This application will allow users to join hunts, follow clues around campus, complete tasks, and earn points. Though functionality and performance are essential components for creating software, the user interface is the most salient feature to the end-user as it provides the way in which the user interacts with the system. As such, a capstone team was dedicated to creating a usable and engaging interface. Using HTML and SCSS, Team Interface is creating and modifying web pages that allow the user to visualize and navigate through actions associated with a scavenger hunt such as submitting answers and completing tasks. While web frameworks provide many off-the-shelf capabilities that speed up the development process, complications arise in interpreting, understanding, and integrating the code to fit the requirements and design specifications of the software. One such example is the Ruby Devise gem which provides user login capability. Team Interface must also handle dependencies and incorporate essential functionality and contributions from other project teams. This presents the creative challenge of integrating off-the-shelf and original components into a fluid and usable web interface. When integrating and visualizing underlying structures, Team Interface must consider optimization of views for various screen sizes, accessibility when choosing colors and fonts, and the differences in web browser availability on mobile phones. These challenges in balancing creation and integration are discussed in the context of mobile computing.

68. Keeping a Pirate's Data Safe: Data Architecture within a Scavenger Hunt Application
Jake Balderama, Class of 2015; Natalia Rodriguez, Class of 2015; Michael Morris, Class of 2015; Brittany Pugh, Class of 2015
Sponsor: Dr. Barbara Anthony, Mathematics and Computer Science Department

This year the students of the Computer Science Capstone are working to create a scavenger hunt software application for the Southwestern University community. This application will allow users to create a hunt specific to Southwestern University's campus. Team Data is in charge of maintaining an organized data architecture of information so that the other two teams in the Capstone, Teams Engine and Interface, can successfully complete their duties. Data architecture centers on the use of databases, which are tables of data that hold information specific to its application. The data architecture in this type of application is the fuel of the project, allowing information to flow from one part of the application to another while storing associated information. The work completed by Team Data allows the user to successfully progress through the application's features. Team Data has created the databases for the scavenger hunt application, utilizing SQL, a language used to build and edit databases, and SQLite3, a program used to execute SQL commands. Team Data is also using Ruby, one of the

primary languages of the application, on the framework Rails. The Ruby library Devise has provided methods to build the data architecture for the needed databases. The Capstone group is using VirtualBox to establish a virtual environment and support the work of group members who may be working on different operating systems. The application will be a fun and interactive way for visitors and current students to explore the Southwestern campus for many years to come.

69. Mapping Body Image with Instagram Data
Natalia Rodriguez, Class of 2015
Sponsor: Dr. Barbara Anthony, Mathematics and Computer Science Department

More than 300,000 photos are uploaded to Instagram and Facebook every minute, racking up a staggering total of over six billion per month. The pervasiveness of these images has inadvertently created a bank of powerful data for social scientists and researchers. While using computers to analyze images still has its limitations, users often associate hashtags with their images, allowing for easier categorization. In this project, we study two particular groups of user-generated images based on their hashtags: Instagram content tagged with #blithe, a pro-anorexia keyword used by people suffering from eating disorders, and the familiar hashtag #selfie. By providing a way for the user to interact with the data in an informative visualization, the goal is to juxtapose seemingly opposing hashtags and reveal their fundamental differences and similarities. Some of the metrics include user engagement, keyword connotations, and the actual images themselves. This project seeks to shine light on the research surrounding the field of "self-body image" by closely analyzing all of the data surrounding these images--their likes, comments, and captions. The goal is to bring these massive data banks to use by providing these intuitive visuals created by merging both computer science, data mining, and various visualization tools. While the current project focuses only on two hashtags, the potential applications increase when users are able to compare any two hashtags.

70. Science and Math Achiever Teams Achievement Party
Mareah Lucio, Class of 2015; Antonio Lopez, Class of 2015; Penny Wong, Class of 2015; Brandon Hudson, Class of 2016; Julie Han, Class of 2016; Kyle Bauernschmitt, Class of 2016; Ryan Beeman, Class of 2017; Veronica Pardo, Class of 2018; Greer Miller, Class of 2018; Abby Toppins, Class of 2018; Chickie Murphy, Class of 2018; Claire Schumann, Class of 2018
Mitchell Elementary School Students:
Aileen Castro, Bailey Chapman, Samantha Collins, Hannah Deazvedo, Savannah Gonzales, Avery Haley, Jadyn Mazuk, Abilene Stearns, Macy Stearns, and Mikayla Vinyard
Sponsor: Dr. Romi Burks, Biology Department

Science and Math Achiever Teams (SMArT) is an interdisciplinary mentoring program that provides Southwestern students a unique opportunity to share their interests for science and math to 3rd-5th graders from a partnered Georgetown ISD school. Each elementary school student is paired one-on-one with a mentor in order to encourage inquisitive thinking, an excitement for learning, and a love for science and math. Therefore, each SMArT pair was expected to design and create their own research project that was centered on answering a key research question during the course of nine weeks. In order to learn the scientific concepts behind their questions and answers, each pair chose to design an experiment, dissect an animal specimen, or to creatively model a new and interesting concept. Examples of investigated research questions include, "How is a planet formed?" and "How are video games coded and designed?" The answers to these questions and more can be found in individual poster presentations created by the collaborative efforts of each SMArT pair. Please join us as we

celebrate and present their findings to the Southwestern Community. A comprehensive list of each Southwestern mentor, mentee, and research question can be found below. Comprehensive List of Project Titles: Antonio Lopez and Avery Haley – "How does a shark's digestive system work?" Penny Wong and Hannah Deazvedo – "What is cartilage, and why do we need it?" Brandon Hudson and Aileen Castro – "How are video games designed and how do they work?" Julie Han and Mikayla Vinyard – "How are pig hearts different than human hearts?" Kyle Bauernschmitt and Abilene Stearns – "How is a planet formed?" Ryan Beeman and Samantha Collins – "How do different organ systems interact with each other?" Veronica Pardo and Macy Stearns – "What are crystals made of, and how are they made?" Greer Miller and Jadyn Mazuk – "How does a turtle's spine grow with its shell?" Abby Toppins and Savannah Gonzales – "How does a shark breathe underwater?" Chickie Murphy and Bailey Chapman – "How does a turtle's shell protect its body?"

71. Application of Sensors in Robotics
Garrett Banister, Class of 2017
Sponsor: Dr. Steven Alexander, Physics Department

Sensors are the means by which we derive meaning from the world around us. They allow robots to understand the world around them, just like we use our senses to do the same. My focus for the 2014 SCOPE Internship Program was to build a line following robot using an array of reflectance sensors. This robot can navigate a course autonomously because of some intuitive coding. I studied the reflectance sensor array in order to understand what kind of information it was telling us and how I can interpret its output into something that I can use. I researched an algorithm called PID which stands for proportional, integral, and derivative control. This allowed me to utilize the data outputted by the sensor into a way to adjust the motors of the robot rapidly. Then, I ordered parts and assembled the robot. All that was left was to tune the PID algorithm until it produced the desired output. After a month and a half of research and building, the robot successfully navigated a course autonomously for the first time. I tested a track with multiple paths to decipher the decisions made by the robot per the algorithm. The robot almost never took the same path. This study was eye-opening for me because I discovered a practical algorithm with many uses. The PID algorithm is the basis for stabilization of a movable surface and I am building an inverted pendulum robot to test this.

72. Redirection of Lightening Through an Ionized Pathway
Isabella Ferranti, Class of 2017
Sponsor: Dr. Steven Alexander, Physics Department

This King Creativity project proposes to explore the possibilities of redirecting lightening through the use of a nitrogen laser. With an annual average of 24,600 lightning-caused fires, and an estimated damage cost of $407 million recorded by National Fire Protection Association, the need for protection from this frightening force of nature is evident. The experiment will be conducted in a controlled lab setting with nitrogen laser, metal grate, Tesla coil, and grounding stake. The Nitrogen laser will be set behind the metal grate with its beam shot very close in proximity to the Tesla coil and hitting the grounded stake. Since 78% of the atmosphere is made up of Nitrogen, the laser's frequency will match the frequency of the Nitrogen molecules in the atmosphere, ionizing a path for the electricity to follow. The high voltage produced by the Tesla coil will then be allowed to discharge, arcing over to the grounded stake. This will ultimately serve to prove the possibility of redirecting lightening in electrical storms.

73. Robotics SCOPE
Keeley Coburn, Class of 2016; Amir Hessabi, Class of 2016
Sponsor: Dr. Steven Alexander, Physics Department

Most robots contain a variety of sensors, an electromechanical system that allows them to move and a computer that controls everything. Today, robots have the capability to learn, to act autonomously, and to interact with humans and their environment. In this project, students will work to use these abilities to create a robot that can perform many of the tasks while learning about the software and hardware components of electronics. We have assembled a robot that is capable of being operated remotely. This robot has a claw which allows it to manipulate small objects as well as a camera which allows the operator to see the area around the robot. We will discuss the performance of this machine as well as our plans for the next generation of Southwestern University robots.

74. Two–Tiered Green Roof
Kelsey Abel, Class of 2015; Ilka Vega, Class of 2017
Sponsor: Dr. Steven Alexander, Physics Department

With the rise in concern about global climate change there has been a surge in the prevalence of home adaptations invented to minimize the energy expenditure and carbon footprint of the average household. Kelsey and Ilka have created and tested a two-tiered roof system that generates convection currents to passively cool the inside homes. They tested this by building four miniature plywood houses, each encompassing just under 5 cubic feet. Two houses were control houses with only one roof (simulating a traditional house), and two had a roof of corrugated metal installed above the traditional roof. This created a small channel of air between the roofs that is open to the outdoor environment. The houses were placed in areas with varying levels of direct sunlight for 24 hour periods and the internal temperatures were measured. The two-tiered roof design was hypothesized to lower the internal temperature of the house, thus showing it as a viable technique to passively cool homes. Internal temperature and humidity readings as well as external barometer readings and infrared cameras were used to further determine the effectiveness of this model. After the houses have been tested and presented they will be repurposed and donated to the Southwestern University Cat Club as cat shelters. On the macroscale, these women hope their design will be an affordable home addition that will grant wider access to green home renovations. On a microscale they are just happy to be helping out the campus cats by partnering with the Cat Club.

75. Measles: From Physical Data to Virtual Simulation
Danielle King, Class of 2017; Charles Payne, Class of 2016
Sponsor: Dr. Therese Shelton, Mathematics and Computer Science Department

There has been a recent resurgence of the measles in the United States after being declared eradicated over fourteen years ago. This spurred our interest in epidemiological modeling of this contagious disease. Investigation began with creating mathematical models in Microsoft Excel representing measles cases both within and outside of the United States. The data used to create these models was drawn primarily from the World Health Organization (WHO), Geohive, and the Centers for Disease Control and Prevention (CDC). We fit logistic models to sigmoidal data sets, which involved applying logarithmic and other data transformations. Our research led to the creation of an S-I-R (susceptible-infected-removed) simulation in Mathematica, a mathematical programming environment, to model the spread of the measles in a closed population. We encoded information regarding the characteristics of the measles virus from

WHO and the CDC as parameters, including secondary attack rate, time until onset of symptoms, and duration of infectivity. We encoded stochastic methods to randomly generate various aspects of the virtual spread of measles. Our simulation produced the signature graphs in standard S-I-R modeling, which also matched the data. The values of these parameters can be changed to represent characteristics of other infectious diseases.

76. Synthesis and Characterization of a Novel Hydrozone Thiophene Ligand
Arie Angeledes, Class of 2016
Sponsor: Dr. Willis Weigand, Chemistry and Biochemistry Department

Copper, cobalt and nickel organometallic complexes continue to be of interest to our research group as these compounds may find use as anti-cancer, anti-fungal or anti-bacterial compounds. Hydrozones have shown biological activity as anti-tumor, anti-viral and anti-mycobacterial agents along with other applications. One recent water-soluble hydrazone thiophene ligand synthesized by Morales-Toyo, et.al. (J. Chem. Cryst, 2013, 43, 544-549) may offer an opportunity to increase the water solubility of select metal compounds, thereby making them potentially more biologically active. The reaction of copper and cobalt with these hydrozone thiophene ligands may result in compounds of biological significance along with improved water solubility. A new ligand, (E)-Ethyl-2-[2-(thiophen-2-ylmethylene) hydrazinyl] benzoate has been synthesized and characterized by NMR and IR. Additionally, preliminary results of bacterial testing with this ligand are shown.

77. Paideia Connections: Angela Davis and Interdisciplinarity (Representing Gender Paideia Cluster)
Emma McDaniel, Class of 2016; Drew Kotlarczyk, Class of 2016; Samantha Weaver, Class of 2017; Sarah Matthews, Class of 2017; Katherine Protil, Class of 2016; Jordyn Goodman, Class of 2017; Sarah Surgeoner, Class of 2017; Meredith Murphy, Class of 2017
Sponsor: Dr. Elaine Craddock, Religion Department and Dr. Shannon Mariotti, Political Science Department

Our Representing Gender Seminar's project integrates existing disciplinary knowledge of the students to provide a cohesive interdisciplinary analysis of the cluster's thematic questions through a case study of the works of the feminist philosopher Angela Davis. The Representing Gender Seminar consists of eight students in different stages of their majors (English, Sociology, Psychology, Spanish, Anthropology, Feminist Studies, German, Religion, and Business) and two professors from different departments (Political Science and Religion). The case study method is especially suited for interdisciplinary learning because it allows us to integrate disciplines to answer the complex thematic cluster questions: How do sex and gender vary across space, place, and time? Why is the world gendered and sexed? What are the consequences of living in a sexed and gendered world? We examine Davis' writings about the prison industrial complex, remnants of the slave system, and capitalist structure of the United States in order to answer these questions. Angela Davis' works were selected because she provides insight into interlocking oppressions, intersectionality, and ways to analyze current events. Complex problems are more holistically addressed and solved by incorporating multiple perspectives and disciplines to create a seamless interdisciplinary method of analysis. The combination of the case study method with interdisciplinary analysis displays the value of the Paideia experience.

78. One Industry Succeeding During a Failing Economy
Omeed Azmoudeh, Class of 2016
Sponsor: Dr. Alisa Gaunder, Political Science Department

Beginning around 1965, both Germany and Japan followed a managed market model, in which their respective economic policies favored specific sectors of the economy. Despite rapid growth in following decades, 1990 marked a downward turning point. Paying specific attention to the automotive industries at this time, the German automobile companies seemed to evade a failing German economy, while the Japanese parallels faltered and entered a period of lengthy sluggishness. This research attempts to answer the question of why, during the stagnant economy in the 1990s, was Germany able to maintain, or re-flourish, automotive growth. It will be argued that specific policy agreements put forth by international institutions offered more favorable conditions for the German industry. Whereas, in Japan, they lacked similar policies that might favor their faltering automotive industry. This research may have a hand in portraying that for economies of scale, protectionism can be a viable option for rekindling growth, even in light of failure of the national economy.

