

TENNESSEE EXPERIENTIAL LEARNING SYMPOSIUM + UNDERGRADUATE SOCIAL SCIENCE SYMPOSIUM

Combined Conference | October 20–21, 2016

TENNESSEE EXPERIENTIAL LEARNING SYMPOSIUM

October 21, 2016



UNDERGRADUATE SOCIAL SCIENCE SYMPOSIUM

October 20–21, 2016



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Tennessee STEM Education Center
Science • Technology • Engineering • Math

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Welcome to Joint Conferences
Tennessee Experiential Learning Symposium (TELS)
and
Undergraduate Social Science Symposium (USSS)

We are pleased you participating in the 2nd Annual Tennessee Experiential Learning Symposium (TELS) and/or the 25th Annual Undergraduate Social Science Symposium (USSS) which are being jointly hosted at Middle Tennessee State University (MTSU) October 20-21, 2016. TELS began in 2015 at the University of Tennessee Knoxville to provide a broad forum for undergraduates from not-for-profit institutions of higher education across Tennessee to present their learning experience in high-impact practices including undergraduate research, experiential learning, service learning, and study abroad. For 25 years, USSS has been providing opportunities for students engaged in these same high impact practices who identify with the social sciences. Both offer students an opportunity to present work orally or by poster. USSS also allows panels and other presentation options.

TELS activities are scheduled for Friday, October 21, 2016. USSS keynote and oral presentations are Thursday, October 20, with additional presentations and a joint poster session on Friday, October 21, 2016. There is a career and professional fair on Friday from 10:00 to 2:00 PM open to all students. Please take time to chat with the visiting representatives about opportunities in their various organizations.

Thank you to Dr. Marisa Moazen, Director of Undergraduate Research at UTK for her vision to create TELS and for hosting the first TELS event in 2015. Thanks to Provost Mark Byrnes and Dean Robert Fischer, College of Basic and Applied Sciences at MTSU, for their support of STEM education and these events. Special thanks to Dr. Jackie Eller, Vice Provost for Research and Dean of the College of Graduate Studies at MTSU for her financial support to make the conferences possible. Thanks to the staff of the Tennessee STEM Education Center at MTSU, for their help and support in organizing the TELS Conference. Lastly, thanks to my TELS co-host, Dr. Andrienne Friedli, Director of Undergraduate Research at MTSU, and to Dr. Andrew Wyatt, the Organizer of the USSS Conference for their efforts in organizing the events.

Students should thank their mentors and teachers for making these high impact practices part of their learning experience as an undergraduate. Through these experiences, you have participated in independent learning that is characteristic of graduate education. We hope you will consider graduate education in your future.

Enjoy your time at TELS and/or USSS. Talk with someone you do not know about your learning experience and the opportunities to leverage this into the next phase of your education and career. Please let us know if there is anything we can do to make your experience more productive.



Tom Cheatham
Director, Tennessee STEM Education Center

At a Glance

TELS Schedule at a Glance (Friday, October 21, 2016)

Time	Activity	Location
8:00 – 8:25 am CT	Registration, light breakfast	Ballroom Lobby
8:30 – 9:15	Welcome and Brief Plenary Talk	Ballroom
9:25 – 10:15	Breakout Session 1 A. Improving Lives & Community B. Culture, Heritage & Economy C. Science, Technology & Society	STU 220A STU 221B STU 224
10:00 – 2:00	Recruiter Fair	Ballroom Lobby
10:25 – 11:15	Breakout Session 2 A. Improving Lives & Community B. Culture, Heritage & Economy	STU 220A STU 224
11:30 – 1:30	Lunch Poster Session A 11:30 – 12:30 Poster Session B 12:30 – 1:30	Lobby Ballroom Ballroom
1:40 – 2:30	Breakout Session 3 A. Improving Lives & Community B. Improving Lives & Community	STU 220A STU 224
2:35 – 3:30	Meeting of Associated Faculty/Staff Groups A. Undergraduate Research B. Experiential Learning C. Study Abroad	220A 221B 224

USSS Schedule at a Glance (Thursday & Friday, October 20-21, 2016)

Thursday, October 20		
Time	Activity	Location
8:00 am	Registration	Ballroom Lobby
8:30 – 9:25	Welcome and Paper Awards	Ballroom
9:40 – 11:05	Thematic Plenary and Panel Discussion	Ballroom
11:20 – 12:45 pm	Student Paper Sessions A. Social and Historical Movements B. Study Abroad C. Tattoo Cultures and Practices I	Breakout Rooms STU 220A STU 221B STU 224
1:00 – 2:25	Student Paper Sessions A. LGBTQ+ Research and Activism B. Bodies and Culture C. Tattoo Cultures and Practices II	Breakout Rooms STU 220A STU 221B STU 224
2:40 – 4:05	Keynote Speaker	Ballroom
Friday, October 21		
Time	Activity	Location
8:00 am	Registration	Ballroom Lobby
9:30 – 11:15	Thematic Panel	Ballroom
11:30 – 1:30	Poster Session A 11:30 – 12:30 Poster Session B 12:30-1:30 Student Paper Sessions A. Health and Well-Being Research B. Tattoo Cultures and Practices III	Ballroom STU 220A STU 224
2:00 – 3:30	Film and Discussion	STU Theater

TELS Detailed Schedule
 Friday, October 21, 2016
 MTSU Student Union Building (STU), 2nd Floor

Time (CT)	Activity	Location
8:00 – 8:25 am	Registration, light breakfast	Lobby
8:30 – 9:15	<i>Welcome:</i> Drs. Tom Cheatham and Jackie Eller, Middle Tennessee State University <i>Symposium Overview:</i> Dr. Andrienne Friedli, Middle Tennessee State University <i>Brief Plenary Talk:</i> Dr. Ryan Otter, Professor of Biology, Middle Tennessee State University <i>Title:</i> Rabbit Holes	Ballroom
9:25 – 10:15	Breakout Session 1 <ul style="list-style-type: none"> A. Improving Lives & Communities <ul style="list-style-type: none"> 1. The effects of target-language environment on foreign language acquisition, Sara Alexander, Austin Peay State University 2. How I came to be involved on the fringes of European social change this summer: observations of a student traveling abroad, Jennifer Crow, Middle Tennessee State B. Culture, Heritage & Economy <ul style="list-style-type: none"> 1. Depictions of reverse chivalry in Marie de France’s “Lanval,” Emily Gray, University of Tennessee Chattanooga 2. Misunderstanding the Modern Maya, Sierra Sotelo, Middle Tennessee State Univ. C. Science, Technology & Society <ul style="list-style-type: none"> 1. Synthesis of symmetrical pyridinium-substituted Boron clusters: [closo-B₁₂H₁₂]²⁻ vs. [closo-B₁₀H₁₀]²⁻ derivatives, Muhammad Ali, Middle Tennessee State University 2. Progress toward a series of [closo-B₁₂H₁₂]²⁻ cluster liquid crystals, John Lasseter, Middle Tennessee State University 	STU 220A STU 221B STU 224
10:00 – 2:00	Recruiter Fair	Lobby
10:25 – 11:15	Breakout Session 2 <ul style="list-style-type: none"> A. Improving Lives & Communities <ul style="list-style-type: none"> 1. Focal adhesion kinase inhibition promotes adult olfactory stem cell proliferation via ciliary neurotrophic factor, Dustin Gilmer & Hannah Malone, East Tennessee State University 2. Spatial relationships between food environments and health outcomes, Anagha Uppal, University of Tennessee Knoxville B. Culture, Heritage & Economy <ul style="list-style-type: none"> 1. <i>Que Costa Rica?</i> Nate Dillow & Jasmine Rogers, Roane State Community College 2. 2016 Field School, Christopher Lane, Middle Tennessee State University 	STU 220A STU 224
11:30 – 1:30	Lunch Poster Session A 11:30 – 12:30 (titles, authors and affiliations appear elsewhere) Poster Session B 12:30 - 1:30	Lobby Ballroom Ballroom
1:40 – 2:30	Breakout Session 3 <ul style="list-style-type: none"> A. Improving Lives & Communities <ul style="list-style-type: none"> 1. Service Learning Project: Teenage Pregnancy, Teresa Gilreath, Volunteer State Community College 2. Determinants of life expectancy in Sub-Saharan Africa, Jeanette Stevens, Middle Tennessee State University B. Improving Lives & Communities <ul style="list-style-type: none"> 1. Collaborative Leadership in Research and Design Settings, Dustin Gilmer, East Tennessee State University 2. Displaced persons, misplaced identities: Jewish American Holocaust survivors & the American immigration policy throughout World War II, Harley Davis, Middle Tennessee State University 	STU 220A STU 224
2:35 – 3:30	Meeting of Associated Faculty/Staff Groups <ul style="list-style-type: none"> A. Undergraduate Research B. Experiential Learning C. Study Abroad 	STU 220A STU 221B STU 224

USSS Detailed Schedule
 Thursday, October 20, and Friday, October 21, 2016
 MTSU Student Union Building (STU), 2nd Floor Ballroom

Thursday, October 20

Time	Activity	Location
8:00 am	Registration	Lobby
8:30 – 9:25	<i>Welcome and Paper Awards</i> <i>Opening Plenary Talk:</i> Dr. Rodger Bates, Clayton State University <i>Title:</i> Survivor: Generational Battles	Ballroom
9:40 – 11:05	Thematic Plenary and Panel Discussion <i>Title:</i> Community Roles and Responses to Refugees and Immigrants <i>Organizer and Moderator:</i> Dr. Angela Pharris, MTSU, Social Work	Ballroom
11:20 – 12:45 pm	Student Paper Sessions A. Social and Historical Movements <i>Moderator:</i> Dr. Meredith Dye	STU 220A
	1. Rational in its Irrationality: A Critique of the All Lives Matter Movement and One-Dimensional Society, Elliot Newell, University of Tennessee, Chattanooga 2. Militant Political Activism in the British Women’s Suffrage Movement, Kayla McCrary, Middle Tennessee State University 3. Slaves, Soldiers, and the Shadows of History, Clelie Cottle, Middle Tennessee State University 4. Displaced Persons, Misplaced Identities: Jewish American Holocaust Survivors & the American Immigration Policy throughout World War II, Harley Davis, Middle Tennessee State University	
	B. Study Abroad <i>Moderator:</i> Dr. Andrew Wyatt	STU 221B
	1. 2016 Field School, Christopher Lane, Middle Tennessee State University 2. Five Months of Focus: My Experience Studying Abroad, Kellye Guinan, Middle Tennessee State University 3. How I Came to be Involved on the Fringes of European Social Change This Summer: Observations of a Student Traveling Abroad, Jennifer Crow, Middle Tennessee State University	
	C. Tattoo Cultures and Practices I <i>Moderator:</i> Aaron Deter-Wolf	STU 224
	1. Being a Tattooed Man versus Being a Tattooed Woman, Lauren Scruggs, Middle Tennessee State University 2. Mastectomy Recovery through the Use of Modern Tattooing, Joey O'Dell, Middle Tennessee State University 3. Technology and Body Art, Heather Dallenbach, Middle Tennessee State University 4. Tattooing: Reality Television’s Perception, Makayla Fryman, Middle Tennessee State University	
1:00 – 2:25	Student Paper Sessions A. LGBTQ+ Research and Activism <i>Moderator:</i> Charlotte Archer	STU 220A
	1. Resource Mobilization and the Hierarchy of Rights: Attitudes, Identities, and Outcomes Among LGBTQ+ Populations, Charlotte Archer, Middle Tennessee State University 2. Queer Femme Erasure in the LGBTQ Community, Gennifer DeLille, Middle Tennessee State University 3. Queer Spaces as Sacred Space, Kevin Lewis, Middle Tennessee State University	
	B. Bodies and Culture <i>Moderator:</i> Dr. Ida Fadzillah	STU 221B
	1. Show Me Your Teeth: The Expectations of Dental Perfection and the Costs of Attaining It, Kellye Guinan, Middle Tennessee State University 2. Too Faced: A Cross-Cultural Comparison of Cosmetics in Japan and United States, Katelyn Brooks, Middle Tennessee State University	
<i>(Thursday Schedule Continued Below)</i>		

USSS Detailed Schedule
 Thursday, October 20, and Friday, October 21, 2016
 MTSU Student Union Building (STU), 2nd Floor Ballroom

Thursday, October 20 (Continued)		
Time	Activity	Location
1:00 – 2:25	C. Tattoo Cultures and Practices II <i>Moderator:</i> Aaron Deter-Wolf <ol style="list-style-type: none"> 1. Tattoo Culture of the Amazon, Jon Barkmeier, Middle Tennessee State University 2. The Scarification of the Bétamarribé tribe, Margaret Campbell, Middle Tennessee State University 3. Orang Ulu: The Extinction of a Borneo Tattooing Tradition, Regan Darnell, Middle Tennessee State University 4. The Revitalization and Decolonization of the Maori Tattoo, Macie Orrand, Middle Tennessee State University 5. Scarification in Africa, Amy Conner, Middle Tennessee State University 	STU 224
2:40 – 4:05	Keynote Speaker Dr. Ruth Gomberg-Muñoz, University of Chicago, Loyola <i>Title:</i> Becoming Legal: Immigration Law and Mixed-Status Families	Ballroom
Friday, October 21		
Time	Activity	Location
8:00 am	Registration	Lobby
9:30 – 11:15	Thematic Panel <i>Title:</i> Student Experiences Working with Refugees and Immigrants <i>Organizer:</i> Dr. Ida Fadzillah, MTSU, Anthropology	Ballroom
11:30 – 1:30 pm	Poster Session A 11:30 – 12:30 Poster Session B 12:30 – 1:30 Student Paper Session <ol style="list-style-type: none"> A. Health and Well-Being Research <i>Moderator:</i> <ol style="list-style-type: none"> 1. Determinants of Life Expectancy in Sub-Saharan Africa, Jeanette Stevens, Middle Tennessee State University 2. Spatial Relationships Between Food Environments and Health Outcomes, Anagha Uppal, University of Tennessee, Knoxville 3. Collaborative Leadership in Research and Design Settings, Dustin Gilmer, East Tennessee State University B. Tattoo Cultures and Practices III <i>Moderator:</i> Aaron Deter-Wolf <ol style="list-style-type: none"> 1. Henna and Appropriation: A Brief Look at the Growing Trend of Henna Application in the Western World, Kellye Guinan, Middle Tennessee State University 2. Modern Socialization: Stick and Poke Tattooing, Clara Robnett, Middle Tennessee State University 3. The Renaissance of Tribal tattoo in Hawaii, Gretchen Sims, Middle Tennessee State University 4. Slavery and Body Modification, Madeline Laderoute, Middle Tennessee State University 	Ballroom STU 220A STU 224
2:00 – 4:00	Film and Discussion <i>Organizer:</i> Dr. Shannon Hodge, MTSU, Anthropology	STU Theater

