4-20-2017

2017 - The Twenty-second Annual Symposium of Student Scholars

22nd Annual

SYMPOSIUM OF STUDENT SCHOLARS & STUDENT RESEARCH RECEPTION

APRIL 2017

Recognizing excellence in student scholarship and creative activity

Kennesaw State University

22nd Annual Symposium of Student Scholars & Student Research/ Creative Activity Reception

April 20, 2017

Convocation Center

Program

2:30pm – 3:30pm	Poster Session #1
4:00pm – 5:00pm	Student Research Reception
	Members of the Stage:
	Sam Olens, President Ken Harmon, Provost & Vice President for Academic Affairs David Baugher, Senior Assistant Dean of the Graduate College Amy Buddie, Director of the Office of Undergraduate Research
5:00pm – 6:00pm	Poster Session #2
6:15pm – 8:15pm	Oral Presentations and Performances

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Reception Honorees

A.L. Burruss Institute of Public Service & Research

Atlanta Immigrant Crossroads
Graduate Student(s): Socorro Aguila
Faculty Mentor(s): Darlene Xiomara Rodriguez and Paul McDaniel

Bagwell College of Education

Elementary and Early Childhood Education

Developmentally Appropriate Science Activities for Kindergarten
Undergraduate Student(s): Janie Gilstrap, Britany Cox, Torri Cooper, Adrienne Parnell, Kim Leeds, Tasha Erie
Faculty Mentor(s): Yanghee Kim

Inclusive Education

Implementing Peer Training as an Evidence Based Practice to Support Social Communication and Interactions in Young Children with Autism
Oral Presentation
Graduate Student(s): Jasmine Ennis
Faculty Mentor(s): Melissa Driver

A Cross-Cultural Framework to Bridge the Cultural Clash between Teachers and Students
Oral Presentation
Graduate Student(s): Cleopatra Sorina Iliescu
Faculty Mentor(s): Melissa Driver

Center for Young Adult Addiction and Recovery

Peer Education: The Answer to Prevention on College Campuses
Poster Presentation
Undergraduate Student(s): Lindsay Montgomery, Jessica McDaniel
Faculty Mentor(s): Austin Brown and Teresa Johnston

Marketing & Professional Sales

How Can Neuromarketers Optimize Dating Websites to Attract Customers Based on Design?
Poster Presentation
Undergraduate Student(s): Dustin Bearden, Shensen Gao
Faculty Mentor(s): Sandra Pierquet

How Can the Layout of the Makeup Store Sephora Be Improved by Applying Neuromarketing Research to Positively Impact Purchasing Behavior?
Poster Presentation
Undergraduate Student(s): Kinza Tariq, Bailey Thompson
Faculty Mentor(s): Sandra Pierquet

How Do Evolutionary Factors Influence Intra-Sexual Competition in Males and Females in Their Personal Branding and Subsequent Purchase Decisions?
Poster Presentation
Undergraduate Student(s): Kaci Giles, Sarah Rice
Faculty Mentor(s): Sandra Pierquet

Sex Sells: Determining How Explicit Advertising Impacts Men and Women Differently Through the Application of Neuromarketing Theory
Poster Presentation
Undergraduate Student(s): Robert Bernard, Kristen Grodd
Faculty Mentor(s): Sandra Pierquet

Beauty, Brains, and Brand Loyalty
Poster Presentation
Undergraduate Student(s): Maria Ford
Faculty Mentor(s): Sandra Pierquet

How Health/Beauty Brands Can Use Cuteness to Affect Consumer Purchase Behavior
Poster Presentation
Undergraduate Student(s): Rachael Eidson
Faculty Mentor(s): Sandra Pierquet

How Can Marketers Effectively Identify and Target Consumers Using Self-Esteem as a Driver Through the Application of Neuromarketing Theory?
Poster Presentation
Undergraduate Student(s): Tyler Hightower
Faculty Mentor(s): Sandra Pierquet

College of Architecture and Construction Management

Architecture

Chandigarh: A 21st Century Smart City?
Poster Presentation
Undergraduate Student(s): Dhruvee Patel
Faculty Mentor(s): Ameen Farooq

Constructed Reality: A Study in Virtual Reality Through the Use of Perspective and Cinemetrics
Oral Presentation
Undergraduate Student(s): Jose Rodriguez
Faculty Mentor(s): Christopher Welty and Arief Setiawan

College of Computing and Software Engineering

Computer Science

Improving the Prediction Accuracy of Text Data and Attribute Data Mining with Preprocessing
Poster Presentation
Graduate Student(s): Priyanga Chandrasekar
Faculty Mentor(s): Kai Qian