79. Art History's Diversity Failure
Olivia Stephenson, Class of 2016
Sponsor: Mr. Anwar Sounny-Slitine, Environmental Studies Interdisciplinary Program

Despite art being a creative activity all people practice, the discipline of art history focuses mostly on white, male European artists. It's not like women and people of color do not make art- they do, but often it is ignored. This study will take the contents of a selection of art history classes' syllabi and map out where most artists discussed in these classes hail from. Art history is fraught with geographic and gender biases. Thus by taking stock of these statistics, scholars can figure out what little-discussed artists they could learn and teach about in order to broaden their minds and those of their students. This study will obtain its data from a class selected from Southwestern University's art history courses and other similar courses from peer institutions.

80. Interconnectedness Through Recycling
Kalyn Kane, Class of 2017
Sponsor: Dr. Erika Berroth, Modern Languages and Literatures Department (German)

The landfill is a graveyard of forgotten resources. We've lost our understanding for the worth of physical objects and our connection to their life cycle, because of convenience and cultural attitudes. What makes something "trash?" Waste is a global issue that is both destructive and unproductive, and changing our definition of "trash" will allow people to rediscover the value of those discarded objects. Western civilization has been programmed to throw trash away without any thought which disconnects our waste from its larger impact. The "Cradle-to-Grave" mentality has become detrimental in the sense that it has created social injustice, environmental issues, and health problems. Humans, nonhuman animals, and the environment would benefit if the mentality was shifted towards "Cradle-to-Cradle." This is how forward-thinkers turn, what I call, the human counter-cycle into interconnected recycling—not just paper, plastic, and glass recycling, but an overall concept of zero-waste. This cultural shift would influence people to realize that trash would no longer be trash, thus anything harmful or unable to be reused would be banned. Changing cultural attitudes about trash is a first step toward reconnecting with the inherent value of what had previously been thought of as "disposable."

81. The Freshman 15: Comparing Change in Weight of Male and Female Student Athletes During the First Year of College
Nolan Klein, Class of 2015
Sponsor: Dr. Jimmy Smith, Kinesiology Department

It is a common notion that students gain 15 lbs during their first year of college. Although many studies have shown that weight gain is less than 15 lbs, much less is known about weight gain in first year college athletes. This study was done to determine whether male and female athletes gained weight during their first year of college. Weight of male (n=132) and female (n=73) athletes was measured by the University Athletic Training Staff as first year students in 2013 and as second year students in 2014. Separate paired tests were conducted to compare the weight in 2013 to that in 2014 of both men and women. A mixed model repeated measures ANOVA was conducted on the paired weight data for male and female athletes. The changes in the average (sd) weight of men and women were 6.0 (8.74) lbs and 4.0 (8.08) lbs, respectively. The results of the paired t tests suggest that the weights of the men ($t(131) = 7.92$; $p<0.001$) and women ($t(72)=4.24$; $p<0.001$) were significantly greater in 2014 than 2013. The mixed model repeated measures ANOVA indicated that there were significant effects of time ($F=65.331$; $p<0.001$) and sex ($F=78.213$; $p<0.001$) on weight. Both men and women gained weight during their first year as college student athletes, but neither gained the mythical 15 lbs. These results do not indicate whether weight gained was healthy or unhealthy, but do indicate that college athletes experience increases in weight during their first year.

82. Feminist Theology in Amsterdam, the Netherlands
Annalise Kohrs, Class of 2015
Sponsor: Dr. Melissa Johnson, Sociology and Anthropology Department

Amsterdam, the Netherlands, is known for being open, welcoming, and socially progressive, especially regarding gender. Indeed a number of US-based study abroad providers run programs focused on gender and feminism in this city. In this paper, I explore gender and feminism in the protestant church in Amsterdam. I specifically investigate why women choose to be involved in the church, their leadership in the institution, how gender is negotiated in these spaces, and women's understandings of feminist theology. I studied in Amsterdam from the beginning of February to the end of May, 2014, spending my last four weeks there intensively conducting ethnographic research primarily through collecting oral histories of women involved with the church. My findings suggest that ideas about gender in church-dominated spaces are not as socially progressive as I had expected. Most of the women I interviewed believed that the gender equality movement had been successful, but then made statements suggesting that patriarchal understandings of women still predominate. My research shows that the protestant church persists as a patriarchal space in a socially progressive city.

83. You Ahead of the Game: Exotic Dancers, Ambition, Community, and Exploitation
Julia Estrada, Class of 2015
Sponsor: Dr. Melissa Johnson, Sociology and Anthropology Department

In this paper I explore how female exotic dancers assign value to themselves, their work, and each other, as well as how and why women with varying social resources take up this work. Using one dancer's life history and evidence gathered from participant observation from August 2014 to January 2015 in men's clubs in Houston, Texas, I examine how socioeconomic class, family background, and educational aspirations affect how women engage in exotic dance, perceive their relationships with coworkers and clientele, and perceive themselves and other dancers. My findings suggest that educational aspirations play an important role in constructing a social hierarchy among the dancers that in turn impacts the degree of camaraderie between the women. Furthermore, I argue a dancer's personal ambitions shape their perception of who is and is not exploited in this industry. Through a nuanced focus on one dancer, this project

contributes to debates about the nature of exploitation in the growing exotic dance industry.

84. Group Exercise and Well-Being in Kumming, China
Kaylynn Guerra, Class of 2015
Sponsor: Dr. Melissa Johnson, Sociology and Anthropology Department

In China, outdoor group exercises, like dance and Tai Chi, are very popular among senior citizens in urban areas. In this paper I explore why group exercise is popular, and how it is tied to ideas and practices of well-being. My analysis is based upon a four-month stay in Kumming between February and June 2014, including a four week period during which I conducted participant-observation and interviews. The sense of well-being that the individuals in my study aimed to achieve includes physical good health, but goes beyond this, incorporating senses of connection to community and family, mental acuity and emotional and spiritual balance. Striving for well-being is particularly important to this generation of Chinese who endured hardships during their youth in the Great Famine, Cultural Revolution, and Rural Re-Education of the mid-20th Century. My findings contribute to the growing literature on, and understanding of, well-being cross-culturally.

85. Baytown, Texas: Where Oil and Water Really Do Mix
Rowan Prothro, Class of 2015
Sponsor: Dr. Melissa Johnson, Sociology and Anthropology Department

This paper explores the relationships and power dynamics between the oil and chemical industries and environmental conservation, specifically examining how the two rely on and shape each other in a city that is home to both. I focus on Baytown, Texas, a small city outside of Houston, located on Trinity Bay, that is replete with both wetlands set aside for conservation and major oil refineries and chemical plants. The city has many environmental conservation programs, and focuses on environmental education in all of the schools. Yet, the economy of the city is built on the oil and chemical industries. Through participant observation, in depth interviews, casual conversations, and autoethnography, I investigate how individuals working in both environmental conservation and oil refining and chemical manufacturing see each other and the future of Baytown. I consider the roles that greenwashing, corporate social responsibility and corporate charity play in these relationships. My findings suggest that the industry and conservation in Baytown are dependent on one another, and that everyone is complicit in the environmental damage done by big business, whether they actively oppose the actions or not.

86. Student Versus Professor: What Qualities Make an Effective Teacher?
Cadie Pullig, Class of 2017
Sponsor: Dr. Sandi Nenga, Sociology and Anthropology Department

This paper looks at the qualities of an effective teacher and whether there is a difference in opinion between students and professors. In addition, I examine whether definitions of an effective teacher vary by gender. To determine the difference, a sample group of students and professors from Southwestern University and Hanover College (N=395) were surveyed. Respondents were given sixteen possible qualities of an effective teacher and asked to rank the four qualities they thought best described an effective teacher. Professors were more likely to choose “uses a variety of teaching methods and formats” than students. Students were more likely than professors to choose "makes the class enjoyable" as an important characteristic of an effective teacher; however a higher percentage of men students chose "makes the class

enjoyable" compared to women students.

87. How Students and Professors Define Effective Teaching at Two Different Liberal Arts Colleges
Kelly McKeon, Class of 2017
Sponsor: Dr. Sandi Nenga, Sociology and Anthropology Department

Are there differences in how professors and students at two small liberal arts universities, in different regions of the United States, define effective teaching? Professors and students at Southwestern University in Georgetown, Texas, and Hanover College in Hanover, Indiana, were asked to define effective teaching by ranking the four most important qualities that define an effective teacher (N=395). Characteristics of effective teaching were grouped into three indexes: Knowledge and Presentation Qualities, Personal Qualities and Instructional and Professional Qualities. I hypothesized that: Southwestern respondents were more likely to choose qualities from the Knowledge and Presentation Qualities group than Hanover respondents, Hanover students were more likely to choose qualities from the Personal Qualities group as the qualities of an effective teacher than Hanover professors and Southwestern professors and respondents, and Southwestern professors and Hanover professors were equally likely to choose qualities from the Instructional and Professional group as the qualities of an effective teacher as each other and more likely than Southwestern or Hanover Students. Overall, Southwestern and Hanover respondents chose similar characteristics of an effective teacher. The only difference by institution was that Southwestern respondents were more likely to choose qualities of an effective teacher associated with knowledge and presentation than Hanover respondents. An understanding of this difference will benefit both professors and students because it enables professors to tailor their methods to their student's needs.

88. Defining Effective Teaching at Two (Really Three) Private Liberal Arts Colleges
Dr. Sandi Nenga, Sociology and Anthropology Department

Effective teaching matters to students and faculty alike, but do students and professors have the same ideas about what constitutes effective teaching? This project was inspired by Layne's (2012) survey of students and professors at Lynchburg College. Layne (2012) found that students' and professors' definitions of effective teaching only partially overlapped; professors focused on the competent and organized delivery of information while students focused on whether professors kept them interested or made the class enjoyable. To investigate whether this pattern holds at other liberal arts colleges, we surveyed 366 professors and students at Southwestern University (SU) and Hanover College (HC). The survey presented respondents with sixteen characteristics of an effective teacher and asked respondents to rank the top four characteristics. We found that professors and students at Southwestern University and Hanover College largely agreed that effective teachers can effectively present information, make students free to articulate ideas and pose questions, and know the material well. SU students were more likely to choose "is accessible to students" than SU professors. Hanover students were more likely to choose "keeping students interested" and "making the class enjoyable" than Hanover professors. We conclude by noting that some of the most important characteristics of an effective teacher are not on the teaching evaluation forms at SU or HC.

89. Effect of Starting Block Design on Competitive Swim Start Performance
Ashley Moulder, Class of 2016; Ariana Weeks, Class of 2017
Sponsor: Dr. Scott McLean, Kinesiology Department

Previous work has demonstrated that despite increased force production from the back foot, swimmers achieved only slight increases in takeoff velocity and substantially more negative takeoff angles for starts when using an inclined block configured with a wedge. Thus, the negative impact on takeoff angle minimizes any positive advantage from increased force production. The current study examined whether manipulating the inclination of the starting platform could improve start performance. Ten participants completed three maximal effort starts from level and inclined blocks with and without a wedge. Digitized video recordings were used to track the whole body center of mass during each start from which takeoff velocity and angle were computed. Repeated measures ANOVA was used to compare start performance. Use of the wedge increased takeoff velocity by 3.2% ($p<0.01$) and was not different between the level and inclined block ($p=0.1$). Take off angle was 29% less negative when using the level block with the wedge than the inclined block with the wedge ($p=0.211$). These data suggest that reducing the inclination of the starting block surface may offset the tendency to promote a more downward trajectory in the start when using the wedge on a starting block.

90. The Effects of Shoe Design on Lower Limb Running Kinematics
Carol Bentley, Class of 2015; Alexandra Dillion, Class of 2015
Sponsor: Dr. Scott McLean, Kinesiology Department

Running for exercise exposes more recreational athletes to the risk of injury with stress fractures accounting for 0.7-20% of all running injuries (Wilder & Sethi, 2004). Low drop height shoes have been shown to induce a more forefoot running pattern, which decreases impact peaks responsible for injury. (Horvais & Samozino, 2012). The purpose of this study was to compare ankle joint kinematics, dorsiflexor muscle activity, and tibial axial acceleration while wearing low and high heel-drop shoes. The procedure included fifteen female participants (19.7(1.0) years, 168.0 (7.3) cm, and 64.9 (7.6) kg) who ran at least 10 miles per week were equipped with a tri-axial accelerometer attached to the tibia, one bi-axial electrogoniometer attached at the ankle, two Ag-AgCl surface electrodes attached to the tibialis anterior, and a heart rate monitor. Participants completed two data running trials (target HRR= 65-70%) in different shoes (drop heights 4mm(S1) and 11.7mm(S2)) with a10-minute rest between trials. The results paired t-tests suggested that mean ankle angles at ground contact (S1=98.2 (4.5)°, S2=99.7(3.9)°) ($t(14)=-1.31$, $p=0.211$) and mean percentages of maximal iEMG for the tibialis anterior (S1=39.7(14.2)%, S2=44.9(11.5)%) ($t(14)=-1.791$, $p=0.095$) were not significantly different. Mean peak tibial accelerations (S1=5.62(2.35)g), S2=4.79(2.42)g) were significantly larger for the S1 condition ($t(14)=3.391$, $p=0.004$). The results suggest that the shoe drop height did not alter the running strike pattern. The dorsiflexed ankle angles combined with the lower heel drop height may be responsible for the larger mean peak tibial accelerations in the S1 condition.
For this work, Carol Bentley received the 2015 Membership Poster Award from the Texas American College of Sports Medicine on February 27th 2015.

91. Wrist Immobilization: Does Elbow and Shoulder Overcompensation Occur When Performing Drinking and Hammering Tasks?
Virginia Stofer, Class of 2015
Sponsor: Dr. Scott McLean, Kinesiology Department

Immobilization of the wrist with wrist orthoses may cause difficulties performing daily tasks as they may affect other nearby joints and muscles of the upper extremity. Previous studies have generally focused on compensatory shoulder movements, not elbow movements, when wearing wrist orthoses. The purpose this study was to determine whether wrist immobilization results in compensatory movements of both the elbow and shoulder when performing a drinking and

hammering task. This study was approved by the Southwestern University Institutional Review Board for Human Research. The participants were a convenience sample of twenty healthy adults aged 19-22. Each participant performed both a drinking and hammering task with and without a wrist orthosis three times. A compensatory movement was defined in terms of joint excursion, or the change in joint motion throughout the performance of the task, which was tracked using two twin-axis electro-goniometers. Two 2 x 2 (condition x joint) repeated measures analyses of variance showed no significant interaction between joint movement and orthosis on joint excursion for both the drinking task ($F(1,19) = 2.13$, $p = 0.16$, $\eta^2 = 0.10$) and the hammering task ($F(1,19) = 2.35$, $p = 0.14$, $\eta^2 = 0.11$). These results indicate that movement of one joint together with the wearing of the orthosis did not have an effect on joint excursion of the other joint. The results of the study support the use of wrist orthosis as wrist orthosis usage does not cause compensatory movements of the elbow and shoulder.