TELS and USSS Poster Schedule

Poster Session A, 11:30 - 12:30 CST, Ballroom (Posters 1-22)

Poster	Name	Title	Institution
1	Dillow, Nate Rogers, Jasmine	<i>Que Costa Rica?</i>	Roane State Community College
2	Crow, Jennifer	How I came to be involved on the fringes of European social change this summer: Observations of a student traveling abroad	Middle Tennessee State University
3	Gilmer, Dustin	Collaborative leadership in research and design settings	East Tennessee State University
4	Stevens, Jeanette	Determinants of life expectancy in Sub-Saharan Africa	Middle Tennessee State University
5	Farmer, Ashley	Cultural and emotional reactions to the Harry Potter series	Milligan College
6	Armstrong, Scott	Continued characterization and structure-activity relationship analysis of an antimicrobial oligomer peptoid against the fungi <i>Cryptococcus</i> spp.	Middle Tennessee State University
7	Baltz, Robert	Uric acid aensing with multi-walled carbon nanotubes modified with zinc oxide nanoparticles and enzymes	Middle Tennessee State University
8	Holman, Marcel	Establishment of a high performance liquid chromatography method for Vitamin A in Nutrition Department	University of Tennessee Knoxville
9	Doski, Pel "Bell"	Host gender's effect on gene expression in clinical strains of <i>C. neoformans</i>	Middle Tennessee State University
10	Jacobs, Matthew	Is breed-specific legislation effective?	Tennessee Technological University
11	Fitzwater, Brooke	The effects of predator kairomones and starvation on <i>Tegula tridentata</i> behavior in a Chilean subtidal ecosystem	Middle Tennessee State University
12	Nunn, Clayton	<i>Arabidopsis thaliana</i> NIP2;1 is a root specific lactic acid channel induced during hypoxia stress	University of Tennessee Knoxville
13	Kozul, Mia Cantrell, Dalton	Migration with dignity	Middle Tennessee State University
14	Hoefler, Laura	Creating Digital Structure Contour maps of Middle Tennessee	Middle Tennessee State University
15	Mathis, India Ali, Ali	Evaluating allele-specific gene expressions of WFS1 gene in association with rainbow trout muscle mass	Middle Tennessee State University
16	Rankhorn, Brenda	Healthcare barriers for Spanish speakers	Milligan College
17	McCrary, Kayla	Right wing extremism in Europe: The cases of the United Kingdom and France	Middle Tennessee State University
18	Cross, Molly	Phenomenon of the working man: A historical analysis of theatrical masculinity	University of Tennessee Knoxville
19	McCroskey, J. Ali, Ali	Correlation between allele-specific expression of LAT-4 gene and muscle mass in rainbow trout	Middle Tennessee State University
20	Bjerre, Karen	Hockey moms and abortion Barbies: An examination of gender differences in news media coverage	University of the South
21	Meggison, Andrea	Comparing computerized performance measures of executive function to self-report measures of executive function	Middle Tennessee State University
22	Davis, Rachel	Student and faculty knowledge of UTC's policy on sexual misconduct, relationship violence, and stalking	University of Tennessee Chattanooga

TELS and USSS Poster Schedule

Poster Session B, 12:30 - 1:30 CST, Ballroom (Posters 23-44)

23	Moore, Roderick	The effectiveness of chlorine dioxide gas as a bactericidal agent	Middle Tennessee State University
24	Aslinger, Holly Watts, Nicholas	Study abroad at the Romanian ASTRA Museum	Middle Tennessee State University
25	Nieto, Aldair	Human hand gesture recognition, using the Microsoft Kinect sensor	Middle Tennessee State University
26	Clingensmith, Rachel	Mother's breastfeeding experiences as a factor of self identity in youth	East Tennessee State University
27	Noe, Jesse	Azaaurones an unexplored scaffold for biological activity	Middle Tennessee State University
28	Hahn, Miranda	A month in the Brazilian Amazon	Middle Tennessee State University
29	Raborn, Sarah	Surface characterization of biochars, switchgrass (SG), tall fescue (TF), and cellulose (CC) produced at 500, 700, and 900°C by XPS,	Middle Tennessee State University
30	Lancaster, Amber	A cross-cultural analysis of false confessions: A literature review	Middle Tennessee State University
31	Rahmani, Salman	Drag analysis of 3-dimensional rearward facing step	Middle Tennessee State University
32	Bates, Melinda	Assistive technology: Enhancing older adults' well-being	Middle Tennessee State University
33	Robinson, Summer	Hidden dangers in color powders	Middle Tennessee State University
34	McCrary, Kayla	Militant political activism in the British women's suffrage movement	Middle Tennessee State University
35	McCrary, Kayla	Brexit: A comprehensive analysis of Britain's vote to exit the European Union	Middle Tennessee State University
36	Sharp, Calla	A review of literature for "Why children's opinions matter: A qualitative study on preschool children's cognitive construct in the early childhood classroom"	Middle Tennessee State University
37	Shind, Joy	Promoting global understanding: An in-depth study of the neo-classical frescos located at Villa Di Geggiano, Siena Italy	Middle Tennessee State University
38	Wilson, Sana	Searching for the missing: A content analysis of non-binary orientation and gender identity in significant social science journals (preliminary results)	Middle Tennessee State University
39	Tyer, David Churchill, Joseph Mohammed, Asfah Lopez, Claudia	Synthesis of novel phosphine ligand with NH linker for ligand cooperative catalysis	Middle Tennessee State University
40	Uhls, Amanda	The effect of sample date on the propagation success rate of the grape, <i>Vitis aestivalis</i> 'Norton/Cynthiana.'	Middle Tennessee State University
41	Welchance, William	The generalized pitcher problem	Middle Tennessee State University
42	Woods, Justin	Child – resistant packaging redesign	Middle Tennessee State University
43	Lechleiter, Robert Ali, Ali Al-Tobasei, Rafet	Deletion in WFS1 gene is associated with muscle tenderness in rainbow trout	Middle Tennessee State University
44	Temuri, Hoor	How increasing competition of residency positions in the U.S. affects ECFMG certified IMG doctors: A qualitative study	University of Tennessee Knoxville

All TELS and USSS Presentations by Last Name of First Author

Name	Major	Institution	TELS Oral	TELS Poster	USSS Oral	USSS Poster	Abstract Page
Alexander, Sara	History	Austin Peay State University	•				13
Ali, Muhammad	Chemistry	Middle Tennessee State University	•				13
Archer, Charlotte	Sociology	Middle Tennessee State University			•		14
Armstrong, Scott	Biochemistry	Middle Tennessee State University		•			14
Aslinger, Holly Watts, Nicholas	Anthropology Anthropology	Middle Tennessee State University		•		•	15
Baltz, Robert	Chemistry	Middle Tennessee State University		•			15
Barkmeier, Jon	Anthropology	Middle Tennessee State University			•		16
Bates, Melinda	Social Work	Middle Tennessee State University				•	16
Bjerre, Karen	Politics	University of the South				•	16
Brooks, Katelyn	Anthropology & Communication Studies	Middle Tennessee State University			•		17
Campbell, Margaret	Anthropology	Middle Tennessee State University			•		17
Clingensmith, Rachel	Clinical Psychology	East Tennessee State University		•		•	17
Cottle, Clelie	Anthropology	Middle Tennessee State University			•		18
Cross, Molly	English Literature	University of Tennessee Knoxville		•		•	18
Crow, Jennifer	Sociology	Middle Tennessee State University	•	•	•	•	18
Dallenbach, Heather	Anthropology	Middle Tennessee State University			•		19
Darnell, Regan	Anthropology & Biology	Middle Tennessee State University			•		19
Davis, Harley	English	Middle Tennessee State University	•		•		19
Davis, Rachel	Sociology	University of Tennessee Chattanooga				•	20
DeLille, Gennifer	Chemistry	University of Tennessee Chattanooga			•		20
Dillow, Nate Rogers, Jasmine	Business Business	Roane State Community College	•	•			21
Doski, Pel	Biology	Middle Tennessee State University		•			21
Farmer, Ashley	Psychology & Communications	Milligan College		•			22
Fitzwater, Brooke	Biology	Middle Tennessee State University		•			22
Gilmer, Dustin	Biomedical Sciences	East Tennessee State University	•	•	•	•	23
Gilmer, Dustin Malone, Hannah	Biomedical Sciences	East Tennessee State University	•				23
Gilreath, Teresa	Health Information Technology	Vol State Community College	•				24
Gray, Emily	English	University of Tennessee Chattanooga	•				24
Guinan, Kellye	Anthropology & Foreign Language	Middle Tennessee State University			•		24
Guinan, Kellye	Anthropology & Foreign Language	Middle Tennessee State University			•		25
Guinan, Kellye	Anthropology & Foreign Language	Middle Tennessee State University			•		25

All TELS and USSS Presentations by Last Name of First Author (Continued)

Name	Major	Institution	TELS Oral	TELS Poster	USSS Oral	USSS Poster	Abstract Page
Hahn, Miranda	Anthropology	Middle Tennessee State University		•		•	25
Hoefer, Laura	Geoscience	Middle Tennessee State University		•			35
Holman, Marcel	Nutrition	University of Tennessee Knoxville		•			26
Jacobs, Matthew	Biology	Tennessee Technological University		•			26
Kozul, Mia Cantrell, Dalton	Global Studies History	Middle Tennessee State University		•			27
Laderoute, Madeline	Anthropology	Middle Tennessee State University			•		27
Lancaster, Amber	Psychology	Middle Tennessee State University		•		•	28
Lane, Christopher	Anthropology	Middle Tennessee State University	•		•		28
Lasseter, John	Chemistry	Middle Tennessee State University	•				29
Lechleiter, Robert Ali, Ali Al-Tobasei, Rafet	Biology Molecular Bioscience Computational Science	Middle Tennessee State University		•			29
Lewis, Keven	Liberal Arts	Middle Tennessee State University			•		30
Mathis, India Ali, Ali	Biochemistry Molecular Bioscience	Middle Tennessee State University		•			30
McCrary, Kayla	International Relations	Middle Tennessee State University		•			31
McCrary, Kayla	International Relations	Middle Tennessee State University				•	31
McCrary, Kayla	International Relations	Middle Tennessee State University				•	31
McCroskey, Jasmine Ali, Ali	Biology Molecular Bioscience	Middle Tennessee State University		•			32
Meggison, Andrea	IO Psychology	Middle Tennessee State University		•			32
Moore, Roderick	Biochemistry	Middle Tennessee State University		•			33
Newell, Elliot	Sociology	University of Tennessee Chattanooga			•		33
Nieto, Aldair	Mechatronics Engineering	Middle Tennessee State University		•			33
Noe, Jesse	Biochemistry	Middle Tennessee State University		•			34
Nunn, Clayton	Biochemistry/Cellular & Molecular Biology	University of Tennessee Knoxville		•			34
O'Dell, Joey	Anthropology	Middle Tennessee State University			•		35
Orrand, Macie	Anthropology	Middle Tennessee State University			•		35
Raborn, Sarah	Chemistry	Middle Tennessee State University		•			36
Rahmani, Salman	Aerospace Technology	Middle Tennessee State University		•			36
Rankhorn, Brenda	Exercise Science	Milligan College		•			36
Robinson, Summer	Biochemistry	Middle Tennessee State University		•			37
Robnett, Clara	Anthropology	Middle Tennessee State University			•		37
Scruggs, Lauren	Anthropology	Middle Tennessee State University			•		37
Sharp, Calla	Early Childhood Education	Middle Tennessee State University		•			38
Shind, Joy	Art Education	Middle Tennessee State University		•			38

All TELS and USSS Presentations by Last Name of First Author (Continued)

Name	Major	Institution	TELS Oral	TELS Poster	USSS Oral	USSS Poster	Abstract Page
Sims, Gretchen	Organizational Communications & Global Studies	Middle Tennessee State University			•		38
Sotelo, Sierra	Music Business	Middle Tennessee State University	•				39
Stevens, Jeanette	International Relations & Global Studies	Middle Tennessee State University	•	•	•	•	39
Temuri, Hoor	English	University of Tennessee Knoxville		•		•	40
Tyer, David Churchill, Joseph Mohammed, Asfah Lopez, Claudia	Biochemistry Biochemistry Chemistry Chemistry	Middle Tennessee State University		•			40
Uhls, Amanda	Biology	Middle Tennessee State University		•			41
Uppal, Anagha	Computational Social Science	University of Tennessee Knoxville	•		•		41
Welchance, William	Mathematics	Middle Tennessee State University		•			42
Wilson, Sana	Social Work	Middle Tennessee State University				•	42
Woods, Justin	Physics & Mathematics	Middle Tennessee State University		•			43