Software Engineering

Enhancing Requirements Elicitation Activities Using Virtual Reality
Poster Presentation
Graduate Student(s): Aman Bhimani
Undergraduate Student(s): Jared Gibson, Casey Brock
Faculty Mentor(s): Paola Spoletini

Using Biofeedback to Design and Deliver Online Courses for Computer and Software Majors
Poster Presentation
Graduate Student(s): Jennifer Cassan
Faculty Mentor(s): Paola Spoletini

16-068: Tiresias: Discovering Unknown Requirements
Oral Presentation
Graduate Student(s): Albert Maine
Faculty Mentor(s): Paola Spoletini

College of Humanities and Social Sciences

Communication

Media Relations in a Changing Media Landscape: A Study of Interviews with Public Relations Practitioners
Oral Presentation
Undergraduate Student(s): Toni-Ann Hall *[University Honors Scholar]*
Faculty Mentor(s): Justin E. Pettigrew

Digital Writing and Media Arts

Search Engine Optimization: The Art and Science of Online Visibility in a Sea of Billions
Oral Presentation
Undergraduate Student(s): Edward Kihara
Faculty Mentor(s): Laura Palmer

English

College Reflective Writing Practices: Pedagogies in Writing Courses
Oral Presentation
Undergraduate Student(s): Kailee Kivett
Faculty Mentor(s): Lara Smith-Sitton

College Reflective Writing Practices: Writing Center Support for Students with Disabilities
Oral Presentation
Undergraduate Student(s): Emily Deibler
Faculty Mentor(s): Lara Smith-Sitton

College Reflective Writing Practices: Writing Outside the Classroom for Healing
Oral Presentation
Undergraduate Student(s): Lindsey Walden
Faculty Mentor(s): Lara Smith-Sitton

Harnessing Social Media for Social Movement: Intersectional Feminism and the Digital Publication Model
Oral Presentation
Graduate Student(s): Laurel Ann Lowe
Faculty Mentor(s): Letizia Guglielmo

Valerie Smith, A Poetry Reading
Oral Presentation
Graduate Student(s): Valerie Smith
Faculty Mentor(s): Tony Grooms

Literacy, Rhetoric, Language Barriers and Academia
Oral Presentation
Graduate Student(s): Estefany Palacio
Faculty Mentor(s): Sergio Figueiredo

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Poster Presentation
Undergraduate Student(s): Sara Omer
Faculty Mentor(s): Jeanne Bohannon

What is a Meme?
Poster Presentation
Undergraduate Student(s): Amira Menkara
Faculty Mentor(s): Jeanne Bohannon

Geography and Anthropology

Archeological Efforts to Locate Slave Dwellings at a Civil War Era Plantation Site in North Georgia
Poster Presentation
Undergraduate Student(s): Ethan Williams
Faculty Mentor(s): Terry Powis

Ceramic Analysis from the Middle Woodland Lower Dabbs Site in Cartersville, Georgia
Poster Presentation
Undergraduate Student(s): Briana Johnston
Faculty Mentor(s): Terry Powis

Contradictions: A Historical Archeological Analysis of the Life of Corra Harris
Poster Presentation
Undergraduate Student(s): Jordan Lashaun Gentry *[University Honors Scholar]*
Faculty Mentor(s): Terry Powis

Investigation of a 19th Century Cabin at Troup Factory: A Former Servant's Quarter to a Freeman's House
Poster Presentation
Undergraduate Student(s): Cynthia Sun
Faculty Mentor(s): Terry Powis

Investigating Usefulness of Canoe Travel on the Etowah River
Poster Presentation
Undergraduate Student(s): Jordan Whiteman
Faculty Mentor(s): Terry Powis

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Undergraduate Student(s): Eden Ryan
Faculty Mentor(s): Susan Kirkpatrick Smith

Blast Trauma Injuries to the Skull: Comparison Between Primary and Secondary Injuries
Poster Presentation
Undergraduate Student(s): Desiree Smith-Plourde
Faculty Mentor(s): Susan Kirkpatrick Smith

Periosteal Reaction and Signs of Stress Found in Skeletal Remains from Ierapetra, Crete
Poster Presentation
Undergraduate Student(s): Logan Howard
Faculty Mentor(s): Susan Kirkpatrick Smith

Linear Enamel Hypoplasia in Roman Ierapetra
Poster Presentation
Undergraduate Student(s): Morgan McKenna
Faculty Mentor(s): Susan Kirkpatrick Smith

The Decline of the Indus Valley Civilization: A Children's Book Perspective
Poster Presentation
Undergraduate Student(s): Kelcey Bartkowiak
Faculty Mentor(s): Teresa Raczek