92. Withdrawing for Whose Peace? The United States and the Paris Peace Accords of 1973
Lydia Au, Class of 2015
Sponsor: Dr. Timothy O'Neill, Political Science Department

This paper examines the question of whether or not the U.S. military withdrawal from South Vietnam after the signing of the Paris Peace Accords of 1973 was justifiable, given the events that occurred afterwards, culminating in the Fall of Saigon in 1975. According to the agreements made by the Paris Peace Accords, North and South Vietnam would have a ceasefire and the U.S. would withdraw its military support from South Vietnam. After the signing of the accords, neither North nor South Vietnam honored the ceasefire, and the North began its push into the south. Using a utilitarian approach based off of John Stuart Mill, this paper looks at the decisions made at the time by Presidents Nixon and Ford as well as the decisions of the 93rd and 94th U.S. Congress. While the Presidents had both been willing to send back military support to aid the South Vietnamese government, Congress had refused. The question becomes one of whether or not the actions that were taken (or not taken) were the best decisions that could have been made at the time given the circumstances. This paper will pull from the methodology found in Thinking in Time by Richard E. Neustadt and Ernest R. May.

93. Can Alternative Affirmative Action Policies Retain Diverse College Campuses?
Elizabeth Bell, Class of 2015
Sponsor: Dr. Timothy O'Neill, Political Science Department

Affirmative Action policies have now been challenged by seven states due to legislative action, voter referendum, or executive order. However, our schools continue to have racially stratified achievement, and pervasive segregation that prevents students from reaping the benefits of racially, ethnically, and socioeconomically diverse learning environments. Through a comparative case study, this paper will assess and compare the diversity of student bodies at the flagship state universities under two alternative affirmative action policies, the Texas Top Ten Percent Policy and the One Florida Plan. After assessing whether these plans have improved racial, ethnic and socioeconomic diversity, my research will address which policies best accommodate disadvantaged students and make some policy suggestions for state governments and state universities to employ in the future.

94. The Moral Complications of U.S. Drone Strikes
Kenneth Brooks, Class of 2015
Sponsor: Dr. Timothy O'Neill, Political Science Department

The Obama administration's decision to use drones in the Islamic World has resulted in the loss of many civilian lives (an estimated 2,400 within the last 5 years). President Obama has relied on these drones to effectively target and kill members of Al Qaeda and other terrorists who pose a threat to our national security. However, distinguishing whether the Obama administration is justified in doing so is a debate that has produced many opinions on not just the justifiability of their use, but also whether it is also ethical to do so. I refer to Michael Walzer's "Just and Unjust Wars," specifically the subject of *Jus Ad Bellum*: When a state is justified in going to war, and *Jus In Bello*: Justice in the combat of war in order to help formulate my research question and use a qualitative approach for my methodology. Along with referring to *Jus Ad Bellum* and *Jus In Bello*, I also focus on the International Human Rights Laws (IHRL) and International Humanitarian Laws

outlined in Fritz Kalshovens' 'Constraints on the Waging of War' focusing on the principles of humanitarian law, the weapons that can ethically be employed through these principles, and also the importance of distinction and proportionality as a means of supporting my thesis. I refer to the Global Terrorism Database as a way to gather evidence on the frequency of recent drone strikes and the innocent deaths resulting from them, primarily in Yemen, Pakistan, Somalia, and Syria. Through my research I find that the Obama Administration is not acting within the boundaries of the International Humanitarian Laws, and the fact that civilians have died as a result of acting outside those boundaries is completely unacceptable. The use of drones provides an unnecessary risk to future conflicts by taking the ethics out of warfare as well as accountability. The more we distance ourselves from the real effects of warfare and the means we use to carry out acts of war, the more issues we will begin to see regarding moral responsibility.

95. U.S. Foreign Policy in the Cold War Era: Interventions and the Guatemalan Coup in 1954
Ricardo Gonzalez, Class of 2015
Sponsor: Dr. Timothy O'Neill, Political Science Department

The Cold War was a time of unilateral force from the United States in Latin America. During this time Washington viewed Latin America as a third world region susceptible to the influence of the Soviet Union and communism. Covert operations from the U.S. military and the CIA became the norm in resolving "problems" in the region. Years after a successful revolution in 1944, Guatemala experienced an agrarian land reform led by the democratically elected President Jacobo Arbenz. The United States feared that Arbenz's reforms would threaten U.S. interest in the United Fruit Company. I will call into question the justification, means and consequences of arranging the Guatemalan coup. For my methodology I will be using the comparative case model. I will be using a most-similar comparative study with other cases of U.S. interventions in Cuba and Chile. The CIA operations in Guatemala are an important case to study as it created precedent for future U.S. involvement in the region including Cuba and Chile in the years to come. For this project I will also be applying an ethical theory testing John Stuart Mill's principle of utilitarianism to my case.

96. The Iraq War: Just or Unjust?
Mandy Koohi, Class of 2015
Sponsor: Dr. Timothy O'Neill, Political Science Department

The line between just and unjust wars in the international arena tend to sometimes get blurred because leaders of superpowers are able to use different types of reasoning to achieve their intended goals. The decision to invade Iraq was certainly not an easy one for President Bush and many factors were considered. The question is then, what were the factors that President Bush relied upon to ultimately decide to invade Iraq? Furthermore, are these considerations justified in accordance with the principles of the "Just War" Theory? Through using Neustadt and May's "Historical Policy" Approach, I analyzed Michael Walzer's take on the "Just War" Theory in regards to the factors that led to President Bush's decision to occupy Iraq. It was found that by applying the "Historical Policy" methodology to the six criteria in this theory, President Bush used reasoning that is ultimately deemed unjust to invade and occupy Iraq. Presidential decisions many times create a precedent for future executive action and the conclusion from this analysis is significant in preventing unjust rationalization in potential situations.

97. The Dragon's Claw: Ethics and Development Issues of China in Africa
China Albin, Class of 2015
Sponsor: Dr. Timothy O'Neill, Political Science Department

How do Chinese companies' recent political and economic involvement in Nigeria, Uganda, and Zambia uphold or fail to uphold the ethical principles of justice and care? Developing countries are vulnerable to manipulation and exploitation which may hinder or even work against their development goals. China's relationship to the countries studied is necessarily a question of its place in the structures that aid or impede their development--therefore, a structural approach is most useful. Using Virginia Held's theory of ethics, there are three possible conclusions: China in Africa 1) aids development, thereby upholding the principles of both justice and care; 2) impedes development, violating the principles of justice and care; 3) neither aids nor impedes development, upholding the principle of justice but failing to uphold the principle of care. I will analyze China's relationship with developing African countries. To operationalize the relationship in terms of development, I will assess Chinese companies' contributions to the variables that create and dissemble the four development traps as described by Paul Collier (2007). If the relationship with China creates or perpetuates a development trap, this will be measured as unjust and uncaring. If the relationship deters or disarms a development trap, this will be measured as just and caring. If the relationship does not affect development, this will be measured as just but uncaring. This study expects to find that China's involvement occasionally aids development, but in many cases the relationship includes variables that could contribute to development traps. China therefore upholds the justice principle inconsistently, and upholds the care principle even less so--this indicates that the ethics of China in Africa are questionable at best.

98. A Utilitarianist View of Crimea's Annexation
Christina Manzanares, Class of 2015
Sponsor: Dr. Timothy O'Neill, Political Science Department

In order to maintain political legitimacy, Putin decided to annex Crimea from Ukraine. This thesis begs the question: how does John Stuart Mill's Utilitarianism help explain and/or justify Putin's decision to cause conflict with Ukraine? Putin publicly based his decision on concerns about the safety of Russian-Ukrainians due to their political, historical, and ethnic ties with Russia. However, it can be argued that he chose to annex Crimea in order to relieve the country's dismal economy and the government's domestic unpopularity. By examining why leaders choose to cause conflict with other countries, we are able to better understand the motivations and justifications for corruption in governments like Russia. In my analysis, I will explain and describe 1) the relationship Russia and Ukraine had post-Cold War, 2) Putin's personal and political background, 3) and assess the causes of the numerous Ukrainian and Russian tensions leading up to the conflict and Putin's ultimate decision to annex Crimea. In order to determine how the decline in the Russian government's popularity convinced Putin to annex Crimea, I will show 1) the various benefits he considered before making his decision and 2) the various costs the Russian government must now face based on this decision. Even though to the outside world Putin's actions seem to stem from self-interest, it can also be argued that he believes his decision to annex Crimea was for the greater good of the Russian majority living and experiencing an unbearable conflict in Ukraine.

99. President Lee MyungBak and Nuclear Policies with North Korea
Mary Rossi, Class of 2015
Sponsor: Dr. Timothy O'Neill, Political Science Department

Are previous South Korean president, Lee MyungBak's, hard line policies under the MB Doctrine ethical? Did President Lee MyungBak put care before justice and implement political policies that cared for their "northern brothers?" Lee MyungBak and his administration chose policies that were radically different from previous presidents and the Sunshine Policy. Subsequently, Lee MyungBak and his policies exaggerated poor relations with North Korea and increased nuclear tensions. By looking at previous North-South Korea nuclear relations, nuclear relations theorists, the events leading to Lee MyungBak's decisions on policy, and the results of these policies, we will test whether Lee MyungBak increased or decreased North-South political and nuclear tensions as well as whether Lee MyungBak implemented ethical policies.

100. Non-Reconciliation and the Congo's Democratic Collapse
Jay Scheinman, Class of 2015
Sponsor: Dr. Timothy O'Neill, Political Science Department

At the height of the Cold War, the Belgian Congo finally attained independence on June 30th 1960 as the Republic of Congo. Yet, the young social democratic state quickly unraveled as secessionist movements, internal political rivalries and maneuvering by the former colonial power as well as the United States and the Soviet Union plunged the new state into political chaos. This paper argues that the dilemmas faced by post-independence Congo were a direct result of Western meddling, which grew due to Congolese Prime Minister Patrice Lumumba's unwillingness to seek reconciliation with the Belgian government. Employing a most similar case method of the comparative analysis, this project will juxtapose Lumumba's non-reconciliatory actions and rhetoric to the pragmatic reconciliatory approach of Kenyan Prime Minister Jomo Kenyatta. This pairing serves to demonstrate how Congo's transition into a sovereign state could have mirrored Kenya's relatively smooth transition to statehood had Lumumba shared Kenyatta's reconciliatory vision. Additionally, this paper will apply John Stuart Mill's theory on Utilitarianism to evaluate Lumumba's decision to not seek reconciliation.

ORAL PRESENTATION abstracts

101. Beethoven's "Pathétique," 3rd Movement: Unification in Variation
Courtney Nagel, Class of 2017; Paul Glasheen, Class of 2015
Sponsor: Dr. Kiyoshi Tamagawa, Music Department

What makes a piece of music cohesive? The easy answer is repetition, the recurrence of certain elements. However, we would scarcely call a single note repeated over and over to be music. This question leads me to turn to a time when as many elements as possible were used to bind a musical work together. The Classical period of music, roughly 1750 to 1820, is characterized by an increased interest in exercising control over all artistic forms. Ludwig van Beethoven's beloved Pathetique Sonata in C minor was composed in 1798, when the idea of organic unity and symmetry in music was becoming prevalent. Composers in this period often had to juggle, trying to find a balance between pleasing symmetry and melodies and harmonies that were not so predictable as to be monotonous; all the while staying within the rules of tonal music, of course! The third movement of the Pathétique Sonata achieves this balance beautifully. I explore how Beethoven used the musical tools at his disposal to successfully create this coveted cohesion melodically and thematically and to simultaneously create emotional interest. Paul Glasheen, Class of 2015, will be playing live excerpts of the movement.

102. Trauma, Cruelty, & Audience Reception: The Living Theatre's Paradise Now
Audrey Barrett, Class of 2015
Sponsor: Dr. Kathleen Juhl, Theatre Department

The Living Theatre was one of the most radical and groundbreaking theatre companies to come out of the 60s. The company's intense dedication to their art and to anarcho-pacifist beliefs led them to the creation of a wide variety of socially conscious works. Their most famous piece, Paradise Now, took their audiences from the theater out into the streets, naked and chanting, and was extreme to the point that some audience members felt traumatized by the production. However, despite the production's less than enthusiastic reception, it seemed to have been worth considerably more than just shock value, as it caused the theatre community to take note of the Living Theatre's serious commitment to art and activism. I argue that the production directly led to the Living Theatre's longevity, allowing them to continue creating and performing for decades past the deaths of most of the company's contemporaries.

103. The Independent Females: Women of the San Francisco Mime Troupe
Elise Gabriel, Class of 2015
Sponsor: Dr. Kathleen Juhl, Theatre Department

What is now known as the San Francisco Mime troupe was first established by director R.G. Davis as the R.G. Davis Mime Troupe in 1959 as an experiment of the nationally recognized Actors' Workshop. Davis remained the leader of the group for over a decade, during which time he served as the driving force in the company's stylistic and political development. He departed from the group in 1970 due to an increasing desire among troupe members for more artistic involvement. Following the departure of R.G. Davis, the troupe's transition to a collective company was marked by the emergence of women's issues and changed roles for women in the plays the company created. I will argue that the troupe's shift toward inclusion of feminist plays and multi-dimensional roles for women in its repertoire was a result of the company's move to a collective organization. While women's newfound roles within the troupe were not without

their flaws, the transition to a collective was the opening of a door through which the troupe's women could make their voices heard.

104. A Re-Examining of the Open Theatre and its Legacies Through the Lens of Play Theory
Kristen Samuelson, Class of 2015
Sponsor: Dr. Kathleen Juhl, Theatre Department

The notion that Joseph Chaikin's Open Theater, which existed from 1963 to 1973, revolutionized and re-conceptualized Western acting techniques is not really up for debate here. Chaikin's theories and methods can be found in the book *Twentieth-Century Actor Training* alongside other notables such as Stella Adler, Augusto Boal, Bertolt Brecht, and Konstantin Stanislavsky. The question that should be asked is not if Chaikin altered the conventional viewpoints on actors' roles in the production process, but how exactly he chose to do so. Prior to the Open Theater, a strict hierarchy guided a production's road to performance, with the intentions, actions, and viewpoints of characters taking priority over the thoughts and feelings of the actors themselves. Chaikin constantly questioned this principle. I propose to conduct a re-examination of the Open Theater and its methods. It has been over forty years since the theatre was in operation, yet the same conventional hierarchical principles that Chaikin was rejecting in 1963 still govern our popular theatre today. With a larger body of theory under our belts, we can choose to examine and critique the Open Theater's revolutionary methodologies with a contemporary lens. Through a detailed analysis of Chaikin's theories and methods, I will argue that the Open Theater utilized significant elements of play theory in combination with post-structuralist ideologies in order to carve a new space in the theatrical world for the living, breathing, thinking, feeling, playful, intelligent actor.