All Presentations by Conference (TELS or USSS) and Type (Oral or Poster)

TELS Oral Presentations by Last Name of First Author

Name	Major	Institution	TELS Oral	TELS Poster	USSS Oral	USSS Poster	Abstract Page
Alexander, Sara	History	Austin Peay State University	•				13
Ali, Muhammad	Chemistry	Middle Tennessee State University	•				13
Crow, Jennifer	Sociology	Middle Tennessee State University	•	•	•	•	18
Davis, Harley	English	Middle Tennessee State University	•		•		19
Dillow, Nate Rogers, Jasmine	Business Business	Roane State Community College	•	•			21
Gilmer, Dustin	Biomedical Sciences	East Tennessee State University	•	•	•	•	23
Gilmer, Dustin Malone, Hannah	Biomedical Sciences	East Tennessee State University	•				23
Gilreath, Teresa	Health Information Technology	Volunteer State Community College	•				24
Gray, Emily	English	University of Tennessee Chattanooga	•				24
Lane, Christopher	Anthropology	Middle Tennessee State University	•		•		28
Lasseter, John	Chemistry	Middle Tennessee State University	•				29
Sotelo, Sierra	Music Business	Middle Tennessee State University	•				39
Stevens, Jeanette	International Relations & Global Studies	Middle Tennessee State University	•	•	•	•	39
Uppal, Anagha	Computational Social Science	University of Tennessee Knoxville	•		•		41

USSS Oral Presentations by Last Name of First Author

Name	Major	Institution	TELS Oral	TELS Poster	USSS Oral	USSS Poster	Abstract Page
Archer, Charlotte	Sociology	Middle Tennessee State University			•		14
Barkmeier, Jon	Anthropology	Middle Tennessee State University			•		16
Brooks, Katelyn	Anthropology & Communication Studies	Middle Tennessee State University			•		17
Campbell, Margaret	Anthropology	Middle Tennessee State University			•		17
Cottle, Clelie	Anthropology	Middle Tennessee State University			•		18
Crow, Jennifer	Sociology	Middle Tennessee State University	•	•	•	•	18
Dallenbach, Heather	Anthropology	Middle Tennessee State University			•		19
Darnell, Regan	Anthropology & Biology	Middle Tennessee State University			•		19
Davis, Harley	English	Middle Tennessee State University	•		•		19
DeLille, Gennifer	Chemistry	University of Tennessee Chattanooga			•		20
Gilmer, Dustin	Biomedical Sciences	East Tennessee State University	•	•	•	•	23
Guinan, Kellye	Anthropology & Foreign Language	Middle Tennessee State University			•		24
Guinan, Kellye	Anthropology & Foreign Language	Middle Tennessee State University			•		25
Guinan, Kellye	Anthropology & Foreign Language	Middle Tennessee State University			•		25

All Presentations by Conference (TELS or USSS) and Type (Oral or Poster), (Continued)

USSS Oral Presentations by Last Name of First Author (Continued)

Name	Major	Institution	TELS Oral	TELS Poster	USSS Oral	USSS Poster	Abstract Page
Laderoute, Madeline	Anthropology	Middle Tennessee State University			•		27
Lane, Christopher	Anthropology	Middle Tennessee State University	•		•		28
Lewis, Keven	Liberal Arts	Middle Tennessee State University			•		30
Newell, Elliot	Sociology	University of Tennessee Chattanooga			•		33
O'Dell, Joey	Anthropology	Middle Tennessee State University			•		35
Orrand, Macie	Anthropology	Middle Tennessee State University			•		35
Robnett, Clara	Anthropology	Middle Tennessee State University			•		37
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Sims, Gretchen	Organizational Communications & Global Studies	Middle Tennessee State University			•		38
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Participant Abstracts

The effects of target-language environment on foreign language acquisition

Sara Alexander

Senior, History, Austin Peay State University

Mentor: Dr. Norbert Puszkar

My presentation will center on how my study abroad experience in Austria was essential to my language acquisition and greatly improved my German language proficiency, how it enhanced my foreign culture proficiency, how it affected my personal and intellectual growth. I will analyze aspects of my language acquisition in terms of Krashen's natural-method theory (especially his acquisition-learning hypothesis and his input hypothesis) and Bloom's taxonomy (focusing on applying and synthesizing). I will address how the target-language environment of the town and dorms where we stayed, the university we studied at and the classroom settings, the students I studied with were an integral part of the experiential learning experience. Lastly, my presentation will exemplify how this experience allowed me not only to improve in my German language skills, but also formed transferable critical learning skills for my other fields of study, history and geology

Synthesis of symmetrical pyridinium-substituted boron clusters:

[*closo*-B₁₂H₁₂]²⁻ vs. [*closo*-B₁₀H₁₀]²⁻ derivatives

Muhammad O. Ali

Junior, Chemistry, Middle Tennessee State University

Mentors: Piotr Kaszynski and Andrienne C. Friedli

Symmetrical substitution of the [*closo*-B₁₂H₁₂]²⁻ cluster with 4-alkoxypyridinium fragments yields highly fluorescent bis-zwitterionic 1,12-derivatives. This class of compounds is expected to exhibit a nematic phase and contribute to fundamental studies of the effect of dipole and quadrupole moments on phase behavior. The new pyridinium derivatives will be compared to those of the [*closo*-B₁₀H₁₀]²⁻ cluster, which were previously reported.[1,2] Thus, the [*closo*-B₁₂H₁₂]²⁻ dianion is reacted with ArI(OAc)₂ and the resulting mixture of the bis-aryliodonium zwitterions is separated to the corresponding 1,7 and 1,12 derivatives. Both isomers were reacted separately with 4-alkoxypyridine to yield the desired bis pyridinium derivatives. In this presentation we will report progress on the synthesis and characterization of the new compounds and compare with the analogous [*closo*-B₁₀H₁₀]²⁻ derivatives.

Participant Abstracts

**Resource Mobilization and the Hierarchy of Rights:
Attitudes, Identities, and Outcomes Among LGBTQ+ Populations**
Charlotte A. Archer
Graduate Student, Sociology, Middle Tennessee State University
Mentor: Dr. Angela Mertig

This study examines the LGBTQ+ movement, including the various identity subpopulations within the community, in the context of resource mobilization theory and the expectation that a hierarchy of rights exists within social movements, and within social movement organizations (SMOs). Resource mobilization theory states that a movement, and SMOs specifically, must have a narrow and focused agenda to be successful. In conformity with this postulate, social movements often have subordinate populations whose needs, rights, and agendas are relegated to secondary status or are completely subordinated for the sake of the rights of the dominant population. Since the 1990s, two progressive social movements, the Third Wave Feminist Movement and the LGBTQ+ Rights Movement, have challenged this assumption by following and advocating policies that promote intersectionality and inclusion. This study considers whether this inclusive approach pays off by increasing resources through solidarity and movement crossover, and by so doing provides an alternative that allows broader agendas to be effective. To explore these ideas a survey of members of the LGBTQ+ community concerning their involvement, and their perception of the state of LGBTQ+ civil rights, was conducted.

Continued characterization and structure-activity relationship analysis of an antimicrobial oligomer peptoid against the fungi *Cryptococcus* spp.
Scott A. Armstrong
Senior, Biochemistry, Middle Tennessee State University
Mentor: Dr. Kevin Bicker

The Bicker Lab has invested in the research and development of novel antimicrobial peptidomimetic compounds known as peptoids; oligomeric n-substituted glycine amino acid submonomers. The submonomers are linked via solid phase synthesis with amine side chains or side chains that are identical to those attached to the alpha carbon of standard amino acids. Several libraries of peptoid oligomers were created and screened previously and of these libraries, a hit, found possess broad antifungal activity, was identified. Through this research, AEC5 has since been confirmed as a lead and has been characterized against several commercially available antifungal agents such as amphotericin B, fluconazole, and flucytosine. This research is currently conducting a Structure-Activity Relationship (SAR) analysis of AEC5 that may identify potential analogs, or may improve therapeutic potential. Once the SAR study has been completed, we will begin screening the most potent compounds discovered during the SAR work to quantitatively evaluate cytotoxicity in mammalian cells, including HPL1A lung cells, HepG2 hepatocellular carcinoma, NIH/3T3 fibroblasts, and erythrocytes. Further tests to evaluate strong candidates from the SAR study will include mechanism of action studies, serum stability tests, evaluation of broad spectrum antifungal and antibacterial activity, and pharmacokinetics. These tests will further characterize the most promising molecules for their potential to become a drug and are critical to licensing and patenting new antifungal agents.

Participant Abstracts

Study abroad at the Romanian ASTRA Museum

Holly Aslinger

Senior, Anthropology, Middle Tennessee State University

Nicholas Watts

Junior, Anthropology, Middle Tennessee State University

Mentor: Dr. Shannon Hodge

The Transylvanian Association for Romanian Literature and the Culture of the Romanian People, or ASTRA, is an organization in Sibiu, Romania, that oversees several museums, one of which is the ASTRA Museum of Transylvanian Civilization, where the ArchaeoTek Field Museology Workshop takes place annually in June. The ASTRA Museum is home to hundreds of traditional Romanian houses, mills, and workshops, making it an ideal venue for learning the crafts that created its exhibits. The program included workshops in wood working, leather working, pottery, metal working, and painted icon restoration, as well as lectures on museology, and excursions to the museums Brukenthal, Corvin Castle, Bran Castle, Peles Castle, and Rasnov Citadel. Traditional Romanian crafts have survived throughout the ages from the Late Iron Age to the present day, and Romania's museums reflect their resilience through Roman conquest all the way through the tense economic and political atmospheres of the 20th century. The resilience of Romanian crafts and ASTRA's dedication to preserving them has allowed ethnoarchaeology conducted by students and professionals to thrive.

Uric acid sensing with multi-walled carbon nanotubes modified with zinc oxide nanoparticles and enzymes

Robert J. Baltz

Senior, Chemistry, Middle Tennessee State University

Mentor: Charles C. Chusuei

Uric acid is a chemical that is produced in the body following the breakdown of purines commonly found in the mammalian diet. This byproduct poses a unique problem due to its limited solubility in acidic environments. The build-up of uric acid can lead to many health problems, such as gout and kidney disease. The uric acid that is excreted is found in the urine. An easy method to determine the exact concentration of uric acid in the blood would help health professionals quickly and efficiently diagnose patients with increased uric acid concentrations. Carbon nanotubes were applied to glassy carbon electrodes to detect uric acid. Carboxylic acid-functionalized multi-walled nanotubes (COOH-MWNTs) will allow metal oxides and enzymes to bind with them onto the glassy carbon electrode (GCE) surface. ZnO was used to bind to the surface using varied sonication times. We hypothesize that the incorporation of enzyme would further enhance electrochemical sensing performance. The mixture was sonicated for 30, 60, and 75 minutes to give three different ZnO/COOH-MWNT/GCEs. The three composites were used to detect uric acid, and the optimal sonication time was found. The composite with the optimal sonication time was bound with cytochrome C, an enzyme, using Coulombic attraction to increase sensitivity. The effect of the enzyme to increase in sensitivity and selectivity for uric acid detection will be presented.

Participant Abstracts

Tattoo Culture of the Amazon

Jon Barkmeier

Junior, Anthropology, Middle Tennessee State University

Mentor: Professor Aaron Deter-Wolf

The Amazon has always been shrouded in mystery. Many see the dense jungles and untouched landscape as a separate world full of strange and exotic flora, fauna, as well as culture. The indigenous peoples that reside in the Amazon are largely untouched from the outside world. This has preserved much of the culture within the Amazon and allowed them to keep many of their practices, included the art of tattooing. By studying Amazonian cultures, such as the Kayabi, one can see how tattooing is ingrained in their culture and belief system. While their position away from the outside world is slowly becoming compromised due to over-foresting, the Kayabi, and other tribes within the Amazon, continue to practice their ritualistic tattooing in spite of the modern world closing in on them.

Assistive technology: Enhancing older adults' well-being

Melinda Bates

Senior, Social Work, Middle Tennessee State University

Mentor: Dr. Kathleen Darby

According to the National Institute of Health (2016), the number of Americans over the age of 65 is expected to double in 2050 by 40 million, totaling 88 million. Social isolation and loneliness are often associated with aging, and isolated seniors have a 59% greater risk of mental and physical decline than their socially engaged cohort. The purpose of the current research proposal is to design a pilot study around the development, use and evaluation of a self-contained peer-to-peer network for the combined goals of increasing social connectivity and providing access to needed services to enhance the overall well-being of seniors 65 and older. Local agencies servicing the older population will be used to identify participants. The research design will utilize a control and experimental group for comparison. Findings and implications from the pilot will be used to apply for appropriate grant funding and publication with the assistance of my research mentor, Dr. Kathleen Darby.

Hockey moms and abortion Barbies:

An examination of gender differences in news media coverage

Karen Bjerre

Senior, Politics, Sewanee: The University of the South

Mentor: Dr. Melody Crowder-Meyer

Through a content analysis of 1,152 articles covering 20 different gubernatorial races between 2004 and 2014, I examine how the presence of a female candidate in an electoral race affects coverage of that campaign. This project considers the prevalence of gender biases and stereotypes and examines whether or not print media outlets perpetuate these stereotypes or subvert them. Initial analyses suggest that differences in coverage manifest themselves in adjectives used to describe candidates: female candidates were more likely to be described as being honest and compassionate, while male candidates were described as experienced and good leaders. Existing research suggests that voters favor traditionally masculine traits over traditionally feminine traits when evaluating candidates for public office. So, the difference in media coverage may influence female candidates' chances of getting elected, and thereby influence women's descriptive and substantive representation.