Conversion of Labs for Geography 1112 and Geography 1113
Oral Presentation
Undergraduate Student(s): Justina Edwards
Faculty Mentor(s): Nancy Hoalst-Pullen and Mark Patterson

A Study of Homeopathic Methods and the Reasons Behind Their Use
Oral Presentation
Undergraduate Student(s): Taelor Moran
Faculty Mentor(s): Kenneth Williamson

KSU's First Interactive Sustainability Maps
Oral Presentation
Undergraduate Student(s): Hannah Knab
Faculty Mentor(s): Tim Poe

The Plight and Determination of First-Generation Latino Students in the United States
Poster Presentation
Undergraduate Student(s): Tania Benavidez
Faculty Mentor(s): Brandon D. Lundy

Grocery Shopping for Your Fur Child: Humans Buying Food for Cats
Poster Presentation
Undergraduate Student(s): Natasha Lee
Faculty Mentor(s): Brandon D. Lundy

Gaggles of Gamers: Gamer Group Dynamics in a Virtual Reality Setting
Poster Presentation
Undergraduate Student(s): Adam Cusick
Faculty Mentor(s): Brandon D. Lundy

Friend Request: Identifying the Impact Social Media Networking has on a Non-Governmental Organization in Atlanta, GA
Poster Presentation
Undergraduate Student(s): Ashely Nicole Dawson
Faculty Mentor(s): Brandon D. Lundy

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Poster Presentation
Undergraduate Student(s): Richonna Sanders
Faculty Mentor(s): Brandon D. Lundy

Read All About It! Marketing Anthropology to Students at Kennesaw State University
Poster Presentation
Undergraduate Student(s): Elizabeth Pomawski
Faculty Mentor(s): Brandon D. Lundy

Yoga in Westernized Media: Perspectives and Expectations of the American Yogi
Poster Presentation
Undergraduate Student(s): Kendra Thomas
Faculty Mentor(s): Brandon D. Lundy

Swipe Right If You like Long Walks on the Beach: Online Dating and How Race, Gender, Education, and Sexuality Factor into Romantic Selection on Dating Sites
Poster Presentation
Undergraduate Student(s): Zoe Heard
Faculty Mentor(s): Brandon D. Lundy

Involvement of Women in Outdoor Recreational Activities
Poster Presentation
Undergraduate Student(s): Samuel Sims
Faculty Mentor(s): Brandon D. Lundy

How Do College Students Choose Their Presidential Candidate?
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Undergraduate Student(s): Evan Talmadge
Faculty Mentor(s): Brandon D. Lundy

Lost Skills and Ancient Arts: Stone Tool Culture Preservation and Education
Poster Presentation
Undergraduate Student(s): Ellie Stanley
Faculty Mentor(s): Brandon D. Lundy

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Undergraduate Student(s): Yasmin Alamin
Faculty Mentor(s): Brandon D. Lundy

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Poster Presentation
Undergraduate Student(s): Christopher Sipes
Faculty Mentor(s): Paul McDaniel and Darlene Xiomara Rodriguez

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Poster Presentation
Undergraduate Student(s): Gregory Smart
Faculty Mentor(s): Terry Powis

History and Philosophy

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Oral Presentation
Undergraduate Student(s): Savannah Beeson
Faculty Mentor(s): Jim Piecuch

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Poster Presentation
Undergraduate Student(s): Emily Rolader
Faculty Mentor(s): Katherine Perrotta

Sweeping Change in America Via the New Deal's Glass-Steagall Act
Poster Presentation
Undergraduate Student(s): Margaret Boggs
Faculty Mentor(s): Katherine Perrotta

International Conflict Management

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Poster Presentation
Graduate Student(s): Cyrel San Gabriel
Faculty Mentor(s): Brandon D. Lundy

Breaking the Glass Ceiling: Experiences of Female Engineers in the United States
Poster Presentation
Graduate Student(s): Yeju Choi
Faculty Mentor(s): Brandon D. Lundy

Diversifying Our Assets? The Impact of Institutional Funding to Student Organizations on Student Perceptions at Kennesaw State University
Poster Presentation
Graduate Student(s): Jonathan Taylor Downs
Faculty Mentor(s): Brandon D. Lundy

Political Science

The Power of a Movement: How Third-Wave Feminism has Shaped Sexual Violence in the United States
Poster Presentation
Undergraduate Student(s): Natalie Phillips
Faculty Mentor(s): April Johnson

Modern Day Corruption in Various Regimes
Poster Presentation
Undergraduate Student(s): Victoria Pancheva, Armena Brown, Sydney Palmer, Kenneth Carmon
Faculty Mentor(s): Esther Jordan