105. Viva El Teatro Campesino
Kyle Sapienza, Class of 2015
Sponsor: Dr. Kathleen Juhl, Theatre Department

El Teatro Campesino is a theatre production company with roots deep in political activism; however, after their appearance on Broadway with company founder, Luis Valdez's *Zoot Suit*, many theatre scholars agree that the company's work in social justice was over. This line of thought can be attributed to the fact that in its early days the company operated primarily on the whims of Luis Valdez whose casting policies were sexist and whose artistic processes were hierarchical, making collaboration difficult. After *Zoot Suit* several of the founding members of the company left the group. Valdez maintained the name and moved the company to San Juan Batista where they continue to reside today. After the fallout of *Zoot Suit*, it seemed that the company was done with their social justice agenda; however, some of their most recent work suggests otherwise. I will argue that while El Teatro Campesino is no longer the guerilla theatre that it once was, it is still focused on social justice and other socio-political issues that the Chicano/a community faces, and that the survival of the company is due to both a recent new artistic direction and the historical importance and cultural impact ETC has had on the Chicano/a community.

106. The Free Southern Theater: Where the Transformation Lay
Madge Watson, Class of 2015
Sponsor: Dr. Kathleen Juhl, Theatre Department

In 1963, the Civil Rights gave birth to a theater company called The Free Southern Theater. Its members were diverse, and they chose to perform plays that emphasized equality,

inclusiveness, and the human condition. They would, in their early years, occasionally use references of Black Culture in their shows, but stuck to already published scripts for the most part. By 1965, however, their aims and practices quickly and suddenly changed. They had become an all-black company and were focusing all of their time and energy on plays that spoke specifically to black audiences, to their culture, and to their social and political positions. Over time, they became more of a community based theater in the Black Belt of Louisiana, giving classes and workshops, allowing everyone who lived in the area to become involved, and creating plays based on specific local problems. While it is difficult to pin down what, exactly, brought on this rather quick and sudden change, I will argue that it was primarily engendered by a controversial production of Samuel Beckett's *Waiting for Godot* the Free Southern Theater produced in 1964. In the show, Black actors appeared in 'white face', or white make-up covering their dark skin to represent the fact that black actors were appearing in a show that had previously only been performed by White actors. This decision was extremely controversial and led to nearly violent reactions several times, especially from White audiences.

107. Prodigious Puppets Protest Powerfully
Mallorie Tidwell, Class of 2015
Sponsor: Dr. Kathleen Juhl, Theatre Department

Bread and Puppet Theatre is one of the leading social justice theatres in the United States. Its members and its larger than life puppets and masks made some of their first and most notable public appearances at marches protesting the Vietnam War. These appearances were so notable in fact, that the director of the 2007 Beatles tribute film *Across the Universe* approached the founder of Bread and Puppet Theatre about making a series of puppets and masks specifically to be used in certain scenes of the movie. Through using Bread and Puppet Theatre as a case study, I will uncover the buried history of puppets for social change in order to support the argument that puppetry is a powerful theatrical form that has successfully provoked important change in the American political landscape.

108. All for One and One for All
Nick Kellogg, Class of 2015
Sponsor: Dr. Kathleen Juhl, Theatre Department

This study focuses on The Performance Group, an important, politically charged avant garde theatre company that was actively working in the 1960's. It rose to fame in 1968 with its production of *Dionysus* in '69 and fell from grace with its production called *Makbeth* in 1969, which received scathing critical reviews from New York City critics. The critical difference between these two productions was in the process that was used to create them. *Dionysus* in '69 was created through a collaborative process and *Makbeth* through a hierarchical process led, ironically, by experimental theatre director, Richard Schechner. The result of this difference led to vigorous disagreements among company members that contributed to the company's demise. I will argue that the hierarchical process behind the creation of the failed production of *Makbeth*, directly led to the demise of the company and that collaborative creative processes are more appropriate and successful for politically charged political theatre.

109. Rethinking Digital Instruction: SU Guitar Tutorials
Gideon Nelson, Class of 2016
Sponsor: Dr. David Asbury, Music Department

The Southwestern University Guitar Tutorial program began with the production of three instructional videos during the summer of 2014. Associate Professor David Asbury and student Gideon Nelson served as the producers of instructional classical guitar videos that feature performances and lessons/interviews with students John Lind, Andrew Smith and Sean Stone-Ashe. Shot in high definition with studio lighting, each segment focuses on one short public domain work that is at a beginning or intermediate level. The videos weave together excerpts from player lesson-interviews with half tempo close-up split screen shots of the player's hands and animated scores, before closing with a performance of the work. Currently, there is no other free educational resource that is taking this approach to teaching. The animated scores and half tempo close-ups of the hands are best practices for instructional use of this medium and are vastly different from the overwhelming majority of video resources that aspiring guitarists normally find online. The video lessons have excellent content, very high production values and offer an innovative, unique and free resource for aspiring guitar players. The students increased their awareness of sound and video recording techniques, especially as it pertains to solo guitar performance. Further, they enhanced their knowledge of and practical familiarity with the numerous software programs that were used in the project's production. Additionally, students were able to reflect on their digital identity, and carefully weigh how to best shape their public personas.

110. *La Fila India*: Sexism, Corruption, and the Daily Struggle of Latin Americans
Melina Cantu, Class of 2015
Sponsor: Dr. Katy Ross, Modern Languages and Literatures Department (Spanish)

Hoy en día, muchos países de la zona norte de latinoamérica están pasando por muchos problemas sociales y políticos. A pesar de estar padeciendo de problemas sociales desde sus principios como el racismo, el clasismo, y el machismo, los problemas han crecido a un punto en donde se vive con miedo y corren riesgo a ser ejecutados. Estos países tienen gobiernos corruptos en donde no hay control sobre la seguridad de su gente. Ha llegado a un punto en donde gente puede cometer homicidio, violar a mujeres, y maltratar a otros sin tener ningún tipo de consecuencia legal. Es esta inseguridad y miedo a morir que la gente siente que su única esperanza de vivir es emigrando a los Estados Unidos. El libro La fila india es una obra que está basado en estos problemas, desde la perspectiva de México. Los resultados no han sido concluidos. Pero el estudio ayudara en sacar a relusir la situacion en Mexico y su importancia. Mas que nada ilustrar como la representacion literaria es una buena forma de representar y demostrar lo occurido. En estudiar los problemas prevalentes en la parte norte de Latinoamérica, el estudio ayudará a concluir cómo cierta gente está afectada por estos problemas mientras otros no por razones como su sexo y estatus socioeconómico. Este estudio proveerá información sobre las cuestiones pertinentes hoy en día en Latinoamérica, ya que mucha gente no sabe lo que pasa. Más que nada, saca a relucir y hablamos de temas que normalmente no forman parte de la conversación americana, y lamentablemente tampoco parte de la conversación en los países afectados.

111. Sustainability Tracking Assessment and Rating System (STARS)
Keegan Taylor, Class of 2015
Sponsor: Dr. Joshua Long, Environmental Studies Interdisciplinary Program

The Association for Advancement of Sustainability in Higher Education (AASHE) has standardized sustainability in Institutions of Higher Education (IHE) through their Sustainability Tracking Assessment and Rating System (STARS). Stars is extremely in depth and takes a multifaceted approached to recording and ranking Campus initiatives. This ranges from physical

environmental impacts to diversity to investments and is the most comprehensive and accepted rating system. Southwestern University began filling out STARS last year and we are currently expected to receive a Silver rating once it is completed.

112. Climate Change, Politics, and Grassroots Environmentalism in Tibetan Areas of China
Hunter Jurgens, Class of 2017; Adrienne Dodd, Class of 2015
Sponsor: Dr. Patricia Schiaffini, Modern Languages and Literatures Department (Chinese)

As the origin of all of the major rivers in East Asia, the Tibetan Plateau is of paramount ecological importance. Rising temperatures, pollution, and migration in the region are causing glacial melting to exponentially increase. Our project tackles the implications that glacial melt has on the populations of Qinghai, China, and different ways that the population are mobilizing to combat these mounting issues. Particularly, we argue that the Tibetan culture plays a vital role in the mobilization of grass root environmental movements. In this way, we analyze the intersection of culture and politics, and how Tibetan culture fits into the broader political scheme of China. This puzzle is important for two main reasons. First, by analyzing the effects of climate change on the Tibetan Plateau where temperatures are increasing at the fastest rate in the world, we are able to take a look at what rapid temperature changes have not only on ecosystems, but also on human populations. Second, by specifically studying the intersection of Tibetan culture and politics, we add to a growing literature that hopes to explain causal factors of political and social movements.

113. The Effect of the Minimum Wage of Unemployment
Andrew Cole, Class of 2015
Sponsor: Dr. Katherine Grooms, Economics and Business Department

With many states increasing their minimum wage above the national requirement of $7.25, it is empirically important to look at the impact that county-level minimum wage policy has on a county and states' unemployment rate. A county's unemployment rate is a good indicator of the health of a state's economy, which varies substantially across different regions (Schmitt 2013). Minimum wages and their impact on unemployment have been central in empirical economic studies for many years (Khamis 2008). This paper uses panel data at the county level to analyze the effects of the change in minimum wage policy on the unemployment rate from 2011 to 2013. Also included is a county fixed effect that will absorb the time-invariant unobservable characteristics of a county. Data were obtained from the United States Department of Labor, the Bureau of Labor Statistics, the United States Department of Commerce Bureau of Economic Analysis, and Opportunity Nation. Economic policy from all 50 states in the United States, excluding territories, is represented in this data. This research found that there is little to no effect on unemployment from a change in minimum wage policy at the county level. This little to no effect may show that binding minimum wages can be associated with a bite into the productivity and wealth of a state due to inefficiencies theorized in wage floor rhetoric.

114. The Effects of Changes in Educational Funding on High School Graduation Rates
Caleb Ruckel, Class of 2015
Sponsor: Dr. Katherine Grooms, Economics and Business Department

In the literature surrounding the determinants of a person's well-being there are many topics of interest that range from prenatal health to a person's sleeping habits. One important indicator that determines one's future success is whether they graduate or not. While there are the typically discussed benefits such as increased earning potential, there are many other benefits

of having a high school diploma. These positives include an increased likelihood of holding a job, a lower chance that the individual will be incarcerated, and reduced chances that individuals will become parents at a young age, amongst many other things. This issue is incredibly complex and although funding is important in affecting the success rates of students, this success is reliant on the creation of efficient policies. The results from this study will be applicable on a larger scale because it provides knowledge about what policies have positive effects on graduation rates and also what type of action can be taken on the individual level to improve the likelihood that students will graduate. This paper is also important because it offers the simple solution that has been recommended by many papers in the literature of investing time in children's education. As of right now, my empirical and theoretical models are still works in progress, so I cannot give insight as to what I have found so far but the groundwork for my project has been established through my literature and the project will soon be underway.

115. Does Higher Income Mean Worse Mental Health?
Egan Cornachione, Class of 2016
Sponsor: Dr. Katherine Grooms, Economics and Business Department

National income is generally accepted as the best measure of a nation's well-being. Most people assume that higher incomes mean improved well-being and happiness. In the latter half of the 20th century, economists began researching the link between income and happiness and found that increasing a person's income only increases happiness to a point. Increasing a nation's income over time, however, does not increase citizens' happiness over time. The literature to this point has failed to examine the direct mechanisms through which income affects happiness. Mental health has been shown to have a large and significant impact on individuals' reported level of happiness. This paper examines the effects of income on mental health. I use individual-level data from the National Survey of Alcohol, Drug, and Mental Health Problems to estimate the effect of income on mental health, controlling for age, gender, physical health, marital status, and education. Mental health is measured as having reported depression or anxiety in the past 12 months of the time of the survey. I use cross-sectional multiple regression analysis to isolate the effect of income on mental health. The results of this study contribute to a better understanding of the mechanisms through which income affects happiness, and may highlight a cause of the growing mental health epidemic in America.

116. Did Compensation Affect Bank Performance During the Financial Crisis of 2008?
Emmy Gradisar, Class of 2015
Sponsor: Dr. Katherine Grooms, Economics and Business Department

Did the salary of employees and CEOs affect bank performance during the financial crisis of 2008? My research paper will be looking at factors that affect bank performance before, during and after the financial crisis, and how it is related to employee and CEO compensation. I will use average employee salaries and CEO salaries as a measure of compensation. Performance will be measured by bank return on assets, return on equity and the stock price. During the financial crisis many banks received scrutiny for poorly rated asset securitization, excessive risk taking and bad management. I will use panel data to analyze CEO and average employee salaries and the relationship to bank performance using an ordinary least squares method. I expect to find a change in compensation over time as well as bank performance that initially decreases and later increases. Also, I expect a positive relationship between compensation and performance. This research will contribute to the literature on CEO incentives and bank performance during the financial crisis and effects of the financial crisis. It can shed light on the regulations surround the

financial crisis, for example, the Trouble Asset Relief Program and the Dodd-Frank Act.

117. The Minimum Wage: Its Relationship with Poverty and the Great Recession
Joseph Ramirez, Class of 2015
Sponsor: Dr. Katherine Grooms, Economics and Business Department

The purpose of this study is to discover if there is a relationship between the minimum wage and poverty. This study will look at this relationship in correlation with the Great Recession. The use of OLS techniques and panel data will be used to try and discover these relationships including, but not limited to, minimum wage laborers, gender, education, and race over the course of 2006-2012. There is strong evidence from previous literature that low-skill labor, ethnic background and the level of educational attainment share strong relationships with poverty. This study will seek to discover the impact of the recession on the minimum wage laborers and the possibility of them falling below federal poverty thresholds. It is expected that there will be a connection between controlled variables and the minimum wage increase during the recent economic downturn. This study's main objective is to determine the magnitude of this connection if it in fact does exist.

118. An Analysis of Depositor Behavior in Response to Banking Panics
Nicholas Sivon, Class of 2015
Sponsor: Dr. Katherine Grooms, Economics and Business Department

In the rapidly changing and ever more complex world of finance, important lessons from history still remain. Using a unique panel data set consisting of weekly summary balance sheet information for all New York City banks from 1853-1859, this paper constructs an Ordinary Least Squares (OLS) regression to examine the relationship between the risk level of banks, measured by the ratio of loans to deposits, and its effect on deposit withdrawals during the banking panics of 1854 and 1857. This paper will examine the market discipline during this panics. Did depositors withdraw accordingly from banks based on the riskiness of their balance sheet? Early results suggest increasing levels of risk by banks have a statistically significant effect on the percent of deposits withdrawn from that bank during panics. As a larger percentage of withdrawals by depositors poses greater threats to banks, this paper has important implications for the early identification of banks which have a higher risk of failure.