Participant Abstracts

Too Faced:

A Cross-Cultural Comparison of Cosmetics in Japan and United States

Katelyn Brooks

Senior, Anthropology and Communication Studies, Middle Tennessee State University

Mentor: Dr. Ida Fadzillah Leggett

Cosmetics allow individuals to paint their culture's image of perfect health onto their face. Make up is able to correct blemishes that appear on skin that can be perceived as being of poor health, such as acne and blotchy skin. Additionally, cosmetic surgeries such as breast augmentation can create an illusion of good health by been seen as an indicator of fertility. While the use of cosmetics most obviously alters physical appearance, it can have an impact on mental health of users and observers. While cosmetics can enhance mental health, such as through increased confidence, it also retains the ability to destroy the same confidence it built. It also can make its wearer appear healthy, but does not guarantee their health. This paper follows the differences in the definitions of ideal health is within the contexts of Japanese and American cultures and how cosmetics have altered those definitions over time.

The Scarification of the Bétamarribé tribe

Margaret A. Campbell

Senior, Anthropology, Middle Tennessee State University

Mentor: Professor Aaron Deter-Wolf

The Bétamarribé tribe are known as the Masters of Scarification throughout Benin. As part of their way of life, these markings have been given to members of the tribe for centuries, and are unique to the member receiving them. In this presentation I will be going over the Bétamarribé tribe's history, culture, and their scarification rituals.

Mother's breastfeeding experiences as a factor of self-identity in youth

Rachel M. Clingensmith

Senior, Clinical Psychology, East Tennessee State University

Mentor: Jason Steadman, Psy. D.

There is overwhelming evidence that breastfeeding is the best source of nutrition for infants. The mother's milk is biologically tailored to fit her child's needs. These physical health benefits are virtually undisputed. However, research regarding possible psychological benefits is deficient. A few studies that have explored a relationship between breastfeeding and psychosocial development looked at whether children who weren't breastfed have more issues with emotional and behavioral disorders. There has been little research concerning whether breastfeeding experiences can predict positive youth self-perceptions. The purpose of this study is to determine whether there is a relationship between the mother's perceived breastfeeding experience and the child's global self-esteem in childhood and later adolescence. We predict that positive maternal attitudes toward nursing will lead to higher global self-esteem. To evaluate this relationship, we measured youth ratings on the Harter Self-Perception Profile, an often used questionnaire designed to engage several aspects of youth self-identity, including global self-worth. We also administered a breastfeeding interview designed specifically for this project. This interview evaluated six dimensions of maternal attitudes toward breastfeeding. We entered these six variables into a logistic regression model to predict youth global self-worth. We also evaluated the moderating effects of social support around breastfeeding and child reactions to breastfeeding, both of which were also rated through self-report. We plan to present preliminary results from approximately 20 participants recruited by the conference date.

Participant Abstracts

Slaves, Soldiers, and the Shadows of History

Clelie Cottle

Sophomore, Anthropology, Middle Tennessee State University

Mentor: Dr. Kevin E. Smith

Evergreen Cemetery was established as the second “city cemetery” of Murfreesboro Tennessee in 1872 and remains an active burial ground today. As a major part of the community landscape, it provides an opportunity to explore the sociocultural landscape of Murfreesboro – including “historically significant” people, those others who are remembered largely by their descendants and relatives, and those who have been “forgotten.” My field research involved examining a series of grave stones in the cemetery, researching who they “were,” and how they relate to both the historic and on-going use of this important place on the Murfreesboro landscape. I will interpret that research in the context of who was moved to that new cemetery from older cemeteries, how and why their families expressed their position in society in the markers, and why others remain unmarked.

Phenomenon of the working man: A historical analysis of theatrical masculinity

Molly Cross

Senior, English Literature, University of Tennessee

Mentor: Dr. Misty Anderson

The cultural revolution of the 18th Century British stage facilitated the discourse on sex politics, class structure, imperialism, and the destabilization of gender roles. The theater acted as a conduit for the discourse of political and cultural public knowledge, a place where new identities and ideas were literally performed for the public. As the political and economic landscape of modernity began to emerge, the theater was a pedagogical structure that narrated the changes that were happening in society. The theater came to act as a mediator for the public perception of appropriate gender identities and how masculinity should be performed in ways that were compatible with the new economic order. American theater followed closely in the footsteps of the British playwrights after WWII. Examining George Lillo’s *The London Merchant* (1731) and the 2015 revival of Arthur Miller’s *A View from the Bridge* (1955), I will examine the construction of masculinity through the tragic persona of the “Working Man”. Through the historical analysis of gender, theater, and the texts I will show how the rhetoric of masculinity becomes debilitating and even tragic.

How I came to be involved on the fringes of European social change this summer:

Observations of a student traveling abroad

Jennifer Crow

Junior, Sociology, Middle Tennessee State University

Mentor: Dr. Ida Fadzillah

The refugee situation in the EU is known globally as a crisis; LGBT rights are not secure in Poland, and massive influx of refugees to Austria drove outcomes for the Presidential election. French labor laws become more restrictive leading to riots, protests and strikes. Hungary refuses to accept refugees and has shut its borders. Fear of multiculturalism in London spurs support for Brexit. Major world headlines happen all the time, but what does that look like to an American student traveling abroad for the first time? This presentation is based on observations and experiences during my travels to six countries in Europe this past May, as well as subsequent library research. Utilizing photographs and PowerPoint, I will discuss what I witnessed regarding how refugees live under the surface of public life, how citizens feel about the repercussions to their country because of these events, and other social and political issues observed. Based on these experiences I conclude that travel changes perceptions, paradigms shift, and research ideas develop when observing global crises from a cultural perspective that differs from one’s own country of origin.

Participant Abstracts

Technology and Body Art

Heather Dallenbach

Senior, Anthropology, Middle Tennessee State University

Mentor: Prof. Deter-Wolf

While most people are aware of various styles of body art. Until recently it has been exclusively a form of individual identification, used to either shame criminals in various ancient cultures and modern history, to express a person's desire to show inclusion of a certain group or even a disdain for certain thoughts and ideologies. In recent years, tattooing and body modification have advanced to a new level. As a species, we have started integrating technology of different from factors and for multiple applications. Tattooing is no longer a purely aesthetic choice. Now we have the ability to make our body art and modification work for us and potentially make our lives easier. Today we have the ability to take advantage of technology and pair it with our desire for body modification. There are several items already on the market that can be taken advantage of, and many more ideas that are being explored that will be available to us on the horizon.

Orang Ulu: The Extinct of a Borneo Tattooing Tradition

Regan Darnell

Senior, Anthropology & Biology, Middle Tennessee State University

Mentor: Professor Aaron Deter-Wolf

Borneo, the world's third largest island, sits off the southeastern coast of Asia and has a long, rich history of tattooing. While some tribes tattoo males for accomplishments such as hunting or war, there are a few tribes where women are not only tattooed but also the tattoo artists themselves. For these tribes, known as the Orang Ulu, tattooing begins at puberty for these women and is commonly passed down from mother to daughter. These tattoos were not just decorative works but ceremonial pieces that are related but not limited to marriage practices, hierarchy, and the afterlife. Borneo women must learn and adhere to many social restrictions that influenced when and how they could tattoo. The Borneo tattooing tradition of the Orang Ulu has not been practiced for many years due to a number of causes including modernization, displacement, and Christian missionaries.

Displaced persons, misplaced identities: Jewish American holocaust survivors & the American immigration policy throughout World War II

Harley A. Davis

Senior, English, Middle Tennessee State University

Mentor: Dr. Sonja Hedgepeth

Roughly a decade after the end of World War II, the United States had accepted over 130,000 Jewish refugees fleeing Nazi Europe. However, it wasn't until early January 1944 that President Roosevelt established the War Refugee Board to aid in rescuing of persecuted Jewish people and bringing them to New York. The following year, President Truman established the "Truman Directive" which increased the acceptance of even more displaced Jewish Holocaust survivors. In this paper, I will discuss experiences Jewish refugees in America following World War II through a case study of Ruth Klüger's memoir *Still Alive: A Holocaust Girlhood Remembered* while also bringing into conversation the evolution of America's Immigration Policy from the mid-1940's to the 1950's.

Participant Abstracts

Student and faculty knowledge of UTC's policy on sexual misconduct, relationship violence, and stalking

Rachel Davis

Senior, Sociology, UT Chattanooga

Mentor: Dr. Makiko Hori

Sexual assault on college campuses is prevalent, with 19 percent of female college students in the United States reporting being victimized by sexual assault committed using either physical force or incapacitation by drugs or alcohol. Campus sexual assault is complex, encompassing a wide range of issues such as violence against women, excessive drinking, drug use, and institutional sexism, yet most people, including researchers, characterize it in an overly simplistic way. For instance, the most recent report on campus sexual assault, funded by the U.S. Department of Justice, failed to acknowledge sexual assault that was not committed using either physical force or incapacitation by drugs or alcohol (Krebs, et al., 2007). My research will seek to determine the extent of the knowledge that University of Tennessee at Chattanooga (UTC) students and faculty members have of the university's Policy on Sexual Misconduct, Relationship Violence, and Stalking. My research will determine whether students and faculty members at UTC can recognize and correctly label instances of stalking, sexual harassment, and various forms of sexual assault, including non-rape sexual assault and rape committed using physical force, incapacitation by drugs or alcohol, verbal or emotional coercion, and lack of affirmative consent.

Queer Femme Erasure in the LGBTQ Community

Gennifer DeLille

Senior, Chemistry, University of Tennessee at Chattanooga

Mentor: Dr. Marcia Noe

Queer women who identify as femme often experience a feeling of disconnect from the rest of the LGBTQ community. This is in part due to the fact that they do not look like the stereotypical image of a queer female. The femme identity is one that is often not taken seriously, because of the fact that it goes against the stereotype. Thus, many women who do identify as femme experience having to come out several times to those around them before being accepted as members of the LGBTQ community. This presentation will focus on a literature review of studies done on the impact of identifying as femme on a woman's experience with coming out, as well as with being visible within the queer community. Additionally, it will reference bisexuality and pansexuality, both of which are sexual orientations that also experience erasure, to both compare the experiences of these groups of queer women, as well as to analyze the possible effects of a bi- or pansexual woman also identifying as femme.

Participant Abstracts

Que Costa Rica?

Nate Dillow

Sophomore, Business, Roane State Community College

Jasmine Rogers

Sophomore, Business, Roane State Community College

Mentors: Cody Villarreal and Dave Rath

My partner Nate and I, wanted to showcase an overview of our time in Costa Rica over the summer by explaining how each activity helped us grow as a person. We begin our presentation with key aspects of the country that make it so unique and experiences that we both agreed made the trip so rewarding. Each slide has bullet points that give each of our topics guidelines as we speak. Some of the topics we included were our time at the turtle reservation, working with INA students, communication with locals, and local cuisine. We titled our presentation “Que no Costa Rica?” which translates to “Why not Costa Rica?”, because we hope to explain to the audience how Costa Rica became such a big influence on each of our lives, and this saying also plainly describes the feeling we had whenever we signed up to take the trip. Because of that “why not?” attitude that everyone who attended the trip shared, we all benefited from foreign culture that really shaped our views and perceptions for the better.

Host gender’s effect on gene expression in clinical strains of *C. neoformans*

Pel “Bell” Doski

Junior, Biology, Middle Tennessee State University

Mentors: Dr. Rebecca Seipelt-Thiemann and Dr. Erin McClelland

Cryptococcus neoformans (*Cn*) is an opportunistic yeast that is responsible for more than 600,000 deaths of immune-suppressed patients per year. Immune-suppressed males have a higher mortality due to cryptococcosis than females despite having a higher CD4+ T lymphocyte count. This suggests there may be a genetic basis for the discrepancy between mortality rates for men and women due to natural selection pressures on the pathogen in the male/female environment and/or differences in the expression of virulence genes in response to the male/female environment. Several virulence factors have previously been identified as important, including the thick polysaccharide capsule, which surrounds the yeast. The goal of this project was to investigate differences in gene expression, particularly in virulence genes, in strains isolated from males and females. RNA sequencing was performed on RNAs from seven strains isolated from HIV patients in Botswana, 4 male and 3 female, along with the wildtype. We identified genes that were significantly upregulated and downregulated by 2 fold between the male and female group. Eleven genes were upregulated by 2 fold or more, with the most upregulated gene being expressed 9-fold higher in males. Four genes were downregulated by 2 fold or more, with the most down-regulated gene being expressed 6-fold lower in males than females. None of the total of 15 genes has been previously identified in capsule production or as a virulence factor. It will be of interest to further investigate these genes and the roles they might play in pathogenesis.

Participant Abstracts

Cultural and emotional reactions to the Harry Potter series

Ashley Farmer

Senior, Psychology and Communications, Milligan College

Mentor: Dr. Kayla Walker Edin

The purpose of this study is to determine if a person can be harmed or benefitted from reading the *Harry Potter* series. In order to determine this properly, a number of similar studies are being looked at. I am also conducting several experiments involving individuals reading different parts of the books to determine the level of emotional response based on what they read, how old they are, and if they have previously read the books or viewed the films. As well as reading the books, the movies were also taken into consideration. One item that is considered is rather or not individuals who had read the books would feel differently about the movies than those who had only seen the movies. Some of the titles that I look at include *Harry Potter and the Deathly Hallows* parts one and two, *Harry Potter and the Prisoner of Azkaban*, and *Harry Potter and the Goblet of Fire*. I also look at the entire *Harry Potter* written works, including the most recent play, *Harry Potter and the Cursed Child*. I argue that there are several factors that can cause an individual to be emotionally influenced by the *Harry Potter* series. Some of these factors include age, gender, and country of origin. The study focuses mainly on the United States and the United Kingdom. I also argue that the amount of detail that was involved in the writing also had a great influence over the degree of the emotional response. In other words, if the story had more background and details in it, the reader was more likely to feel a stronger connection than if the story was bland and simply got to the point. I claim that the older the individual was, the less emotional response there was when compared to the younger participants. The goal of this study is to determine if, and how much, cultural factors influence the emotional reaction of readers of the *Harry Potter* series.

The effects of predator kairomones and starvation on *Tegula tridentata* behavior in a Chilean subtidal ecosystem

Brooke Fitzwater

Junior, Biology, Middle Tennessee State University

Mentor: Dr. Dennis Mullen

Gastropods have been shown to alter their behavior in response to both predators and starvation. *Tegula tridentata*, a marine subtidal gastropod in Chile, is an herbivore that is preyed upon by the crab *Homalaspis plana* and the sea star *Meyenaster gelatinosus*. The effects of kairomones (chemicals) from *H. plana*, *M. gelatinosus*, and crushed conspecifics as well as the effects of starvation were tested to see if the different treatments elicited behavioral responses by *T. tridentata*. Three experimental trials were conducted in which *T. tridentata* behavior was monitored continuously every hour for 24 hours and was then monitored at less continuous but regular intervals for up to 72 hours. Aquaria containing *T. tridentata* (one per aquarium) were connected to predator treatment aquaria via flow-through systems to allow for kairomones to flow from the treatment aquaria into the *T. tridentata* aquaria. Varying starvation levels were also used alongside the presence of kairomones. *T. tridentata* behavior and location within the aquarium was recorded during each observation. There was a significant reduction in movement rates and behaviors when *T. tridentata* were in the presence of *H. plana* and starved. These results have potential ecological implications as there is a high economic demand in Chile for both kelp that *T. tridentata* consume and *H. plana*.

Participant Abstracts

Collaborative leadership in research and design settings

Dustin Gilmer

Senior, Physics, East Tennessee State University

Mentor: Rico Ignace

Collaborative research and development ventures between government, academia, and industry are increasingly being created and used as a means for all parties to leverage their particular strengths using the resources of their partners. We find that leadership in these settings is very important to success of the goals of these ventures. It is not known however how leadership is viewed in these settings. To explore the question of how leadership is viewed in these settings an embedded case study within the Bioenergy Science Center (BESC) will be performed in their collaborative lab settings. To conduct the case study in-depth interviews will be used in a 360-degree view from the supervisors to the research staff to assess their view on leadership.

Focal adhesion kinase inhibition promotes adult olfactory stem cell proliferation via ciliary neurotrophic factor

Dustin Gilmer

Senior, Physics, East Tennessee State University

Hannah Malone

Research Assistant, Biomedical Sciences, East Tennessee State University

Mentors: Theo Hagg and Cuihong Jia

The neural stem cell niche consists of stem cells, blood vessels and multiple extracellular matrix proteins (ECMs). ECMs regulate stem cell adhesion, proliferation, differentiation and migration via integrins. One of the main mediators of intracellular integrin signaling is the Focal Adhesion Kinase (FAK). Our previous studies found that FAK inhibition increased adult brain neurogenesis via up-regulation of Ciliary Neurotrophic Factor (CNTF). The olfactory system is another site where neurogenesis continues throughout life. We tested whether FAK inhibition also promotes stem/progenitor cell proliferation through CNTF in the adult mouse Olfactory Epithelium (OE). Adult male and female C57BL/6, CNTF wildtype and knockout littermate mice were systemically injected with PBS or PBS plus FAK inhibitor (FAK14). Proliferating cells were labeled by injecting BrdU or EdU, which is incorporated into newly synthesized DNA, for 3 days and their numbers were counted in histological sections through the OE. In C57BL/6, FAK14 doubled the number of BrdU+ cells. CNTF wildtype and knockout mice had comparable numbers of EdU+ cells, indicating absence of CNTF does not affect baseline of normal OE neurogenesis. FAK14 increased proliferation in CNTF wildtype mice but did not have an effect in CNTF knockout mice. Collectively, these data indicate that FAK normally inhibits neural stem cell proliferation by reducing CNTF expression in adult mouse OE, and identifies the OE is a good model to study neuroregenerative mechanisms in the CNS.

Participant Abstracts

Service learning project: Teenage pregnancy

Teresa Gilreath

Sophomore, Health Information Technology, Volunteer State Community College

Mentor: Dr. Girija Shinde

I will be presenting a poster with pictures of my service learning project on “Teenage Pregnancy”. Many teenager girls become pregnant through peer pressure or the search for belonging that they do not receive at home. This search leads to dangers such as physical risks with the pregnancy for both mother and child, teenage drinking, sexually transmitted diseases, and, most importantly, pregnancy. Through educational and support programs the number of adolescents that have become pregnant has declined substantially over recent years. With the help of these programs, the teenage pregnancy rate in Tennessee has declined by more than half since 1985 to 20.5 per 1,000 in 2013. With more education these numbers can further decline for our young people. My poster will show some statistics of the above topic in the State of Tennessee. This project was presented in the Wellness fair organized by my college. We had students, staff, and faculty from the college and also some community members visiting the fair.

Depictions of reverse chivalry in Marie de France’s “Lanval

Emily Gray

Junior, English, University of Tennessee-Chattanooga

Mentor: Dr. Matthew Guy

In the time of the Arthurian court, both men’s and women’s roles in society and subsequent actions were dictated by the socially accepted code of chivalry. Chivalry refers to the system of values that men, particularly knights, were expected to adhere to during the Middle Ages. Hinging on the premise that women were the weaker, inferior sex and men their strong, moral superiors, Medieval males were expected to guard the morality of society by demonstrating strict adherence to the chivalric code. As traditional chivalry assigns a person’s place in society solely on the basis of biological sex, it is easy to view Marie de France’s “Lanval” as lacking any semblance of courtliness or traditional chivalry; however, as I will argue in this presentation, this is not the case. Though many critics view the plight of “Lanval” as the emasculating tale of a magnanimous and sexually attractive woman who robs the titular knight of his defining chivalrous qualities, the story is more accurately described as a manipulation of the chivalrous code that produces a branch of reverse chivalry through the swapping of traditional gender roles and their assumed characteristics. By attributing typically feminine qualities to the knight and traditionally masculine qualities to his mysterious mistress, this Medieval fairy tale provides support for the argument that rather than abandoning the idea of the chivalrous hero, Marie de France simply inverts the code to produce one in the unlikely form of a woman.

Five Months of Focus:

My Experience Studying Abroad

Kellye Guinan

Senior, Anthropology and Foreign Language, Middle Tennessee State University

Independence. A sense of adventure. Homesickness. Aching loneliness. New friendships. New stories. New memories. These are the results of my five months overseas while I studied German and immersed myself in a culture so familiar and yet so utterly distinct from my own. Much can be said about the challenges one overcomes in facing life head on. Those who do it, know. Those who haven’t yet, should. Cooking, writing, and developing a sense of self are all factors in building a life distinct from the world before. A small presentation on the virtues of taking a step outside of the comfort zone and plunging into an engaging world far from home.

Participant Abstracts

Henna and Appropriation:

A Brief Look at the Growing Trend of Henna Application in the Western World

Kellye Guinan

Senior, Anthropology and Foreign Language, Middle Tennessee State University

Mentor: Aaron Deter-Wolf

As the Western world continues to adopt traditions from former colonial areas and incorporate them into popular culture, we see increasing arguments on the ethics of appropriation. Henna, being the intricate designs applied to women's hands and feet for important occasions, has become a favorite pastime practiced by Western (European and North American) people. Most know it as an Indian, although it stretches through the Middle East and Northern Africa, and has its roots in the worldwide practice of depicting celebration and ceremony on the body. These temporary images painted onto the skin leave lasting impressions onto what accounts for admiring another culture, and where the line is drawn when it comes to separating the meaning from the art.

Show Me Your Teeth:

The Expectations of Dental Perfection and the Costs of Attaining It

Kellye Guinan

Senior, Anthropology and Foreign Language, Middle Tennessee State University

Mentor: Dr. Ida Fadzillah-Legget

From television doctors to online advertisements, there is a deluge of information entering the American mind about what healthy looks like. Intense workout regimens, dietary supplements, and which foods to put in the body—it all impacts how we view our physical appearance. The smile has become a favorite point in recent years; white, straight teeth are expected. Any deviation from this norm becomes unsightly, something to be hidden from the public or fixed with expensive surgeries and dental realignment. This phenomenon defines what it means to be beautiful and healthy in the modern setting. From how we examine the healthy body to how we incorporate messages drilled into us by the media, our teeth stand as a barrier between us and the world. They define whether we fit in or stand out and the lengths we are willing to go to be a part of our own culture.

A month in the Brazilian Amazon

Miranda Hahn

Junior, Anthropology, Middle Tennessee State University

Mentor: Dr. Andrew Wyatt

In the summer of 2016 I attended the Middle Tennessee State University faculty led study abroad trip to the Brazilian Amazon. The point of this field school was to give students real world experience with an archaeological excavation and for students to learn archaeological survey and excavation techniques. This trip was beneficial to me personally as it makes me a better candidate for graduate school and the techniques I learned can be applied to not only archaeological excavations, but also to forensic anthropological work as well. This trip taught me how to do hands on research and how to write a field report. I also got a feel of what archaeology is really like versus what we learn in the classroom setting. I met a lot of people from a lot of different places and made connections I will probably keep for the rest of my life. Overall this trip made me a better student and gave me skills that I will use for the rest of my career.

Participant Abstracts

Establishment of a high performance liquid chromatography method for Vitamin A in Nutrition Department

Marcel Holman

Senior, Nutrition, University of Tennessee, Knoxville

Mentors: Dr. Yang Liu and Dr. Guoxun Chen

Vitamin A is a lipophilic micronutrient that plays an essential role in human health, including the control of glucose and lipid metabolism. The current work is to establish the measurement of vitamin A using high performance liquid chromatography (HPLC) in the Nutrition Department. Cell and tissue samples were extracted and prepared for HPLC analysis in a C18 column® linked to an Agilent 1220 Infinity LC system® controlled by Chemstation® software. The extracted retinoids were injected and analyzed individually and in various combinations at ultra-violet wave length 325 nano-meters. The mobile phases were 0.01M ammonium acetate (reagent A) and 100% methanol (reagent B). The A to B ratio was 5:95% respectively. The injection volume was 25 µL with retinyl acetate as loading control. A calibrated internal standard percent report was generated for each run, which includes the relative amount of each substance as a percentage of the injected sample. The report was saved as a printout, and an electronic file. The data indicate that the method is repeatable and robust. In conclusion, we have successfully adapted a method for detection, quantification and analysis of retinoids in cellular and tissue samples, which will be used in the future to study the roles of vitamin in metabolic diseases.

Is breed-specific legislation effective?

Matthew Jacobs

Senior, Biology, Tennessee Technological University

Mentor: Dr. Nikki Panter

Breed-specific legislation began in 1980 as a political response to concerns over perceived physical threats from certain dog breeds, particularly pit bull dogs. By 2016, 700 US cities had some form of breed-specific legislation ranging from additional licensing to mandatory sterilization or complete ownership bans. However, legislation has been opposed by the Humane Society of the United States, the American Society for the Prevention of Cruelty to Animals, and the Center for Disease Control due to the policy's high cost and lack of effectiveness. Instead, opponents of breed-specific legislation suggest shifting resources to owner education, along with dog socialization and training. The author's investment of time and patience to train an aggressive pit bull dog at the Cookeville/Putnam County Animal Shelter in Tennessee yielded a well-adjusted dog that was adopted by a responsible pet owner. Other dogs that were deemed fearful, shy, and/or aggressive were given additional attention to improve adoptability and relieve some of the demands on animal shelter staff. The program continues to involve university students, including the author, in training and behavioral modification of troubled shelter dogs.

Participant Abstracts

Migration with dignity

Mia Kozul

Senior, Global Studies, Middle Tennessee State University

Dalton Cantrell

Sophomore, History/Global Studies, Middle Tennessee State University

Mentors: Dr. Antonio Vasquez and Dr. Doug Heffington

In collaboration with the MTSU Experiential Learning Scholars Program, this poster presentation seeks to highlight experiences from direct participation in a Global Studies experiential learning class project entitled “Migration with Dignity.” The pilot project for this event was realized in April 2016, and will continue spring semester 2017. The focus of “Migration with Dignity” is to highlight the various economic, social, and cultural contributions made by immigrants and refugees in Middle Tennessee, through their own words and perspectives. Through this poster presentation, we are able to share our personal experiences with the broader theme of immigration at the local level, as well as our own contribution to this project.

Slavery and Body Modification

Madeline Laderoute

Sophomore, Anthropology, Middle Tennessee State University

Mentor: Prof. Aaron Deter-Wolf

The purpose of this study is to examine how several cultures throughout history have employed branding and especially tattooing to mark slaves. This research aims to highlight the different reasons for tattooing one’s slaves (as a form of punishment, to mark ownership, etc.) in places such as ancient Greece, Rome, and China, as well as in more modern settings such as antebellum America. It also aims to discuss the stigma associated with tattooing in these cultures, as well as the origins of the word and concept of “stigma” itself. By identifying the methods and reasons for tattooing slaves, researchers can hopefully better understand the dehumanizing effects that forced tattooing and branding has on an individual and the many roles that tattooing can play in a society.

Participant Abstracts

A cross-cultural analysis of false confessions: A literature review

Amber Lancaster

Senior, Psychology, Middle Tennessee State University

Mentor: Patricia Riley M.A., M.S.