119. Financial Ratios and Their Effect on Share Prices
Ryan Jones, Class of 2015
Sponsor: Dr. Katherine Grooms, Economics and Business Department

Financial ratios are used to provide a snapshot of a firm's financial position. They provide investors with information regarding the financial health and performance of a firm. Typically financial ratios are grouped into categories based on the information they convey to the investor. This paper uses a fixed effects method to analyze a panel study over 22 common financial ratios and their effects on changes in share prices. Given my earlier results over this topic, I expect to find both statistical significance and practical significance among some of the ratios, in addition to finding a small number of representative ratios from each category is sufficient in predicating changes in share prices. My earlier results were found through a cross section study. By changing to a panel study, I should be able to more accurately determine the true effect of these ratios on changes in share prices. Most investors not only look at the values of these ratios at a specific point in time, but also look at the changes in these ratios over time. Investors not only want to see strong ratios, but they want to see ratios that are improving and

growing. By accounting for time in this panel study, my results should more accurately mimic the actions of investors when analyzing a firm's financial ratios.

120. Do Women Do Better Than Men in Long-Term Investment?
Yinlin Dai, Class of 2016
Sponsor: Dr. Katherine Grooms, Economics and Business Department

This paper mainly examines whether women do better than men in long-term investment. Most of the literatures in behavioral finance only discuss the gender impact on investment. My paper will try to address the gap between gender impact and females actually doing better in long-term investment. The data used in my paper is from the Integrated Public use Microdata Series (IPUMS). I use the OLS regression and also control variables such as personal total income, marital status, the number of children in the household, education attainment and the number of people who graduated with history, math or foreign language degree. All of the variables of interest are statistically significant. Only people who graduated with foreign language degree does not have statistical significance. I find that among the general population, females are not always doing better than males in long-term investment. But if women and men are in the same context—having the same marital status and some children, women would do better than men. There are also some problems with my linear regression. The relationship between long-term investment and gender should be non-linear. In addition, since it was the survey data, I might also have a measurement error in my regression, which would cause the attenuation bias.

121. "My Revenge Against Humanity": A Look at Misogyny, Mental Health, Guns, and their Role in Sensationalism in the Media
Chelsea Allen, Class of 2016
Sponsor: Dr. Phil Hopkins, Philosophy Department

May 23rd 2014, 22-year-old Elliot Rodgers killed six people and injured fourteen near the University of California in Isla Vista, California. The motives behind his crimes were made very public, as he wrote a 107,000-word confession titled "My Twisted World: The Story of Elliot Rodger," which was posted online and sent to family. In it, he details a life in which he was denied what rightfully belonged to him: sex with women, whom he considered so inferior that he wrote that his ideal world involved forcing them to starve in concentration camps. There is no doubt that Elliot Rodgers was not fit to be a part of society as a whole at the time of his death, but larger questions must be asked in the wake of this tragedy. Did we create Elliot Rodgers? In a culture which celebrates the alpha male and his ability to "get" as many "chicks" as possible, which associates firearms with masculinity and power, and which marginalizes and ignores the mentally handicapped, it seems that Elliot Rodgers was a product of a culture which encouraged his behavior. However, none of these important questions were asked in the media coverage of this tragedy. Instead, the media took a largely sensational view, which, according to sociologist Pierre Bourdieu, stems from a culture that craves "blood, sex, melodrama, and crime" over truth and change. I will be examining the media coverage of the Isla Vista killings and its role in the diversion of the masses from more controversial topics.

122. "Help in WilCo": The 2014 Williamson County Growth Summit and Its More Recent Impacts
Katie Morgan, Class of 2016
Sponsor: Ms. Sarah Puffer, Office of Civic Engagement

This presentation will examine the role of nonprofits in the Williamson County area, in conjunction with the area's population growth. My presentation is informed by my experience

as an intern for United Way of Williamson County (UWWC) last spring. I will focus on what the Williamson County community can do to provide equal access to resources to every member of the county. With an estimated net growth of 16,000 people per year, the Austin-Round Rock area is one of the fastest growing areas in the nation. Because of this, Williamson County nonprofits will have to work together in order to provide services for the ever-expanding economically underprivileged households. The information presented at the Williamson County Growth Summit, sponsored by United Way of Williamson County on April 22, 2014, will be used to show what needed to be done a year ago. Later, I will present what United Way of Williamson County is currently doing to help affected individuals in the WilCo area. Williamson County currently lacks two major services that if present would affect the county as a whole. The first is affordable and quality childcare, which is recommended to be the number one resource to economically underprivileged families. The second is accessible public transportation between areas of WilCo and the Austin area. I will discuss the different ways that United Way of Williamson County is working with about 20 other agencies to make these issues a possibility, as well as what we as the Southwestern community can do to make an impact in our region.

123. Synthesis and DNA Binding Studies of [Cu(phen)(4-amino-pteridino(6,7-f)phenanthroline)](PF6)2 and [Pt(triflate)2(4-amino-pteridino(6,7-f)phenanthroline)]
Antonio Lopez, Class of 2015
Sponsor: Dr. Gulnar Rawji, Chemistry and Biochemistry Department

Coordination complexes that interact with DNA can act as medicinal agents. The inclusion of pteridine rings on a ligand provide structural similarities to the purine bases of DNA, suggesting strong hydrogen bond interactions that can result in intercalation with DNA. Thus, the interactions of copper(II) and platinum(II) complexes of 4-amino-pteridino(6,7-f)phenanthroline (abbreviated L-amino) were investigated. The DNA binding and cleavage properties were observed utilizing fluorescence titration and gel electrophoresis. The copper(II) complex exhibited a strong affinity for CT DNA (Kb = 1.71 x 105 M-1). Gel mobility assays of the copper(II) complex showed DNA cleavage occurring at low concentrations (10 μM) without the use of a reducing agent and requiring short incubation times at 37 ^{o}C. The platinum(II) complex showed similar patterns in concentration-dependence for DNA cleavage when incubated. Irradiation of the platinum(II) complex at visible wavelengths (368 and 420 nm) strengthened the DNA cleavage. Reactive oxygen species scavenger studies with NaN3 and curcumin indicate the involvement of singlet oxygen in inducing the cleavage of the plasmid DNA. High binding affinity and presence of a high molecular weight DNA band in the mobility assays indicate intercalation, which can be reinforced with information from DNA thermal denaturation studies.

124. Investigation of DNA Binding and Photocleavage Properties of [Zn(triflate)2(4-amino-pteridino(6,7-f)phenanthroline)]
Penny Wong, Class of 2015
Sponsor: Dr. Gulnar Rawji, Chemistry and Biochemistry Department

Transition metal complexes can interact with DNA through intercalation. When DNA is intercalated, there is potential that DNA can be cleaved photochemically. The ligand, 4-amino-pteridino(6,7-f)phenanthroline, abbreviated as L-amino, is a pteridine derivative with structural similarity to DNA bases, allowing it to interact with DNA bases through hydrogen bonding. The novel complex [Zn(triflate)2(L-amino)], abbreviated as Zn-amino, was synthesized to investigate its DNA binding properties. Studies of its interactions with DNA showed that it was effective in cleaving plasmid DNA in a concentration-dependent manner when incubated at 37°C for ~17 hours. The cleavage activity of DNA was dramatically increased upon ~15 minutes of irradiation

at 360 nm, reducing the time required to achieve cleavage at room temperature and without prior incubation. Additionally, reactive oxygen species studies suggest that the Zn-amino complex promotes the formation of singlet O2 which cleaves DNA. The binding affinity of Zn-Amino was also investigated using absorbance and fluorescence titrations. The two methods gave Kb values differing by two orders of magnitude (1.75x10¬¬6 and 5.25x104). This difference in binding affinity may be due to the kinetic activity of the complex in buffer, as the combination was found to undergo changes in the first 2.5 hours. It is unlikely that the reactive species causing this change is the original complex, but rather one that results from ligand substitution. A proper kinetic study would be needed to determine the reactivity of the complex and its contribution to DNA binding.

125. Titanium-Mediated Synthesis of Cyclobutanols
James Alleyn, Class of 2015
Sponsor: Dr. Michael Gesinski, Chemistry and Biochemistry Department

A novel synthesis for cyclobutanols from aldehydes and ketones is described. Cyclobutanols are functional groups found in many biological compounds that display interesting properties of potential medical interest. Additionally, these molecules have decreased bond angles, known as ring strain, that makes them quite reactive and therefore synthetically useful. In a two-step process an aldehyde was brominated at the α position and subsequently subject to conditions previously described by Kulinkovich known to form cyclopropanols from carboxylic esters. The cyclization reaction takes place via a titanium intermediate formed in-situ from EtMgBr and Ti(iPrO)4. This synthesis has the advantage of taking place under relatively mild conditions and produces the desired product in modest yield (20-30%).

126. Palladium Catalyzed sp2 C-H Bond Functionalization
Jonathan Schulz, Class of 2015
Sponsor: Dr. Michael Gesinski, Chemistry and Biochemistry Department

A Pd-catalyzed site-selective functionalization of unactivated aromatic C-H bonds was used to produce chemically differentiated 1,2-diols from monoalcohol derivatives. A C-H functionalization reaction utilizes a transition metal catalyst to selectively destabilize a specific, inert C-H bond and allow it to be transformed into a more useful functional group. This reaction creates new opportunities for optimization of synthetic schemes and allows for new synthetic options through creative use of chemically differentiated diol products. Because alcohols are ubiquitous and easily transformed into other functional groups, chemically differentiated diol products can be utilized in the synthesis of a wide variety of natural products, such as the active component in inhalers. An oxime functional group was employed as both a directing group and as a protecting group for the starting alcohol in this synthetic scheme. In this reaction, C-H bonds β to the oxime group are selectively oxidized. The preparatory reactions have been shown to produce the oxime functional group in high yield using a variety of substrates, and the functionalization reaction has produced the intended diols in moderate yield on the first attempt using two of those substrates. Future research into the subject could build upon this work by testing the reaction with a wider variety of substrates, and by further optimizing the reaction conditions.

127. Comparative Chemical Analysis of Basil (*Ocimum basilicum L*.) Commercially Available in Central Texas
Mareah Lucio, Class of 2015
Sponsor: Dr. Emily Niemeyer, Chemistry and Biochemistry Department

Between 1997 to 2014, U.S. sales of organic fruits and vegetables have increased from $3.6 billion to an estimated $35 billion. This rapid growth is reflective of a shift in Americans' relationships with food; consumers are now more interested in how produce is grown and the benefits it can provide them. A majority of the sales in the organic food sector result from consumers who believe that organically grown food is overall more nutritious than conventionally grown food. However, a recent meta-analysis of the relevant literature concluded that current research lacks strong evidence for this claim. Therefore, our goal was to determine the relationship between cultivation method and nutrition by analyzing basil (*Ocimum basilicum L*.) samples grown in the Central Texas region. Basil samples were purchased from central Texas farmers markets and grocery stores during a fall and spring harvest season. Since basil has high values of antioxidants in the form of phenolic acids, individual phenolic acid concentrations for each sample were determined through high performance liquid chromatography. Total phenolic content and antioxidant capacity were measured using colorimetric assays and spectrophotometry. Statistical analyses showed insignificant differences in individual phenolic acid levels and antioxidant capacities for organic and conventionally grown basil. Conversely, total phenolic content was significantly affected by season ($p < 0.05$) with a potential contributing factor from cultivation method.

128. Nutrient Deprivation and the Cell Fate Decisions in Malignant and Non-Transformed Mouse Embryonic Fibroblasts
Shelby Beem, Class of 2015
Sponsor: Dr. Kerry Bruns, Chemistry and Biochemistry Department

Non-selective autophagy, which may be induced during times of stress like low nutrient availability, is a pro-survival mechanism utilized by eukaryotic cells. This process requires the formation of autophagosomes, which are membrane-enclosed compartments that trap cytosolic components. The autophagosomes then fuse with lysosomes in which the cellular components are broken down for use in meeting the cell's metabolic demands. An alternative cellular fate to autophagy is known as apoptosis, or programmed cell death. When cells begin utilizing autophagy, the proteins which they express change, and autophagy-related proteins become activated through phosphorylation events or through proteolytic cleavage. In this study, two different cell lines were each grown in two different culture conditions: in media rich in nutrients or in minimal essential medium. The mouse embryonic fibroblast cell lines used were the transformed KBalb and the parental non-transformed Balb 3T3 cell lines. Proteins from different cellular fractions of the cells were analyzed by Western Blot to determine if these cells, in response to differences in nutrient availability, expressed the proteins involved in autophagy or apoptosis differently. Difficulty in the immunological detection of the proteins of interest by Western Blotting have made our experiments inconclusive. However, optimizing the conditions of the antibody binding and detection should lead to results that can be interpreted and allow us to evaluate our hypothesis that malignantly transformed cells may respond differently to nutrient deprivation than their non-transformed parental cells. The results might possibly be used to develop novel anti-cancer therapeutics and in cancer diagnosis and prognosis.

129. Differential Effect of METH on DNA Damage Levels in Four Rat Brain Regions
Zane Johnson, Class of 2015
Sponsor: Dr. Maha Zewail-Foote, Chemistry and Biochemistry Department

Methamphetamine (METH) is a highly addictive psychostimulant that has been shown to cause neurotoxicity. Methamphetamine increases extracellular dopamine which can undergo autoxidation once released from the synaptic cleft, leading to the formation of reactive oxygen

species in the brain. These free radicals can damage biological targets such as DNA molecules. This study examined the effect of METH on DNA damage using the single cell gel electrophoresis assay (comet assay) to detect the formation of DNA single-strand breaks under two different conditions. Rats treated with multiple doses of METH (10 mg/kg x 4) showed significant levels of strand breaks in the nucleus accumbens and striatum, both uniquely dopamine-rich brain areas, whereas a single dose of METH did not lead to significant levels of DNA strand breaks in any of the dopamine-rich brain regions tested. The results of our study demonstrate that METH produces greater DNA damage in brain areas that receive greater dopamine efflux.