False confessions are defined as an admission of guilt by an individual for a crime they did not commit (Gudjonsson, 2011). As more prominent cases of exonerations based on false confessions are coming to light, many people believe false confessions are a relatively new phenomenon, while they have actually been occurring for decades. The development of new technology, such as DNA testing, has exponentially illuminated this very real problem. Since 1992, the Innocence Project has exonerated 250 wrongfully convicted individuals with the implementation of DNA testing; 143 of those individuals resided on death row. 143 innocent Americans would have been put to death for crimes they did not commit. While the numbers are low, it is still hard to fathom how this many people could serve time for crimes they did not do. The statistics for false confessions in the United States, as well as other developed countries, remains hard to pin point, but it can be assured that those 250 that have already been granted their freedom were not the only innocent living among the guilty. A prominent factor in yielding false confessions lies in the interrogation techniques utilized by law enforcement. According to the Innocence Project, the leading cause of wrongful convictions are police coerced, both compliant and internalized, false confessions. The manner in which police interrogate suspects plays a crucial role in false confessions. Not all interrogation tactics are the same internationally. The U.S is known for most often using the Reid method, whereas other European countries implement the PEACE method of interrogation. The difference in practices is key when considering the prevalence of false confessions in the United States versus the United Kingdom. For such a controversial topic as false confessions, there remains to be seen much research encompassing the many ramifications surrounding this issue. The implications of false confessions are not only matters in legality and justice, but they also lie in the social and psychological well-being of those wrongfully convicted.

2016 field school

Christopher A. Lane

Junior, Anthropology, Middle Tennessee State University

Mentor: Dr. Andrew Wyatt

In the summer of 2016 I completed an Archaeological field school in Brazil. During the course of the field school I toured the cities of Belem and Manaus to see the different Brazilian cultures. While doing the archaeological portion of the field school we were housed at the research center of the Goeldi University and the archaeological portion of the field school was completed at the IBAMA site on the edge of the Reserva Florestal Caxiuna and the Bay of Caxiuna. I hope to show through this presentation what the journey and the field school was like.

Participant Abstracts

Progress toward a series of [*closo*-B₁₂H₁₂]²⁻ cluster liquid crystals

John C. Lasseter

Junior, Chemistry, Middle Tennessee State University

Pawel Tokarz

Visiting Scholar, MTSU

Jacek G. Pecyna

Postdoctoral Fellow, MTSU

Mentors: Andrienne C. Friedli and Piotr Kaszynski*

Sequential regioselective substitution of the [*closo*-B₁₂H₁₂]²⁻ cluster with onium fragments yields highly quadrupolar 1,12-derivatives. This class of compounds may have applications in liquid crystal display technology because they exhibit nematic phases. Treatment of a previously reported sulfonium derivative of [*closo*-B₁₂H₁₂]²⁻ with *p*-methoxyphenyliodonium diacetate led to a mixture of 1,7- and 1,12-substituted [*closo*-B₁₂H₁₂]²⁻ iodonium intermediates. Reaction of this isomer mixture with *p*-methoxypyridine as a nucleophile gave a mixture of isomeric *p*-methoxypyridinium derivatives. The isomers were separated by column chromatography giving pure blue fluorescent individual 1,7 and 1,12 isomers. Subsequent dealkylation of the 1,12 isomer with LiCl/DMF gave the corresponding pyridone, which was then O-alkylated with alkyl triflates, yielding a series of quadrupolar derivatives. Computational modeling with DFT using the B3LYP-2DP basis set gave insight into geometry and electronic spectra. In this presentation we will report further details about the synthesis and characterization of the new compounds.

Deletion in WFS1 gene is associated with muscle tenderness in rainbow trout

Robert L. Lechleiter

Senior, Biochemistry, Middle Tennessee State University

Ali Ali

PhD Candidate, Molecular Bioscience, Middle Tennessee State University

Rafet Al-Tobasei

PhD Candidate, Computational Science, Middle Tennessee State University

Mentor: Mohamed Salem

In the industry of cultivating fish for consumption, fillet quality attributes that appeal to the consumer's sense of taste such as the muscle tenderness are important for industry and consumers. Genotype-based selection will help develop genetically improved strains with the desirable phenotypes. Wolframin (WFS1) gene regulates Ca²⁺ level that contributes to post-mortem muscle tenderization by activating Ca²⁺-dependent proteases (Calpains). Phenotypic data for muscle tenderness were collected from 500 fish representing 98 fish families from a growth selection line (hatch year 2010). In this study, RNA-Seq (transcriptome sequencing) of 22 fish families (5 fish each) exhibiting contrasting phenotypes were generated. Two computational pipelines (GATK and SAMtools) were used for calling deletions in the WFS1 gene. Two deletions were potentially tested for association with fillet tenderness. A single deletion of 59 nt long in the WFS1 gene showed statistical significance in association with muscle tenderness (P<0.02). Deletions in WFS1 gene could serve as genetic markers to select fish for improved muscle tenderness.

Participant Abstracts

Queer Spaces as Sacred Space

Keven Lewis

Graduate Student, Masters of Liberal Arts, Middle Tennessee State University

Mentor: Dr. Rebekka King

June 2016 *The Pulse*, a gay bar in Orlando, Florida became the subject of international media attention after a lone gunman opened fire killing forty-nine patrons. The event, which was quickly recognized as the largest terrorist attack on US soil since September 11, 2001, while shocking to the typical US citizen, was especially traumatic to members of the queer community.

The following paper seeks to make the case for queer space as sacred space. This argument will be made by first, examining queer spaces as historically 'safe havens' and later as the center of social life for members of the queer community. Second, by examining 'queer spaces' in juxtaposition with traditional heterosexual and/or religious 'sacred spaces.' Finally, this paper will make the argument that the events of June 2016, were not only an act of terror but an act of desecration of not only *The Pulse* but upon the whole of the queer community.

Evaluating allele-specific gene expressions of WFS1 gene in association with rainbow trout muscle mass

India C. Mathis

Junior, Biochemistry, Middle Tennessee State University

Ali Ali

PhD Candidate, Molecular Bioscience, Middle Tennessee State University

Mentor: Mohamed Salem

Rainbow Trout fish is important for the US aquaculture industry. Economically, genetic improvement of this organism helps profit businesses while also benefiting the customer in terms of fillet quality aspects including the muscle mass, softness and fillet fat content. The *WFS1* gene produces Wolframin protein which is essential for regulation of calcium level in the cell that contribute to muscle contraction, protein processing and fillet softness. Phenotypic data for muscle mass, softness and fillet fat content were measured in 500 fish representing 98 fish families from a growth selection line (hatch year 2010). We sequenced and studied the allelic frequency of SNPs in *WFS1* gene to investigate the monoallelic gene expression at the RNA level (i.e. SNP is heterozygous at the genomic DNA level while showing monoallelic expression at RNA level). Out of 36 fish representing 8 full-sib families showing variation in muscle mass, only four fish showed true monoallelic expression i.e. single peak in RNA sequence chromatograms while SNPs were heterozygous at DNA level. In conclusion, this study suggests that the monoallelic expression in rainbow trout is true but has no parental origin (genomic imprinting) and is not associated with muscle yield. However, a genome-wide study is still needed to confirm if the monoallelic expressions in rainbow trout occur randomly and do not pass down from the parent (inherited).

Participant Abstracts

Right wing extremism in Europe: The cases of the United Kingdom and France

Kayla McCrary

Senior, International Relations, Middle Tennessee State University / University of Chester

Mentor: Dr. Heidi Spring-Jones (University of Chester)

Across the European Union, a rise in right-wing extremism has been observed through the growing sentiments popularized in modern media, political parties, and violent and non-violent backlash against marginalized minorities. Seemingly, these right-wing extremist (RWE) movements across the EU have surged in the last five years, especially in Eastern Europe post-communist member states. The sentiments in these cases are easier explained, as they share similar authoritarian political histories and cultural values. However, this paper aims to explore the recent rise in far right-wing movements in France and the United Kingdom, which do not necessarily exhibit the same characteristics as the Eastern European counterparts. Through the exploration of the facets of right-wing extremism, such as but not limited to the sociological elements, this paper will seek to analyze the context of the rises of extremism in the United Kingdom and France, the overarching sentiments from the EU regarding RWE, and the societal impacts of extremist movements, such as those exhibited after the recent EU Membership Referendum in Britain or “Brexit.”

Militant political activism in the British women’s suffrage movement

Kayla McCrary

Senior, International Relations, Middle Tennessee State University

Mentor: Dr. Mark Doyle

The twentieth century women’s suffrage movement in Great Britain was a unique social and political movement which encompassed women (and some men) seeking the right to vote, gain equal citizenship rights, and transform gender structures. This movement was unique in that eventually the techniques used during the suffragists’ campaigns were radical and militant. Some historians have argued that such tactics damaged the credibility of the women’s suffrage movement in Britain. Others view the campaign as a legitimate protest by women against a gender system that disadvantaged females. The aim of this paper is twofold. Firstly, this analysis will look at the militant and radical political activism in the British women’s suffrage movement led by the Suffragettes, as well as the lasting effects of the Suffragette’s campaigns on British politics during the twentieth century, through a historical perspective. Secondly, this paper will thus analyze the ways in which historical politics as power relations affected women in British society during the women’s suffrage movement by using some elements of the “feminist political theory” methodological approach.

Brexit: A comprehensive analysis of Britain’s vote to exit the European Union

Kayla McCrary

Senior, International Relations, Middle Tennessee State University

Mentor: Dr. Vanessa Lefler

After a Conservative victory in the 2015 General Election in Great Britain, Prime Minister David Cameron vowed to address the rising Eurosceptic sentiments within his own Party and the United Kingdom. At that point, the political climate in regards to European affairs was geared toward a promised 2017 European Union (EU) referendum in/out vote. With a rise in Eurosceptic political parties such as the United Kingdom Independence Party (UKIP) and right-wing extremist philosophies, the UK has reached a turning point in their relationship with the European Union: should they stay or should they go? This research piece intends to analyze some of the causes of Euroscepticism and a demand for the British exit from the European Union, colloquially coined as “Brexit.” Additionally, as the UK has voted to leave the EU, this paper will examine the build-up to the vote, the vote, and the immediate consequences thereof, leading ultimately in an analysis of the predictions of the UK’s political and economic trajectory.

Participant Abstracts

Correlation between allele-specific expression of LAT-4 gene and muscle mass in rainbow trout

Jasmine Z. McCroskey

Sophomore, Biology, Middle Tennessee State University

Ali Ali

PhD Candidate, Molecular Bioscience, Middle Tennessee State University

Mentor: Dr. Mohamed Salem

Developing genetically improved rainbow trout strains, that possess appealing phenotypes to consumers, benefits the overall profit of the agriculture industry. Large Neutral Amino Acid Transporter-4 (LAT-4) gene is necessary for the transport of Branched Chain Amino Acids (BCAAs) that are used by body builders because of their ability to increase the performance and muscularity. To study the genetic architecture of an economically important trait such as muscle yield, muscle percentage to body weight were measured in 500 fish representing 98 fish families from a growth selection line (hatch year 2010). In an effort to improve the fillet quality of rainbow trout, we analyzed the LAT-4 allele-specific gene expression in fish families showing variation in muscle yield to determine if it has any significant association in terms of muscle mass. Interestingly, sequencing LAT-4 gene identified four SNP markers exhibiting allelic imbalances in fish families with contrasting phenotypes (high versus low muscle yield). Statistical analysis showed that the four SNP markers were significantly associated with the muscle yield ($P < 0.001$). In conclusion, this study facilitated identification of allelic variations associated with the trout muscularity. The LAT-4 markers are suitable for both genomic selection and genetic manipulation in aquaculture fish stocks.

Comparing computerized performance measures of executive function to self-report measures of executive function

Andrea Meggison

Graduate Student, Industrial Organizational Psychology Graduate Student

Middle Tennessee State University

Mentor: Dr. Michael Hein

A previous graduate study was conducted to understand the degree to which the psychological construct of Executive Functioning influences success in majors requiring high levels of complex multitasking abilities. Executive Functioning refers to the process of impulse control and planning of complex tasks and multitasking performance. Computerized tests, which took approximately two hours to complete, were administered to the subjects to measure Executive Function in that study. The written self-report scale entitled The Behavior Rating Inventory of Executive Function - Adult Version (BRIEF®-A), is the gold standard for measuring Executive Functioning and can be completed in approximately twenty to thirty minutes. Use of the written self-report scale, rather than the computerized performance-based measures, could represent significant time savings for studies going forward. The purpose of this study will be to compare the performance measures data from the previously mentioned study with the results from the self-report administered to the same subjects in order to determine if they measure the same construct.

Participant Abstracts

The effectiveness of chlorine dioxide gas as a bactericidal agent

Roderick Moore

Senior, Biochemistry, Middle Tennessee State University

Mentor: Beng Ooi

Chlorine dioxide has been used as effective disinfecting agents in hospitals, food manufacturing facilities and water treatment plants. This study investigates the biocidal effects of gaseous chlorine dioxide on *Escherichia coli* K-12 cells in media solution. The main focus of this research is to determine the concentration of chlorine dioxide and the exposure time needed to kill 1×10^8 to 1×10^9 cells. *E. coli* cells were exposed to chlorine dioxide gas produced using 0.5 gram of precursor A and activator B for various time periods of 0.5, 1.0 and 1.5 hours. The BacLight bacteria viability assay and fluorescence spectrometry technique was used to determine the ratio of live to dead cells in untreated and chlorine dioxide treated samples. A one-hour treatment at 7.20×10^{-4} M chlorine dioxide killed about 82 % of the treated *E. coli* cells whereas exposure to higher chlorine dioxide concentration of 1.91×10^{-3} M killed all 3.96×10^8 treated cells.