130. Copper (II)-induced Prooxidant Activity of Rosmarinic and Caffeic Acids
Clark Fritsch, Class of 2015
Sponsor: Dr. Maha Zewail-Foote, Chemistry and Biochemistry Department

Rosmarinic acid and caffeic acid are polyphenolic compounds that are present in many fruits and vegetables and are widely thought to show antioxidant activity in biological systems. Recent evidence, however, suggests that these compounds can also show prooxidant activity, generating highly reactive free radicals in the presence of transition metal ions such as copper(II). Agarose gel electrophoresis was used to test the antioxidant and prooxidant activity of rosmarinic acid and caffeic acid in the presence of copper(II) ions. Our results demonstrate that rosmarinic acid acts as both a prooxidant and an antioxidant, depending on the concentration of copper(II) ions present in solution. However, caffeic acid only exhibited copper-ion dependent prooxidant activity. UV-Vis spectroscopy was used to monitor the ability of these polyphenolic compounds to bind to copper(II) and DNA. Both rosmarinic acid and caffeic acid coordinated with copper(II) ions in solution and these complexes were found to bind to DNA. These results help to further characterize the activity of polyphenols under specific conditions and contribute to our understanding of the role of copper-mediated prooxidant activity in human health and disease.

131. The Nose Knows: Hatchling *Pomacea Maculata* Behavioral Responses to Predator Chemical Cues
Allie Watts, Class of 2015
Sponsor: Dr. Romi Burks, Animal Behavior Interdisciplinary Program

Chemical cues from predation influence behavioral interactions in aquatic communities. Predators release chemical cues, termed kairomones, into the water where prey can sense them. We investigated the prey response of hatchlings apple snails (*Pomacea maculata*) when exposed to kairomones from crayfish and redear sunfish. We determined prey response by movement of snails by measuring the distance traveled. Snails may either seek to bury themselves in sediment or crawl out of the water. Behavioral response experiments occurred in two time periods 0-15 and 15-30 minutes with three observations where we marked locations. We started with a kairomone differentiation experiment where we tested if hatchlings showed ability to differentiate between cues. In a “pre” cue versus “post” cue experiment, we investigated whether exposure to kairomones (crayfish, fish or crayfish and fish) influenced movement of hatchlings and if pre-cued hatchlings showed more movement to kairomone exposure than post-cued hatchlings. Pre-cued hatchlings received exposure to crayfish kairomones 24 hours before while post-cued hatchlings experienced exposure to kairomones only during the experiment. We repeated this experiment with three levels of pH as the pre-cue and found that pH lead to faster movement within the first 15 minutes. In the future, these experiments should be repeated with adult *Pomacea maculata*. Behavioral responses to predatory cues have been demonstrated in the pond snail *Physella gyrina* and *Pomacea canaliculata*, but not yet for the apple snail *P. maculata*. This study gives evidence for similarities

and differences in anti-predator movement of *P. maculata* to *Physella gyrina* and *P. canaliculata*.

132. Dispersal of the Georgetown Salamander (*Eurycea naufragia*) Within Two Springs Sites
Areli Gutierrez, Class of 2015
Sponsor: Dr. Benjamin Pierce, Biology Department

Eurycea naufragia, the Georgetown salamander, is a neotenic, permanently aquatic salamander found only in Williamson County, Texas. Although listed as threatened under the Endangered Species Act, little is known about its ecology. Using photographic recognition, we studied movement of individual salamanders at two spring sites over a 20-month period, comparing dispersal rate and movement within and between the two populations. We found a significant difference in rates of movement between gravid and non-gravid individuals, but no significant difference between the two populations. In contrast to some other headwater spring salamanders, *Eurycea naufragia* displayed no directional bias in its movement. Knowledge about dispersal provides important information needed for developing comprehensive conservation strategies for the species and a better understanding of their ecological requirements.

133. Chasing Cultural Identities: A Statistical Analysis of the Chase from the United Kingdom and the United States
Katie Lelinski, Class of 2015
Sponsor: Dr. Alison Marr, Mathematics and Computer Science Department

This study analyzes the types of general knowledge questions asked on the game show *The Chase* as filmed in the United Kingdom and the United States. Some research questions we aim to discuss include: What, if any, differences in cultural values can be discovered from the categories of questions asked? Is there a correlation between the questions asked of "The Beast/Chaser" and his or her scholastic interests? Is one gender more willing to gamble and take the larger sum of money offered? Is player position associated with a willingness to take the higher offer?

134. This School Just Isn't Set Up for Me: The Experiences of Transfer Students from Community Colleges at Southwestern University
Jessica Jones, Class of 2015
Sponsor: Dr. Maria Lowe, Sociology and Anthropology Department

This paper examines the experiences of transfer students from community colleges at Southwestern University. Relying on 15 face-to-face interviews, an analysis of on-line documents, and a conceptual framework that combines Collins' Outsider-Within standpoint, Sue's microaggressions, Bourdieu's cultural capital, and Goffman's theory on Stigma, this study addresses a significant gap in the existing sociological literature. Specifically, the paper examines which specific factors influence transfer students' sense of belonging and the ways they perceive the university campus climate. Findings suggest that a combination of microaggressions, stigma, and self-doubt influenced, in part, by a perceived lack of cultural capital and the university's institutional structure contribute in various ways to students' self-perceptions and views of the campus climate. These factors, in turn, influence their sense of belonging at the university. As an increasing number of students attend community college prior to transferring to a university, it is vital that we work to understand these students' unique experiences. A better understanding of their lives, struggles, and successes is an important step

towards fostering a supportive campus climate for transfer students from community colleges.

135. "It's All Fun and Shade": Identities, Community and Culture of Drag Performers in the US
Jordan Richardson, Class of 2015
Sponsor: Dr. Maria Lowe, Sociology and Anthropology Department

The present study examines ideas about drag performers, specifically those traditionally defined as drag queens, and drag culture within the United States. There are three major questions explored in this study. How do drag performers conceptualize their drag personas and their non-drag personality? What are the sources of community among drag performers? Are there any tensions within the community? I rely on two types of qualitative methodologies employed in fall 2014: interviews with drag performers across the country as well as observations at drag shows in a number of venues in Austin, Texas. Additionally, I utilize my own experiences and perspectives as a drag performer to gain a better understanding of issues related to performers' presentation of self as well as the importance of, and tensions within, the drag community. Findings indicate that previous sociological definitions of drag performers have limitations and may require re-evaluation. Results provide a more nuanced understanding of how performers build a sense of community with an acknowledgement of the hierarchies that exist within it.

136. The Quiet Leader as a Catalyst in Pre-Adolescent Education
Amy Gu, Class of 2017
Sponsor: Dr. Sherry Adrian, Education Department

My self-study examined ways in which I exhibit leadership as an introvert in a fifth grade classroom setting. I wanted to examine the presence of bias in favor of an extroverted classroom teacher/leader. Specifically, I wanted to examine how my tendency toward being an introvert impacted my interactions with students and whether their academic performance may have been affected. I structured my self-study around personality and leadership theories. I served as both the primary participant and the researcher. My data included reflective and ethnographic notes taken in a general education inclusion classroom (with students identified as gifted and talented, English Language Learners (ELL), and in need of special education services). My notes explored my interactions with individual students, students' reactions to my interactions, and my energy during and after interactions. I taught three lessons and evaluated student performance based on paper-pencil tests covering these lessons. I supported my research with existing literature, most of which supported that introverted leaders blend introverted and extroverted leadership. My data suggests patterns of hesitance and self-doubt, self-critiquing, fatigue, and reduced motivation to socialize. Reflections about the first two lessons show that I felt fatigued directly after. My data suggests less fatigue and greater willingness to interact with students as I became more familiar with students' individualized learning needs. My study suggests that there are strategies that may benefit an introverted teacher/leader in reducing challenges that require significant interaction with others. Additionally, my self-study helped me realize that different leadership styles can result in effective teaching and learning.

137. The BIG Event: Creating a System, Leaving a Legacy
Katheryn Reagan, Class of 2016
Sponsor: Dr. Sarah Brackman, Office of Civic Engagement

This presentation will explore the development of The BIG Event (TBE) at Southwestern University throughout the past four years. Since its inception in 2012, TBE has grown

significantly in the number of volunteers and organizations in the Georgetown community which those volunteers serve. This presentation will provide a history of The BIG Event at both Texas A&M University, where the event began over 30 years ago, as well at Southwestern University. I will use data from the last three BIG Events at Southwestern and current information about how the student organization Sustain (Students for Sustained Civic Engagement) has worked together to put on The BIG Event 2015. Applying concepts from Computer Science, I will discuss the ways in which our current team is working to create a 'system' for TBE that will result in greater success and ease of planning for future Sustain members. This includes streamlining and optimizing the year-long process of planning TBE as well as using Google scripts to automate volunteer registration. Current and future work of Sustain members will leave a lasting legacy at Southwestern, as The BIG Event continues to grow in campus popularity and community impact.

138. Revolution in Retrospect: A Look Inside the Making and Re-Making of May ’68 Forty Years Later
Tony Irizarry, Class of 2015
Sponsor: Dr. Jessica Hower, History Department

This historical analysis examines the competing memories of the Parisian revolts of 1968, known simply as May '68, demonstrating how participants and politicians formed and reformed their understanding of these events in the forty years that followed. The events known as May '68 saw millions of French citizens on strike, occupying Parisian buildings, and actively protesting Charles de Gaulle and the French Government. Because of its magnitude, it still resonates in political rhetoric within France. In the immediate aftermath of these events, participants and political activists acknowledged and even called for a continued revolution while politicians, particularly Charles de Gaulle and Georges Pompidou, described the events as completed and in the past. However, in the 21st century, these roles reversed – in stunning fashion: former participants and leftist thinkers tend to see '68 as a thing of the past while politicians, particularly Nicolas Sarkozy, see it as an ongoing crisis in French society. The contradiction between these two factions embodies a historical phenomenon that can be elucidated through memory studies; it helps us to not only understand the extent of memory's impact on the history of May '68, but also to understand history and memory's role within French society today. Drawing on contemporary newspaper articles, political posters, graffiti, speeches, and film, this analysis uses various "sites of memory" of May '68 as tools to understand the significance of these events within French society today.

139. An Exploratory Study of the Social Construction of LGBTQ Neighborhoods in London
Mitchell Peterson, Class of 2016; Lucas Grisham, Class of 2015; Dakota McDurham, Class of 2016
Sponsor: Dr. Edward Kain, Sociology and Anthropology Department

Social attitudes about sexual orientation have changed rapidly in recent decades (see, for example, Loftus 2001), as has the advent of the internet and social media for finding partners. Gay men and lesbians are more likely to find their mates using the internet than are their straight counterparts (Rosenfeld and Thomas 2012). This paper examines how these factors have had an impact upon LGBTQ social spaces within the city of London. Using Lynch's (1982) concept of mental mapping, we ask our respondents to draw maps of their perceptions of LGBTQ spaces in the city. According to the work of Koblin et. al., 2013, each respondent is asked to draw a map detailing their perception of LGBTQ spaces in London. Though our preliminary findings are not generalizable because of sample limitations, our research suggests there are qualitative differences in the social construction of LGBTQ spaces by all three variables of gender, age and residential status. We conclude with suggestions for future research examining

this topic in a series of cities in both North America and Europe.

140. A Comparative Study of Japanese and German Immigration Policy in Post-WWII World
Eryn Quinn, Class of 2016
Sponsor: Dr. Alisa Gaunder, Political Science Department

Japan and Germany, the main losers of World War II, both underwent significant struggles in overcoming fascist pasts only to emerge as political and economic powers within their respective geopolitical regions. This presentation asks the question, why do these two countries, who share a similar history of occupation and democratization, have such drastically different immigration policies? Japan maintains its staunchly anti-immigrant legislation, while Germany by contrast has progressed significantly in developing and reforming immigration law to be more inclusive. I investigate possible causal factors including international pressures, institutional legacies, and domestic political conditions. Ultimately, I conclude institutional legacies left over from occupied post WWII governments are the cause of such a division; Germany has been able to overcome these legacies, Japan, as of yet, has not.

141. Financialized Capitalism and Uneven Urban Geographical Development in the US
Kevin Lentz, Class of 2015
Sponsor: Dr. Michael Bray, Philosophy Department

This paper, using the rhetoric and concepts of Costas Lapavitsas and other like-minded political economic theorists, argues two things. First, that the current structure and method of the global capitalist economy presents a new and "financialized" period in Capitalist history that is categorically distinct from the previous industrialized period. Second, that the current polarized US urban geography must be thought in relation to this new phase and model of Capitalism; the US urban geography that we know now—gentrification, housing foreclosures, office development, land banking, boutique consumption quarters—is a direct result of city municipalities reacting to the larger shifts that have occurred in the order and impetus of the global Capitalist economy. After outlining the macro-economic shifts that have occurred since the 1970's—the gradual shift of multinational Capitalist mega firms away from their traditional commercial bank financiers, the subsequent shift of the role of these commercial banks towards providing credit for consumer housing markets, and the financialization of consumer income and expenses—and connecting them to the aforementioned urban geographical phenomena, it is ultimately concluded that the previous geographic paradigm of industrial growth/shrinkage is being increasingly eclipsed by a new geographical paradigm of financial growth/shrinkage that has distinct characteristics, objectives, and values.

142. My Education Played a Role: How a Liberal Arts Background Influences Teach for America Corps Members
Victoria Flores, Class of 2015
Sponsor: Dr. Maria Lowe, Sociology and Anthropology Department

Teach For America (TFA) has built its organization around the goal to motivate leaders within the community to work toward ensuring that underprivileged youth receive the same type of education any other student would receive. Since 1989, Teach For America has sent corps members into low income communities as way to revolutionize the education system. The purpose of this study is to question what aspects of a liberal arts education influence the experiences of TFA corps members and how those experiences play out in the classroom. Through analyzing material on the TFA website as well as conducting 15 semi-structured

interviews between August and November 2014, findings indicate that experiences with civic engagement opportunities as well as a student's major enhance their ability to recognize structural inequalities within the classroom. Findings also report that this knowledge translates into the classroom by allowing corps members to establish relationships with students and use the support given by TFA more effectively.

143. Latina/os, Microaggressions, and Positive Interpersonal Interactions on a College Campus
Guillermo Alvarado, Class of 2015
Sponsor: Dr. Sandi Nenga, Sociology and Anthropology Department

Latina/os are the fastest growing ethnic group in the United States and are expected to become 29% of the population by 2050; however, the number of Latina/os enrolled in institutions of higher education does not reflect this growth. Poor racial climates at universities and microaggressions lead Latina/o college students to develop negative views of their campus and, in some cases, leave college. This paper seeks to determine how and why certain racialized interactions on a predominantly white, university become microaggressive in nature and how other, similar interactions do not. In an analysis of 24 in-depth interviews with Latina/o college students I found that, while many students experienced negative racialized interactions, a number of them described similar, but distinct situations they felt positive about. Common characteristics of negative interactions included instances in which the students were assumed to possess knowledge pertaining to Latino culture and/or were stereotyped into a monolithic group. Similarly, students described pressure to perform when professors asked them to publicly speak Spanish in the classroom. However, a smaller number of respondents described positive racialized interactions. These were instances in which peers and professors did not succumb to assumptions but instead, started a dialogue in which stereotypes were questioned. Additionally, respondents felt positive when their professors offered them private praise, often causing them to feel pride in their cultural background. Such nuanced experiences suggest that individuals can engage in racialized interactions without participating in microaggressive behavior and create a more inclusive university environment.

144. "Screaming Like A Little Girl": A Dark Descent into Gender, Video Games, and Fear
Helene Thompson, Class of 2015
Sponsor: Dr. Davi Thornton, Communication Studies Department

Scholarly critique of the horror genre has long noted a gendered pattern to the depiction of fear—as with Clover's theory of the Final Girl and various psychoanalytic theories of phallic violence—but even with new media and video game studies on the rise, little attention has been devoted to how audiences speak of fear as they experience it themselves. In accordance with media portrayals of the classic horror victim scream, fear is routinely characterized as a feminine structure of feeling. How then do men negotiate the tension between that characterization and the unflinching macho ideal when grappling with terror themselves? To what end are genital metaphors employed? How do heteronormativity and a basic literacy of gaming create gendered expectations for gameplay narrative and nudity? And what does it mean, exactly, to scream "like a little girl?" To explain and contextualize the misogynistic leanings in rhetorics of fear, this paper conducts a Foucauldian discourse analysis of public user-made recordings of commentary during gameplay of *Amnesia: The Dark Descent*, a horror game notorious for being especially frightening. The players' discourse of fear in this case study produces key discursive patterns (such as the feminization of fearful noise, testicular/castration symbolism, and the sexualization of damage and violence, among others) which, under scrutiny, appear to make claims that equate the state of being female to the state of being afraid—specifically, afraid of

being raped. With that in mind, player experiences can then be compared against real women's experiences of navigating sexual violence.

- On February 25th 2015, Helene Thompson received Top Undergraduate Paper at the New Voice, New Perspectives Conference.

145. A Yellow Peril: Foreigner or Model Minority?
Meili Criezis, Class of 2017
Sponsor: Dr. Patricia Schiaffini, Modern Languages and Literatures Department (Chinese)

Despite roots reaching back to the mid-1800's, society has, throughout history, designated Chinese-Americans as foreigners, outsiders and in some instances, a threat. On the flip side, the current rhetoric surrounding Asian American identity promotes a false image of the "model" minority - an ideology born during the Civil Rights Movement aimed at dividing and conquering solidarity among minorities. In my paper, I would like to explore Chinese-American history in America as well as parallels between the Chinese immigrant and African-American experience. The final section of the paper discusses the identity of Chinese-Americans adopted from China, China's one-child policy and my personal experience as an adopted Chinese-American. Through the re-examination of history and discussion on identity, I would like to confront stereotypes and start a dialogue.

146. Cinema and Marginalization in the Pacific Region of Colombia
Iris Klotz, Class of 2015
Sponsor: Dr. Carlos De Oro, Modern Languages and Literatures Department (Spanish)

I will explore the cinematic representation of multiple axes of oppression (misogyny, poverty, racism, and marginalization) in the Chocó region of Colombia by analyzing the films *Vuelco del Cangrejo* (*Crab Trap*) directed by Oscar Ruiz Navia, and *Chocó*, directed by Jhonny Hendrix Hinestroza. Both of these films rely heavily on nonprofessional actors who play lightly fictionalized versions of themselves. The films are single-camera and shot in natural light, documentary-style. These documentarial aspects allow the films to be viewed as largely accurate reflections of the life of the people of the Chocó region. The cinematic techniques (shots, framing, lighting, sequences, sound) used by the directors to create social commentary on the various oppressions that the people of Chocó are subject to will be analyzed in detail.

147. The World Outside: Images of the Balkans in British Travel Narratives, 1903-1907
Lauren Gieseke, Class of 2015
Sponsor: Dr. Melissa Byrnes, History Department

In the early 20th century, travel writers regularly employed words like savage, wild, and lawless to depict the people and lands they encountered outside of "civilized" Europe. For British journalists Reginald Wyon and Harry De Windt, the Balkan world was one of harsh, inhospitable landscapes that reflected the uncouth countenance of the people who inhabited them. This seemingly dated characterization remains relevant to treatment of the Balkans even today; Misha Glenny's 1992 book *The Fall of Yugoslavia*, for example, opened with words like "gloomy," "grim," "dreadful" and 26 near-synonyms on the first page alone. Thus, early 20th century travelogues reflect a particular moment in defining a changing "European" identity, but also resonate in the continual peripheralizaion of Europe's Southeastern boundary.
Between 1903 and 1907, Wyon and De Windt captured their separate Balkan expeditions in three books and numerous print articles. Their works provide insight into the ever-evolving understanding of the borders and cultural parameters of Europe. By doing so, Wyon, De Windt,

and writers like them grappled with questions that still govern contemporary discussion of Southeastern Europe. This paper examines perceptions of space and distance on a variety of levels, including the physical distance between Britain and the Balkans, the structure of informal imperial hierarchies, and ideas of civilization.

148. Environmental Policy Adherence in Germany and Japan
Hunter Jurgens, Class of 2017
Sponsor: Dr. Alisa Gaunder, Political Science Department

Japan and Germany are both losers of World War II, regional leaders in their respective spheres, and have both taken up the mantle of environmental preservation by being signatories of the Kyoto Protocol—a treaty that commits state entities to decreasing greenhouse gas emissions. Despite these similarities, Germany has been much more earnest in its adherence to decreasing its greenhouse gas emissions than Japan has. This paper explores the reasons as to this disparity by analyzing the culture, party politics, and civil society in both Japan and Germany. Ultimately, I argue that strong civil society institutions allowed for better German cohesion, which ultimately allowed for greater dedication to the Kyoto Protocol. In light of environmental degradation, this puzzle is important in order to find the best ways to mobilize societies to decrease their carbon footprint. These strategies can be applied across the board in order to implement environmental preservation policies.

149. "From the Outside Looking In": Gendered Rhetoric About Sororities and Fraternities
Elisabeth Spieckerman, Class of 2015
Sponsor: Dr. Alison Kafer, Feminist Studies Interdisciplinary Program

This study explores differences in rhetoric about historically white sororities versus historically white fraternities, and posits that these differences are contingent upon the gender of those involved in these organizations. For many, the term "sorority girl" brings to mind a certain set of descriptors—such as "shallow," "gossiping," or "egotistical"—that suggest artifice, superficiality, and lack of intelligence, despite the fact that sororities were originally founded as primarily academic organizations. The study first examines the early history of sororities to pinpoint how these stereotypes about sorority women came to be. It then analyzes how these stereotypes are manifested in two recent exposés of sorority life, as well as several recent articles on the popular websites Total Frat Move and Total Sorority Move. The study finds that observers and even members of these organizations perceive sororities as high-maintenance, "fake," and exclusionary, but view fraternities as "real," genuine, and bonding-oriented. However, the media analyzed for this study shows that fraternity practices are, in fact, just as exclusionary (if not more so) than those of sororities and are sometimes even actively harmful to their members. The study concludes that this difference in rhetoric is a product of a larger societal devaluation of women's friendships. In other words, sororities are not taken seriously because they are sites where friendships between women are prioritized, thus flouting social scripts that dictate women should prioritize romantic relationships with men above all other interpersonal bonds.

150. Immigration Policy Divergence of Germany and Japan
Grace Garrigan, Class of 2015
Sponsor: Dr. Alisa Gaunder, Political Science Department

Immigration policies are important because they influence political and economic participation. Looking at immigration and citizenship policies in Germany and Japan, this paper will argue that

reunification explains why German immigration policies differ from Japan's. Both countries are advanced industrial economies with fascist pasts, both countries started their journey toward democracy as the losers of a devastating war, and both experienced external pressure to liberalize their policies on immigration. Despite these similarities, Germany now has more open immigration laws than Japan. This paper examines why this is the case. Germany was able to open up its system after the constraints of partition were removed while Japan's strict postwar immigration policy continues today despite external and internal pressure. The only push for immigration reform comes from the individual and non-governmental group level, which helps disprove the argument that a cultural school of thought might point toward the reason for divergence.

151. Identity Accommodation of Higher Education Latino Students
Claire Blyth, Class of 2016
Sponsor: Dr. Sandi Nenga, Sociology and Anthropology Department

This article attempts to reveal when and how Latina/os in higher education settings accentuate or emphasize their racialized identity through the performance of *Latinidad*. This study examines Goffman's "impression management," which describes life as a constant performance and one that is always in flux because it is being informed by different settings and audiences. Goffman describes impression management as the attempt to control the way others perceive you. But rather than using "Impression Management" as a way of explaining Latina/o identity performance, this study introduces the term "Identity Accommodation." Identity Accommodation frames the actor's performance in a racialized perspective and recognizes that due to societal stratification based on race, the actors may not have full autonomy in their identity performance. Twenty-four in-depth interviews were conducted. The interview questions covered topics of transitioning to college life, social life, and academics. This study's results support the idea that assimilation induces the minimization of *Latinidad*. Whites and non-Latina/os have grown accustomed to this and expect *Latinidad* to be minimized most of the time. The results show that Whites/non-Latina/os widely believe that the only time it is applicable for *Latinidad* to be emphasized is when it is prompted by a setting or person. Because assimilation pressures communicate to Latina/os that in order to be successful they must minimize an important part of themselves, it has a considerable impact on the way Latina/o students perform in the context of a university classroom.

152. Tracing Black Gospel Music Through History
Indigo Morgan, Class of 2015
Sponsor: Dr. Elaine Craddock, Religion Department

I have created a classroom course that covers the basic history of black gospel music. The course's relevance comes from the forgotten and often untold stories of the black community and their augmentation of old gospel hymns and spirituals. Primarily the class will focus on how black gospel is influenced and shaped by the struggles of the black community since slavery. Southwestern needs a course like this one, that not only follows the historical events of the black community, but the personal and intimate struggles they went through (and still are going through today). This course takes a look at the history of black gospel music in the United States. As such, it is designed for anyone who is interested in Religious Studies, Race and Ethnicity Studies, as well as Anthropology and Sociology. Students will trace the birth of 'negro spirituals' and the beginnings of lining out, or Dr.Watts style of calling and responding. We will also cover basic formations of black gospel music, and understand what makes it unique from other forms of gospel music. After the early formations of 'negro spirituals' students will do in

depth research on the positions of the black community and their response to social issues throughout gospel music, up to today's modern forms of black gospel. Naturally, by tracing the history of black gospel music we will be following a timeline of how the black community has been shaped throughout their history in the United States.

153. Courts and Environmental Policy Making in Germany and Japan
Sarah Coe, Class of 2017
Sponsor: Dr. Alisa Gaunder, Political Science Department

This research compares the roles the German and Japanese judiciaries have played in environmental policy making in the two countries. After losing WWII, both Germany and Japan industrialized quickly, experiencing impressive economic growth rates described in both countries as economic miracles. With industrialization, though, came environmental issues to which both countries eventually responded strongly, implementing environmental policies that have been praised in respect to other industrialized nations. This research looks at what direct and indirect roles the judiciary has played in each country as they created these policies and then considers other factors that influenced environmental policy making, including civil movements, the bureaucracy, and political parties. The role of courts in policy making is important to study because it relates to both the checks and balances within government and also concerns of the judiciary overstepping and infringing on the separation of powers. I expect to argue that even though the judiciary was not the largest influential factor, it still had a significant impact on environmental policy making in both Germany and Japan.

154. Rates of Recapture in *Eurycea naufragia* Salamanders at Swinbank Spring
Samuel Guess, Class of 2017
Sponsor: Dr. Benjamin Pierce, Biology Department

The Georgetown Salamander, *Eurycea naufragia*, is a neotenic spring and cave-dwelling species recently listed as threatened by the United States Fish and Wildlife Service. These animals are endemic to the San Gabriel River watershed of Williamson County, Texas and are found only in small, isolated populations. Rapid urbanization is threatening all known populations of the salamanders. Knowledge gaps in the ecology of *E. naufragia* need to be addressed to enhance conservation effectiveness. In this study, we examined the effects of body size, reproductive condition, and location of the animal within a spring on rate of recapture. Salamanders were surveyed monthly over a 20-month period. Animals were uniquely identified using spotting patterns on the head. Recapture rate was determined by dividing the number of recaptures over the 20-month period by the number of days between first and last captures. We found no effect of location or body size on rate of recapture. Gravid individuals, determined by the presence of eggs at least once during the 20-month period, exhibited a significantly lower rate of recapture than nongravid individuals. The lower rate of recapture seen in gravid individuals may be associated with egg laying or may represent differences in recapture rates of males and females. This information provides insight into the life history of *E. naufragia* and is critical for effectively managing and protecting these threatened salamanders.

155. Community Engaged Learning the Southwestern Garden
Mary Eleanor Siff, Class of 2017
Sponsor: Ms. Sarah Puffer, Office of Civic Engagement

I will be discussing the Community Engaged Learning Teaching Assistant (CELTA) program in the Southwestern University Community Garden. CELTAs play a number of roles at Southwestern,

both in and out of the classroom. In the Southwestern University Community Garden, the other CELTA and I work together to ensure that faculty have a rich and engaging space to serve as their teaching environment. Both the garden and my work as a CELTA give students and faculty the opportunity to work together in a non-traditional, and engaging space. Being a CELTA has given me unique opportunities to learn to work independently in my management of the garden and its facilities, as well as in coordination with various faculty, departments, and outside organizations. For example, we are currently working with the Native Plant Society of Texas (NPSOT) to create a butterfly garden that will help protect and grow the Monarch butterfly population. As a CELTA I facilitate the work of the NPSOT volunteers, as well as the work of students in classes that are working on the native plants project. My work as a CELTA allows me to support the coursework and research of faculty and students, while allowing the garden to serve as a vital space for where community life and engagement can flourish.

156. Building a Foundation for SU Ecolab
Dakota McDurham, Class of 2016; Caitlin Schneider, Class of 2017
Sponsor: Dr. Bruce Moring, Environmental Studies Interdisciplinary Program

Southwestern University recently began an initiative called Ecolab that has numerous benefits for the University. Ecolab is situated on University owned land near the corner of Highway 29 and Smith Creek Rd. The program began as a tax exemption for the university and has developed into a hands-on research opportunity for students. Current research is limited to chemical water analysis but with the foundation built by this project will expand to include soil quality analysis, macro and microinvertebrate analysis, and further Geographic Information System (GIS) analysis. In order to fully understand the fluvial system present in Ecolab and its interactions with the surrounding environment, a fundamental understanding of the land was needed. This was gained through georeferencing historical aerial imagery to visibly show the change the system has undergone since 1930. A historical background of previous land use was also compiled with the assistance of Special Collections. GIS software was then used to model the flow of water through the fluvial system. In combination, these factors gave a complete understanding of the overall health of the watershed and other factors that historically affected and presently affect the health of the stream. Building off this foundation we will better be able to focus our analysis and have a better understanding of the relationship between the fluvial system and the biota.