Rational in its Irrationality: A Critique of the All Lives Matter Movement and One-Dimensional Society

Elliot Newell

Senior, Sociology, University of Tennessee at Chattanooga

Mentor: Dr. Terri LeMoyne

In his book *One-Dimensional Man*, Herbert Marcuse describes modern society as full of contradictions between our idealized vision of America and the realities of our society. However, these contradictions are hidden because society has lost the ability to critique itself. Forms of protest are ignored and all change comes from within the existing system. As a result, Marcuse asserts that our society has become rational in its irrationality, so that contradictions appear logical and even beneficial. Though published in 1964, Marcuse's theory is still relevant today, and can be seen in the All Lives Matter movement. As a response to Black Lives Matter, which calls attention to the unequal treatment of Black people in America, All Lives Matter makes the seemingly rational claim that everyone in America is valued equally, and that racial prejudice is a thing of the past. However, this claim is not based on fact, as institutional racism and white privilege still exist. While Black people are aware of this, many white people remain in denial about the current state of race relations, and many prejudice people stand behind All Lives Matter to appear morally justified in their beliefs. This presentation will investigate both how modern society attempts to conceal injustices and how we can form a society that accepts criticism and can change for the better.

Human hand gesture recognition, using the Microsoft Kinect sensor

Aldair Nieto

Junior, Mechatronics Engineering, Middle Tennessee State University

Mentor: Brian Slaboch

The aim of my project was to investigate hand recognition using the Microsoft Kinect sensor. The Kinect is a motion sensing device more commonly used in video games. For example, in the Xbox game Kinect Sports, a person is able to control characters on the screen by using their own body movements. In this research project, I learned how to implement an open source computer vision algorithm that allowed Kinect to track hand gestures. In order to visually see the results and provide feedback two servo motors were connected and controlled by hand gestures.

Participant Abstracts

Azaaurones an unexplored scaffold for biological activity

Jesse Noe

Senior, Biochemistry, Middle Tennessee State University

Mentor: Dr. Scott Handy

Aurones are a naturally occurring compound found in yellow flower petals and fruits of some plants. These compounds give rise to its yellow color. These compounds have shown biological activity as anti-cancer, anti-fungal, and anti-trypanosomal to name a few. Because of this, they provide a great scaffold to build upon to enhance biological activity, and it has been shown that by changing the structure of the parent aurone the biological activity can be modified as well. Azaaurones are a variation of the aurone series that displayed significant activity in the few cases that have been reported. The azaaurone series does not occur naturally in nature. In the parent aurone series there is an intracyclic oxygen in one of the rings, and in the aza series that is changed for a nitrogen. These azaaurones were made by reacting an oxyindole with an aldehyde in a condensation reaction. By changing the structure of the indole and aldehyde that are reacted together to make the azaaurone, there have been changes in the biological activity. Preliminary results here at MTSU have shown some unexpected trends when comparing the aza-series to the parent aurone series. There are a few of the aza-series that showed much greater inhibition, even with much less functionality. Further, variations among the aldehyde portion of the aza-series have shown drastic changes in the biological activity.

***Arabidopsis thaliana* NIP2;1 is a root specific lactic acid channel induced during hypoxia stress**

Clayton Nunn

Junior, Biochemistry & Cellular and Molecular Biology

The University of Tennessee-Knoxville

Mentor: Daniel M. Roberts

In plants, oxygen deprivation occurs frequently as a consequence of flooding, waterlogging, and even poor soil aeration. In response to low O₂ stress, plants trigger a survival response that reorients metabolism towards anaerobic respiration by means of the induction of a class of genes encoding anaerobic response polypeptides (ANPs). Among these genes is the *Arabidopsis thaliana* nodulin intrinsic protein 2;1 (*AtNIP2;1*). *AtNIP2;1* is a member of the aquaporin superfamily of membrane channels, but unlike the other homologs, *AtNIP2;1* selectively transports protonated lactic acid, instead of water. Based on quantitative-PCR and promoter:GUS experiments, *AtNIP2;1* transcripts are elevated under anaerobic conditions, increasing >1000-fold in roots within 2 hours post-hypoxia treatment, and show highest expression within the stele of differentiated root tissue. In addition, the localization of NIP2;1 protein during hypoxic conditions was further investigated by generating transgenic plants expressing NIP2;1 fused to fluorescent protein reporters. Confocal microscopic analysis of these plants show the hypoxia-dependent induction of the protein with accumulation observed in the inner cortical cells and the vascular tissue of the mature root. To investigate the role of *AtNIP2;1* in mediating the adaptive response of *Arabidopsis* plants to low O₂ stress, the survival of wild type and *AtNIP2;1* T-DNA knock out mutants to low O₂ stress has been investigated. Moreover, the loss of function of *AtNIP2;1* exhibited different survivability compared to wild type after hypoxia stress. It is proposed that *AtNIP2;1* is a lactic acid specific channel that plays a role in response of *Arabidopsis* roots to hypoxia stress, perhaps in mediating the partitioning and homeostasis of toxic lactic acid metabolites.

Participant Abstracts

Mastectomy Recovery through the Use of Modern Tattooing

Joey Lena O'Dell

Senior, Anthropology, Middle Tennessee State University

Mentor:

Tattooing has long been part of the human experience all across the globe. Following a growth in popularity in Western society, new uses for tattoos have begun to surface. One of these is the use of tattoos in covering up, or masking, the appearance of scars. Breast cancer survivors are often left with many scars from having undergone mastectomy or lumpectomy surgeries. Artists such as Roni Falgout and Vinnie Myers have developed ways of helping women regain their sense of personal beauty and completeness through the application of tattoos. I plan to discuss this important area of modern tattooing, with a focus on the recovery of breast cancer survivors.

The Revitalization and decolonization of the Maori tattoo

Macie Orrand

Senior, Anthropology, Middle Tennessee State University

Mentor: Professor Aaron Deter-Wolf

Maori culture places a considerable emphasis on facial tattooing to display genealogy, accomplishments, and self-identity. Each tattoo is unique to the individual, and could be used as a way to intimidate outsiders. The Maori developed tattooing methods that created designs by puncturing the skin to embed pigment, and could only be performed by special individuals. However, Europeans were unsettled by Maori tattooing and regulated the practice by discouraging traditional tattoos and other facial modifications provided tattooing alternative techniques and materials. Over time, traditional Maori tattooing styles and techniques were nearly lost due to suppression by European colonists. Recently the Maori have started to resurrect their traditional methods of tattooing in a pursuit to decolonize their culture.

Creating Digital Structure Contour maps of Middle Tennessee

Laura Hoefer

Earth Science, Senior

Middle Tennessee State University

Mentor: Mark Abolins

The goal of the project was to develop structure contour maps (elevation of a geologic contact) of several Middle Tennessee 7.5' quadrangles (quads). These maps are for use in an ongoing search for folds being conducted by Dr. Mark Abolins and MTSU undergraduates. Geologic contacts were digitized during the 1990's and were obtained from the U.S. Geological Survey. For each quad, a geologic contact that was geographically widespread was selected. Then, the elevation of that contact was extracted at numerous points along the contact. The National Elevation Dataset (NED) was the source of the elevation data, and the extraction was performed with ArcGIS software. After elevations were extracted, three maps were created to depict variations in elevation in different ways. This project is part of an ongoing effort to evaluate claims that a Precambrian rift lies beneath Central Tennessee (Marshak and Paulsen, 1996; Marshak et al., 2000) or that a cratonic weak zone runs through central Tennessee and adjoining parts of the United States Interior (Paulsen and Marshak, 1994).

Participant Abstracts

Surface characterization of biochars, switchgrass (SG), tall fescue (TF), and cellulose (CC) produced at 500, 700, and 900°C by XPS, IR, and PZC

Sarah K. Raborn

Sophomore, Chemistry, Middle Tennessee State University

Mentors: Charles C. Chusuei, Middle Tennessee State University

Ali Zolghadr & Joseph J. Biernacki, Tennessee Technological University

This study explored surface characteristics of biomass pyrolysis chars. Samples were prepared by pyrolyzing switchgrass (SG), tall fescue (TF), and cellulose (CC) at 500°C, 700°C, and 900°C using a heating rate of 20 °C/min. Nine bio-chars were characterized using infrared spectroscopy (IR), point-of-zero charge (PZC), and X-Ray photoelectron spectroscopy (XPS). The IR results show increasing desorption of carboxyl groups with increasing temperature. Point-of-zero charge (PZC) measurements for tall fescue and switchgrass bio-chars were at pH = 10, while cellulose was at pH = 6. In addition, the XPS results for switchgrass confirmed desorption of oxygen containing functional groups as the temperature of preparation increased.

Drag analysis of 3-dimensional rearward facing step

Salman Rahmani

Aerospace Technology, Middle Tennessee State University

Mentor: Dr. Nate Callender

In aerodynamics, there is a classical, 2-Dimensional geometry which has been heavily examined due to various applications in real-world situations. This geometry is known as the Rearward-Facing Step (RFS). As a fluid flow travels over the edge of the step, the fluid is no longer “attached” to the step and begins to tumble, causing what is known as a recirculation region which produces drag. After numerous studies, it was determined that the recirculation region on the 2-Dimensional Step could be reduced by various methods such as rounding off the edge or by creating a slight taper at the trailing edge of the geometry. This project, which was conducted by Salman Rahmani and overseen by Dr. Nate Callender, attempted to examine whether the same modifications on the 2-Dimensional RFS that produced drag-reducing results, would yield the same outcomes on a 3-Dimensional representation. In addition to testing the already-studied modifications, extensive observations were also conducted on a theoretical design which included rotating cylinders whose surface was tangential to the trailing edge of the 3-D geometry. The tested rotational speed was twice the speed of the flow. The results of these examinations will be the focus of the presentation.

Healthcare barriers for Spanish speakers

Brenda Rankhorn

Senior, Exercise Science, Milligan College

Mentor: Dr. Allysha Martin

Due to the increasing number of Spanish-speakers in the United States, the language barrier and cultural misunderstanding increasingly effect access to proper health care and general well-being, thereby straining current medical services. Often Spanish speakers have more risk factors for diseases and complications of their diseases, not only due to this language barrier, but also due to a lack of insurance, low income, deficiency in medical terminology in the English language, and acculturation issues. Taking into account the changing social landscape in the United States, this essay seeks to address the specific medical concerns within the Spanish-speaking population through statistical analysis of this demographic and to present possible solutions to resolve these issues, specifically the role of medical interpreters and obtaining an adequate understanding of the Spanish speakers’ disease risks, which will increase the patient’s chances for recovery and decrease their visits to the emergency room.

Participant Abstracts

Hidden dangers in color powders

Summer Robinson

Senior, Biochemistry, Middle Tennessee State University

Mentors: Ngee Sing Chong and Beng Guat Ooi

Many color powders have been traditionally used for thousands of years in India for ceremonies, and have recently gained popularity among the western countries as a special effect for concerts, 5k runs, and recreational nightlife. While the companies manufacturing the powders claim they only contain cornstarch and food dyes, several incidences of fire and blindness caused by the powders have initiated further testing to determine if the color powders are safe. The focus of this analysis will be on the color powders used in the 5k color runs. The dyes were extracted from the color powders and analyzed by gas chromatography-mass spectrometry (GC-MS), Fourier Transform infrared spectroscopy (FTIR), and X-ray fluorescence spectrometry (XRF). The tentatively identified analytes will be compared with FD&C approved food dyes as well as with commonly occurring dyes reported in spectral databases or published literature.

Modern Socialization: Stick and Poke Tattooing

Clara Robnett

Junior, Anthropology, Middle Tennessee State University

Mentor: Aaron Deter-Wolf

The art of tattooing is becoming more and more acceptable as time goes on but more recently than ever, “stick and poke tattoos” are sweeping the nation. Many people, mostly young adults, have adopted the art of getting or giving a “stick and poke tattoo” as a hobby and a form of socializing. They are buying ink and needles at their local convenient store and having all of their friends come over and basically setting up a homemade tattoo shop. Why is this form of connection becoming so popular in American society? What do tattoo historians have to say about it? And more importantly, is this trend going to end? This is a new wave hitting our culture and its hitting fast. Twenty years from now, our adults will have these small tattoos that hold stories from their days as teens but probably not the best artwork.

Being a Tattooed Man versus Being a Tattooed Woman

Lauren Scruggs

Junior, Anthropology, Middle Tennessee State University

Mentor: Professor Aaron Deter-Wolfe

In this presentation I will be discussing both tattooed men and tattooed women and how each is treated and viewed differently in today’s society possibly due to more conservative views. Being a tattooed woman comes with the unfortunate reality of being overly sexualized. Men with tattoos seem to go unnoticed though unless they are in a professional setting. The media coverage on tattooed women reports them as a novelty of sorts, while tattooed men are being cast in a negative light. These different ways of looking at tattooed men versus tattooed woman most likely comes from the traditional views of the early twentieth century.

Participant Abstracts

A review of literature for “Why children’s opinions matter: A qualitative study on preschool children’s cognitive construct in the early childhood classroom”

Calla Sharp

Senior, Early Childhood Education, Middle Tennessee State University

Mentor: Dr. Jane Lim

This review of literature was written as part of the larger study, “Why Children’s Opinions Matter: A Qualitative Study on Preschool Children’s Cognitive Construct in the Early Childhood Classroom,” which is currently being conducted. The purpose of the study is to listen to and understand what preschool children think and feel about their school environment and home life. The review of literature focuses on three themes: student-centered educational systems around the world, how play and project based learning connects to a student-centered curriculum, and the benefits of a student-centered pedagogy. The researcher concluded that the foundation for self-motivation, social interaction, and the growth of vital problem-solving skills is truly knowing the students and creating a curriculum based on the individual students’ interests. Research suggests that using a student-centered approach provides more opportunities for student engagement and interaction. A part of beginning a student-centered approach is to gain knowledge about what children think and feel about their daily lives.