157. The Short- and Long-Term Effects of Chronic Methylphenidate
Jessica Morales Valenzuela, Class of 2015; Jeanette Brown, Class of 2015; Kasera Greene, Class of 2015
Sponsor: Dr. Fay Guarraci, Psychology Department

Methylphenidate (MPH; Ritalin™) is a psychomotor stimulant that is prescribed often to adolescents to treat attention-deficit/hyperactivity disorder (ADHD; Retz & Retz-Junginger, 2014). Previous studies have shown that exposure to MPH during adolescence impairs sexual behavior during adulthood in male rats, as measured by a delay in latency to the first mount and intromission (Bolanos et al., 2003). The present study tested the effects of MPH during periadolescence on adult female rat sexual behavior. In Experiment 1, Long-Evans rat pups were randomly selected to receive either 16 days of twice daily MPH 2.0 mg/kg (n=16) or saline (n=12) injections (i.p). On PD 35, rats were tested for general locomotion in an open field, and between PD 71 and PD 78 rats were tested for sexual behavior by being given a choice between a sexually active male rat and a stimulus female rat (i.e., partner preference test). Results showed that MPH-treated females spent significantly more time with the male stimulus animal

than the vehicle-treated females. In Experiment 2, the females from Experiment 1 were used to evaluate the effects of a recreational dose (10 mg/kg) of MPH on sexual behavior in a partner preference test (~ PD 90). MPH-treated females spent significantly less time with the male stimulus animal then the vehicle treated females, and spent slightly more time with the female stimulus animal. These results show that MPH administration during adolescence, as well as recreational doses of MPH taken during adulthood, significantly disrupt typical mating behavior in female rats.

158. Seeing Trash Differently
Kalyn Kane, Class of 2017
Sponsor: Dr. Erika Berroth, Modern Languages and Literatures Department (German)

Resource demand and waste are destructive problems. Effects from these include climate change, displacement due to natural disasters, water contamination, drought, desertification, and extinction. There is a cycle that is not being completed through resources being unsustainably exploited, used, and then thrown away without any regard for their inherent value. This process is an ever-growing disaster that needs to be replaced with sustainable practices. Rather than thinking about convenience and personal gain, people would benefit from understanding their social and environmental impacts. A small step towards this change is to intervene with resource extraction and reducing contributions to landfill. Examples could include using old pallets to create a new desk, returning food scraps back to the soil to enhance soil quality, or trading and reselling items in order to reduce resource demand and waste.

159. An Empirical Evaluation of a 2-approximation for the K-Center Problem
Christine Harbour, Class of 2016; Jordan King, Class of 2015
Sponsor: Dr. Barbara Anthony, Mathematics and Computer Science Department

Despite recent advances in computer science, there are many important problems where the computational time is exponential in the size of the problem, with no hope of improvement. Problems such as these are known as NP-complete, and cannot be solved in polynomial time. Yet, this intractability does not negate the relevance of the problems. As such, approximation algorithms are an important strategy in finding provably 'good enough' solutions. While much work has focused on finding these algorithms and proving bounds on their performance, less work has been done on determining how they behave in practice on various data sets.
We conduct an empirical evaluation of a well-known approximation algorithm for the metric k-center problem. In the metric k-center problem, we are given a set of vertices with specified distances between each pair of vertices, and are required to find a placement of k centers minimizing the distance between each vertex and the closest center. Our experimental results focus on 'pre-clustered' sets of vertices (which could represent typical behavior in population concentration), pseudorandom Euclidean points, and uniformly-distributed points on a circle. Based upon the behavior of the approximation algorithm, we develop and test a heuristic targeted at improving performance when k is small. Our results indicate that the experimental performance can often be significantly be better than the approximation guarantee, although there are some cases where the addition of one center can take the performance from near-optimal to the limits of the guarantee, and vice versa.

160. Innovation Creates: An Analysis of the Role of High-Technology Industries Within Modern Germany and Japan
Sam Ashley, Class of 2016
Sponsor: Dr. Alisa Gaunder, Political Science Department

This study examines how modern Germany and Japan have taken very different steps to foster high-technology industries within their countries. There have been different economic policies, agencies, and government incentives put into place by each of these countries yet through these high-tech industries, jobs have been created, their economies have become stronger and more small businesses have been allowed to develop. By looking at key high-technology industries, the pharmaceutical industry, information technologies and the biotechnology industry for example, all will combine to illustrate the effects that high-tech industries have on the economies of each Germany and Japan. Massive amounts of government funding as well as venture capitalist funding has gone into the high-tech industries of each country making it important to study the effects that they have on each economy. There is also a social benefit factor experienced in the countries who receive technology transfer because of high-tech industries. The technology which may be farther ahead in one country, when brought to another country which may not have the same technology present, provides obvious benefits that both Germany and Japan can use to their advantage.

161. Effect of Estradiol (E2) on the Invasive Capability of HEC-1A and HEC-1B Endometrial Adenocarcinoma Cell Lines
Taylor Vickers, Class of 2016
Sponsor: Dr. Maria Cuevas, Biology Department

Recent studies have indicated a role for E2 in tumor initiation and progression through its promotion of the proliferative (cell division), migratory and invasive capabilities of cells. Cells' migratory and invasive capabilities (movement of cells from one area to another) is central to achieving functions like wound repair, cell differentiation, embryonic development and metastasis of tumors. Whereas tumors that are localized in the tissue of origin are rarely life threatening, the metastasis of tumors to secondary organs accounts for the majority of cancer-related deaths. The current research project is specifically concerned with understanding the metastatic processes involved in endometrial cancer, one of the most common women's reproductive cancers in the US. The objective of the present study was to determine if increasing levels of estrogen (E2) and tamoxifen (4OHT) affect the invasive potential of the endometrial HEC-1A and HEC-1B adenocarcinoma cell lines. The invasive potential was determined using a Boyden chamber with 8 mm pore size polycarbonate membrane coated with ECMatrix. Cells were starved for 24 h followed by 24 h exposure to different E2 concentrations (0-100 nM). Preliminary data showed a biphasic effect of E2 on HEC-1A, whereas we observed a dose-dependent inhibition on HEC-1B invasive capabilities.

162. Effect of Estradiol on Occludin Expression in the Endometrial in the Endometrial Adenocarcinoma Cell Lines HEC-1A and HEC-1B
Morgan Gallo, Class of 2015
Sponsor: Dr. Maria Cuevas, Biology Department

According to the American Cancer Society, endometrial cancer is the most common female reproductive cancer in the United States with an incidence of 1 in 37 women. Alterations of tight junction (TJs) proteins have been reported in a number of endometrial and other human cancers. Occludin is one of several TJ proteins that contributes to the correct assembly and function of TJs. In addition, disruption of TJs function as a result of occludin truncation has been observed in cervical epithelial cells in response to treatment with estrogen. While disruption of TJs has been associated with tumorigenesis, few studies have investigated the role of occludin in the development and progression of endometrial cancer. In this study we evaluated the possible effects of estradiol (E2) and 4-hydroxytamoxifen (4-OHT) treatments on occludin expression in

HEC-1A and HEC-1B endometrial cancer cell lines. Occludin expression levels were determined using immnunoblot analysis and densitometry. Our results show that HEC-1A cells overexpressed three occludin isoforms (46, 58 and 65 kDa), whereas HEC-1B expressed only the 46 kDa isoform. After treatment with 0-100 nM E2, we observed a biphasic effect on occludin expression in both cell lines with the lowest levels of occludin expression at 50 nM E2 for all isoforms. In contrast, when cells were treated with 4-OHT, we observed only the 46 kDa isoform in both HEC-1A and HEC-1B cancer cell lines. In addition, treatment with 4-OHT resulted in a dose-dependent inhibition on the expression of the 46 kDa occludin isoform.

163. Spread of Invasive *Pomacea maculata*, Perry, 1810 (*Ampullariidae*) in the Southwestern United States
Carson Savrick, Class of 2015
Sponsors: Dr. Romi Burks, Biology Department and Dr. Kenneth Hayes, Assistant Professor of Biology at Howard University

Invasive species impact ecosystems by competing with native taxa, altering habitats and facilitating introductions of parasites. *Pomacea maculata* represents a rapidly spreading non-native species of apple snail that threatens native biodiversity, agriculture and public health in the southeastern United States. Previous work indicates two introductions of *P. maculata* from South America into the United States, initially Florida and Texas, from populations in Brazil and Argentina, respectively. Recent distributional maps (USGS) and recent data indicate that the snails have spread to Alabama via Florida, but the origins of more recently established populations in Louisiana, Mississippi, and Georgia remain uncertain. To test the hypothesis that these recently established populations are the result of spread from geographically close states (Florida or Texas) that already contain established populations, we will have sequenced a portion of the cytochrome c oxidase subunit I gene from 206 individuals from multiple sites in Texas, Louisiana, Mississippi, Georgia, Florida and Alabama and constructed a phylogenetic tree to clarify identity of the invaders. Haplotype analyses will be used to evaluate the routes of spread and to better understand population structure across the invaded range. Although exact routes of spread have yet to be determined, it is suspected that recreational boat traffic along with the aquatic plant trade and aquarium industry are major contributors. Future work will include screening all samples for rat lungworm, *Angiostrongylus cantonensis*, which causes angiostrongyliasis in humans. These data will contribute to our understanding of the continued spread and potential impacts of *P. maculata* and congenerics.

- Awarded Top Undergraduate Oral Presentation in Freshwater Science for this talk at the 2015 Texas Academy of Science Meeting.

164. A Tale of Two Species: Comparative Phylogeography and Genetic Diversity of *Pomacea canaliculata* and a Putative Cryptic Congeneric in the Rio de la Plata Basin
Sofia Campos, Class of 2016
Sponsor: Dr. Romi Burks, Biology Department

The Wallacean shortfall refers to the fact that the biogeography of most known taxa remains unresolved, especially for invertebrates. Phylogenetic studies give insights to interspecific genetic diversity and may reveal cryptic species, whereas phylogeography studies can provide a clearer understanding of how and why intraspecific diversity is distributed across the geographic landscape. High diversity and abundance combined with presumed wide distributions make *Pomacea* species good candidates for the study of comparative phylogeography. To examine population structure of *Pomacea canaliculata* and a newly discovered congeneric (Hayes unpublished), we collected individuals from 23 sites across their native range within Uruguay.

We sequenced COI from 56 of these samples and conducted phylogenetic analyses with previous published data to identify species. Haplotype networks were constructed for both species to examine the distribution of intraspecific genetic diversity and population structure. Preliminary results indicate that historical marine incursions in the Rio de la Plata region may have played a role in shaping the population structure and distribution of both these species. These data also indicate that *Pomacea canaliculata* exhibits higher intraspecific genetic diversity than *Pomacea sp*., but further analyses are needed to verify this pattern. Although substantial analyses remain to be completed, we hypothesize that *P. canaliculata* and *P. sp*. established their current ranges in Uruguay following marine incursions from their southern and northern refugial populations, respectively. Continued analyses and additional sequence data should provide more detailed support for these patterns and reveal insights into the evolution and biogeography of these two abundant species.

165. Cling on Me: Impacts of Settlement of Invasive *Limnoperna fortune* (Dunker, 1857) on the Native *Pomacea canaliculata* (Lamark, 1822) in Uruguay
Averi Segrest, Class of 2016
Sponsor: Dr. Romi Burks, Animal Behavior Interdisciplinary Program

When exotic species invade, new interspecific interactions may yield negative impacts on native species. *Limnoperna fortunei*, a bivalve native to Southeast Asia, was first recorded in South America in the early 1990s. This highly invasive bivalve usually settles on hard, stationary substrates, but recent studies confirmed settlement on living gastropods. Field observations in Uruguay found that *L. fortunei* settle on *Pomacea* species, but implications of settlement have not been investigated. Given the likelihood of overlapping ranges for these spreading species in native and exotic habitats, we examined potential impacts of bivalve attachment to shells of *P. canaliculata.* We conducted experiments to determine if adult *P. canaliculata* altered activity frequencies (feeding, mating, lung ventilation, resting) *when L. fortunei* were attached. We attached *L. fortunei* shells filled with sand (to simulate weight of live bivalves) to male and female *P. canaliculata* shells (3 each per trial) and observed changes in activity relative to paired controls with no bivalves. Trials (N=5) were conducted from 21 December 2014 to 04 January 2015 in Maldonado, Uruguay. Trials lasted 48 hours with 30 minute observations every four hours. Preliminary results indicate that snails with bivalves attached exhibit reduced non-mating activities, which may have implications for fecundity as less time foraging may reduce reproductive output. While reduced fecundity may not significantly impact prolific reproducers like *P. canaliculata*, other less fecund gastropods might experience dramatic negative impacts when *Limnoperna* invade. Future work will examine other species with *Limnoperna* attached to determine if there are parallel interactions.

166. Influence of Plant Maturity on Anthocyanin Levels, Phenolic Composition, and Antioxidant Properties of 3 Purple Basil (*Ocimum basilicum L*.) Cultivars
Katie McCance, Class of 2015
Sponsor: Dr. Emily Niemeyer, Chemistry and Biochemistry Department

Phenolic acids and anthocyanins are secondary metabolites synthesized by plants that are known to confer an array of health benefits to humans, including antioxidant, anti-inflammatory, anti-carcinogenic, and neuroprotective effects. The purpose of this study is to examine the effect of plant maturity on the development of anthocyanins and phenolic acids in three varieties of purple basil (*Ocimum basilicum L*.) and to determine the contribution of these compounds to the herb's overall antioxidant capacity. Cultivar did not have a significant effect on phenolic acid concentrations, but plant maturity significantly influenced total phenolic levels

($p < 0.01$) as well as concentrations of individual phenolics, including caffeic ($p < 0.01$), p-coumaric ($p < 0.01$), caftaric ($p < 0.01$), gentisic ($p = 0.033$), chicoric ($p < 0.01$), and rosmarinic acids ($p < 0.01$). Cultivar ($p < 0.01$) and plant maturity ($p < 0.01$) significantly influenced the total anthocyanin content as well as the concentrations of the four most abundant individual anthocyanins. Plant maturity was also shown to have a significant effect on measured antioxidant capacities. Overall, the cultivar and the maturity of basil at the time it is harvested play critical roles in the herb's phenolic and anthocyanin composition as well as its antioxidant properties.

- Katie McCance's work placed in the top 10% of all research in Agricultural and Food Chemistry division at the ACS national meeting in 2014 and 2015.

INDEX