Promoting global understanding: An in-depth study of the neo-classical frescos located at Villa Di Geggiano, Siena Italy

Joy Shind

Senior, Art Education, Middle Tennessee State University

Mentors: Dr. Gloria Wilson and Dr. Sickler-Voigt

As a future educator, my goal is to present meaningful art lessons that introduce students to international cultures while reflecting on historical art making processes. I have decided to use the art that inspired me during two separate study abroad trips that I conducted in Italy, with a focus on the frescos located at Villa Di Geggiano, to create a thesis project. I have completed my goal of creating my own fresco using historical techniques, writing a literature review regarding the history of frescos, and developing a research based lesson plan that provides strategies for teaching fresco techniques to K-12 students.

The Literary Review that I have written highlights important advances in the technical skills and cultural trends in historical fresco making. Understanding the history of Frescos allows us to understand the significance of the frescos located at Villa Di Geggiano. As part of my exploration, I have created a fresco, using the techniques that would have been used during the Neoclassical time period, as a creative project. Creating a fresco using historical methods ties into my third objective, which was to create a research-based lesson plan and instructional materials that provide strategies for teaching fresco techniques to K-12 students. As a URECA Gold level grant winner, I am excited to share my finding with fellow Middle Tennessee State University students and faculty through presenting a detailed poster of the work I have completed. It is my sincere desire to enhance global understanding at my University.

The Renaissance of tribal tattoo in Hawaii

Gretchen Michell Sims

Junior, Organization Communications & Global Studies, Middle Tennessee State University

Mentor: Aaron Deter-Wolf

Hawaii has been exposed to the effects of outside influences since Captain Cook first made contact. Many aspects of indigenous Hawaiian society were eradicated during colonialism of the islands. One major piece of visually communicating one’s social status and family is now returning albeit in a newer form as many tattoo artists embrace their heritage while looking towards the future. This presentation will explore the Renaissance of Hawaiian tattooing as the practice enters the digital age.

Participant Abstracts

Misunderstanding the modern Maya Sierra Sotelo

**Senior, Recording Industry/Music Business, Middle Tennessee State University
Mentor: Deborah Wagnon**

With the increasing globalization of our world it is imperative to remember the importance of preserving culture through education and experiences abroad. One such culture is that of the Maya. The current hardships of the Mayan culture are due to perpetuated misconceptions of its modern people, which this project brings to light. During June of 2016 a group of MTSU students spent three weeks in Belize immersed in its culture by travelling to locations such as Caye Caulker, Placencia, and El Tikal and stayed with homestay families. These families provided invaluable perspective and encouraged cultural exchange. The Rosado family additionally introduced their relatives, the Magañas, who graciously agreed to be interviewed as a part of this project. Following this immersion and generous interview from the Magañas, *Misunderstanding the Modern Maya* was written. Exploring Mayan culture through narrative, this project spoke about the importance of cultural appreciation and preservation in modern times. An excerpt from a larger work, its contents displayed an example of how culture is being pushed aside in order to focus solely on economic development for the purpose of monetary gain. This problem, plaguing more than just the Mayan culture, could be better understood through experiential education abroad as the project heavily implied.

Determinants of life expectancy in Sub-Saharan Africa Jeanette Stevens

**Junior, International Relations & Global Studies, Middle Tennessee State University
Mentor: Stephen Morris**

The determinants of life expectancy is a widely researched topic in the social sciences; everyone wants to know the keys to living a long, healthy life. In this study, moving off of previous research done on the topic, I seek to find the determinants of life expectancy in the Sub-Saharan African (SSA) region. As the world region with the lowest average life expectancy, finding ways to increase longevity in this area is especially important. Using variables that were previously found to have effects on life expectancy in other lesser-developed regions (fertility rate, literacy, urbanization, physician density, and undernourishment), I also create my own (percent of the population with HIV/AIDS receiving anti-retroviral therapy) to further the discussion. The results found after performing a multivariate regression were surprising, to say the least. All hypotheses were discarded and considered null, except for my own hypothesis relating ART% to life expectancy. I attribute this to a small sample size (30) with too many variables to be completely statistically accurate. If I was to redo this study, I would minimize the number of variables while including as much data as possible on all 54 SSA countries.

Participant Abstracts

How increasing competition of residency positions in the U.S. affects ECFMG certified IMG doctors: A qualitative study

Hoor Temuri

Sophomore, English, University of Tennessee, Knoxville

Mentor: Heather Williams

The decline of ECFMG certified IMG residency applicants and the number of matched residents needs to be reversed by identifying the core cause of the decline and implementing it through policy change. The core causes include discouragement from lack of residency positions to accommodate all the eligible candidates. In order to solve this issue, policymakers should create a database for US medical graduates and ECFMG certified IMGs, and create the positions accordingly. The residency system also needs to accommodate the large influx of a highly educated population to fulfill the needs of the growing demand for physicians in the U.S. healthcare system. In order to determine the motivations and obstructions of ECFMG certified IMGs in obtaining residency, we conducted interviews with the first hand population of ECFMG certified IMGs and the second hand population of their families. ECFMG certified IMGs and their family life is effected by the inability to obtain residency. Thoughts concerning residency for ECFMG certified IMGs were grouped into similar themes to understand motivating factors and belief about the residency process. Results reveal that ECFMG certified IMGs are not simply overwhelmed by the competition of the residency matching system. Instead, they are discouraged by, and are against the medical residency system and preference of certain groups solely because of characteristics unrelated to their competence as a physician and not because of their academic demeanor or clinical competence.

Synthesis of novel phosphine ligand with NH linker for ligand cooperative catalysis

David Tyer

Junior, Biochemistry, Middle Tennessee State University

Joseph Churchill

Sophomore, Biochemistry, Middle Tennessee State University

Asfah Mohammed

Sophomore, Chemistry, Middle Tennessee State University

Claudia Lopez

Sophomore, Chemistry, Middle Tennessee State University

Mentor: Dr. Keying Ding

Research on synthesis of amines, amides and imines has seen explosive growth over the past decade due to the increasing needs in the areas of pharmacy, biotechnology and green engineering. Among them, homogeneous acceptorless catalytic dehydrogenative coupling of alcohols and amines has gained particular attention due to its ability to form imines, amines or amides directly, which does not use hazardous stoichiometric oxidants or sacrificial hydrogen acceptors, with H₂O and/or H₂ as the only by-products. We propose to design, synthesize and characterize a novel, well defined and easily tuned Fe complex with metal-ligand cooperativities (MLC) to catalyze alcohol amine coupling reaction at mild conditions, to examine the efficiency and scope of catalyst, and to explore the mechanism of the reaction. For this recent URECA funded project: (1) we have so far gained proper lab safety and lab techniques and mastered air-sensitive techniques utilizing the glove box and Schlenk line; (2) we learned proton and phosphorous NMR spectroscopy; (3) we synthesized a specifically designed phosphine ligand with NH linker through a three step process. This project allowed the team to gain experiences that will be used in future classes, research and careers. This opportunity allowed a chance to develop verbal and writing skills necessary for professional career development. Being active participants in research provided a unique beneficial undergraduate experience.

Participant Abstracts

The effect of sample date on the propagation success rate of the grape, *Vitis aestivalis* 'Norton/Cynthiana.'

Amanda Uhls

Senior, Biology, Middle Tennessee State University

Mentor: Dr. John DuBois

Vitis aestivalis, or "Norton/Cynthiana," is a species of grape native to the southeast region of the United States. It is gaining popularity with industry vineyards within the United States; however, it is problematic, in that traditional propagation methods yield little to no results when applied to these grapes. The purpose of this research was to determine the appropriate time of year and/or time after last freeze that will yield the most successful propagation rate for *Vitis aestivalis*. It was hypothesized that the highest rate of propagation would be in late spring to early summer. To carry out this experiment, forty cuttings were taken semi-monthly over one year at the local vineyard, treated with 0.1% indole-3-butyric acid (IBA), and placed in a moist 50:50 Perlite:Vermiculite mixture in the growth chamber located in the MTSU Biology greenhouse. After six weeks, cuttings were evaluated for root production. Daily temperatures were recorded for every day over the course of this experiment as well, giving a more accurate timeframe in which to take the cuttings in different geographical locations. Rooting success rate was highest in the month of June at 15.0-27.5%, and 0-5% for all other sampling dates of the year. Therefore, it was determined that the best time to propagate *Vitis aestivalis* is the month of June, nine weeks after the last temperature below 0°C and eight weeks after the first indication of budding.

Spatial relationships between food environments and health outcomes

Anagha Uppal

Senior, Computational Social Science, University of Tennessee, Knoxville

Mentor: Dr. Betsy Anderson-Steeves

Evidence of a spatial relationship between food outlets and population health outcomes is well documented, therefore, a geospatial representation of these relationships could be very useful in developing health promotion interventions. However, there is no comprehensive food environment mapping of the East Tennessee region. Food source and health indicator information were collected and mapped for 16 East Tennessee counties. Names, addresses and food source types were collected from the Tennessee Department of Health and the Tennessee Department of Agriculture. Demographic and health data were collected from national, state, and regional data sets (such as the American Community Survey, the Centers for Disease Control and Prevention, state and local Health Departments, and Nourish Knoxville). Once collected, data was formatted, categorized and uploaded these into ArcMap 10.2 (ESRI, California) for visualization and publication.

In the 16-county region, a total of 5715 food sources were identified, geolocated, and mapped. This includes 3961 restaurants, 118 farms, 208 discount stores, 882 gas marts and 213 full-service grocery stores. Counties with larger populations (primarily Knox) have higher densities of food sources and greater variety of sources. Rural counties with smaller populations, often have food sources clustered around major roadways. The differential access to food source types and locations may impact the ability of East Tennesseans to access affordable, healthier food options, which could be related to health disparities. Food source maps can be useful tools for identifying areas with high health risks and developing tailored intervention strategies.

Participant Abstracts

The generalized pitcher problem

William Evan Welchance

Senior, Mathematics, Middle Tennessee State University

Mentor: Xiaoya Zha

“Pitcher problems,” referred to more generally as “decanting” problems, are often used to teach concepts in mathematics and computer science courses. These usually involve obtaining some amount of water by pouring between pitchers of water without measurement. However, there is not much in the way of a formal treatment on the subject, particularly concerning the issue of obtainability. This research generalizes the three-pitcher problem by advancing its modeling in a *tri-linear* coordinate scheme, which enables one to look at the problem graphically and algebraically. These mathematical properties are then evaluated in order to make general conclusions about the three-pitcher problem as a whole. Through first formulating the general rules of pouring, general results about obtainability in the general three-pitcher problem are demonstrated. Notably, specific conditions are identified which delineate that certain values are unobtainable given some initial setup. Furthermore, ideal cases are shown, wherein all possible values that are obtainable are in fact obtained (once more, given some initial conditions). These results are general for the three-pitcher problem, and the work as a whole should provide enough of a notational/formal foundation for anyone who wishes to study the problem further.

Searching for the missing: A content analysis of non-binary orientation and gender identity in significant social science journals (preliminary results)

Sana Marie K. Wilson

Senior, Social Work, Middle Tennessee State University

Mentor: Dr. Justin Bucchio

The Wilson (2015) study “More missing: Expanding content analysis in social work journals to include non-binary orientations and gender identities” established that there is a large literature gap in Social Work journals regarding non-binary identities. The purpose of this current project was to find what articles are available in other social science journals regarding this marginalized population. Social science journals with the highest impact factor, with material to address this population were identified, and articles published 2011-2015 were surveyed for inclusion. Articles that met criteria were identified, coded and analyzed to provide information about target, theme, issues, and resources. Preliminary results indicate that while there is general information about concepts and theory regarding non-binary identities, there is almost no information regarding skills and interventions for working with this population. The theory and concepts identified in this study can be used to develop further research, as well as to design appropriate interventions and materials to teach related skills for working with this population.

Participant Abstracts

Child – resistant packaging redesign

Justin Woods

Junior, Professional Physics/Professional Mathematics, Middle Tennessee State University

Mentor: Brian J. Slaboch

During the spring and summer of 2016, research was conducted on creating a child-resistant packaging design, with an emphasis on child-resistant pill bottles. The objective of this research was to create a child-resistant packaging design that would prove to be more child-resistant than the most common child-resistant medicine packages on the current market, while still providing a high level of senior and industrial friendliness.

The result of the research was the successful prototyping of two child-resistant packaging designs (prototyped through the use of an on-campus 3-D printer). Each design makes use of a keyway system, of which is believed to provide the packaging with a high level of child-resistance, and is not believed to be used by any of the common child-resistant medicine packages on the market today. The keyway system is designed in such a way that it requires little to no physical strain while opening the packaging (which may prove beneficial to elderly or arthritic persons), and the opening procedure of the packaging is believed to require a level of cognitive skill that would have not yet been developed in young children (thus rendering the packaging child-resistant).

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Presenting Colleges and Universities

- Austin Peay State University, Clarksville, TN
- Chattanooga State Community College, Chattanooga, TN
- East Tennessee State University, Johnson City, TN
- Middle Tennessee State University, Murfreesboro, TN
- Milligan College, Milligan College, TN
- Roane State Community College, Harriman, TN
- Tennessee Technological University, Cookeville, TN
- Volunteer State Community College, Gallatin, TN
- University of the South, Sewanee, TN
- University of Tennessee, Knoxville, Knoxville, TN
- University of Tennessee, Chattanooga, Chattanooga, TN

Majors of Presenters

- Aerospace Technology
- Anthropology
- Art Education
- Biochemistry
- Biomedical Sciences
- Biology
- Business
- Cell and Molecular Biology
- Clinical Psychology
- Communications
- Computational Social Science
- Early Childhood Education
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- Health Information Technology
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- Industrial Organization Psychology
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