The Refugee Crisis and the Determinants of Responsibility to Protect
Poster Presentation
Undergraduate Student(s): Katherine McNamara, Seychelle Steele, Mary Payton Blackmon
Faculty Mentor(s): Esther Jordan

Leadership and ROTC: Methods and Optimization of Cadet Leadership
Poster Presentation
Undergraduate Student(s): Barrett Tallant
Faculty Mentor(s): James Summersell and Kami Anderson

Psychology

The Intergroup Sensitivity Effect Among Racial Groups
Oral Presentation
Undergraduate Student(s): J. Caleb Lang, Chloe McLaughlin
Faculty Mentor: Katherine White

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Undergraduate Student(s): Dara Latimer, Aimee Meeks, Stephen Gilcrease, Parisa Jallali, Karina Gartavel
Faculty Mentor(s): Jennifer Willard

Factors Related to Blame Taking among Friends: Closeness, Beliefs About Reporting Wrongdoing, and Identity
Poster Presentation
Undergraduate Student(s): Carly Burger, Mikayla Dittman, Cooper Jannuzzo
Faculty Mentor(s): Jennifer Willard

Gender and Willingness to Take the Blame Among Close Friends
Poster Presentation
Undergraduate Student(s): Mikayla Dittman, Dara Latimer, Noel Byers Carter
Faculty Mentor(s): Jennifer Willard

Behavioral Indicators of Welfare in Shelter Dogs
Undergraduate Student(s): Paige Adams *[University Honors Scholar]*
Faculty Mentor(s): Suma Mallavarapu

The Relationship between College Students and Their Pets
Undergraduate Student(s): Olivia Carlson
Faculty Mentor(s): Suma Mallavarapu

Evaluating the Effect of Previous Knowledge of a Disorder on Attitudes
Poster Presentation
Undergraduate Student(s): Hannah Dollinger *[University Honors Scholar]*
Faculty Mentor(s): Sharon Pearcey

Sources of Sexual Knowledge, Sex Negativity, and Sexual Shame
Poster Presentation
Undergraduate Student(s): Tara Joyce *[University Honors Scholar]*
Faculty Mentor(s): Beth Kirsner and Dorothy Marsil

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Undergraduate Student(s): Kylie Kuglar *[University Honors Scholar]*
Faculty Mentor(s): Dorothy Marsil and Corinne McNamara

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Faculty Mentor(s): Corinne McNamara and Dorothy Marsil

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Poster Presentation
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Faculty Mentor(s): Dorothy Marsil

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Poster Presentation
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Faculty Mentor(s): Dorothy Marsil and Corinne McNamara

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Faculty Mentor(s): Dorothy Marsil and Beth Kirsner

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Poster Presentation
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Faculty Mentor(s): Tracie Stewart

Exploring the Relationship Among Stress, Personality, and Working Memory
Poster Presentation
Undergraduate Student(s): Sharlene Strother, Hillary Groover, Melissa Ake
Faculty Mentor(s): Adrienne Williamson

Is the Struggle Real? Perceptions of Stress on Working Memory
Poster Presentation
Undergraduate Student(s): Karen Ake, Amneh Z. Minkara, Hillary P. Groover, Bethany A. Wyman, Connor L. Lewis, Jamie N. Miller
Faculty Mentor(s): Adrienne Williamson

The Relationship Between Childhood Trauma Exposure and Fear-potentiated Startle
Poster Presentation
Undergraduate Student(s): Cheyenne Ashley, Luana Scienza, Rebekah Fallin, Jesse Edmond, Jasmine Williams, Tiana Britton, Jamie Miller
Faculty Mentor(s): Ebony Glover

Estrogen and Emotion Regulation: An Examination of Self-Report and Biological Data
Poster Presentation
Undergraduate Student(s): Jesse Edmond, Luana Scienza, Bethany Wyman, Jasmine Williams, Rebekah Fallin, Tiana Britton, Jamie Miller, Nhat Nguyen
Faculty Mentor(s): Ebony Glover, Sharon Pearcey, and V. Doreen Wagner

Using Fear-Potentiated Startle to Examine Sex-Related Factors in Test Anxiety
Oral Presentation
Undergraduate Student(s): Rebekah Fallin, Luana Scienza, Bethany Wyman, Nhat Nguyen, Jesse Edmond, Jasmine Williams, Tiana Britton, Jamie Miller
Faculty Mentor(s): Ebony Glover and Sharon Pearcey

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Poster Presentation
Undergraduate Student(s): Courtney Skeete, Luana Oh Scienza, Bethany Wyman, Jesse Edmond, Jasmine Williams, Rebekah Fallin, Tiana Britton, Jamie Miller, Nhat Nguyen
Faculty Mentor(s): Ebony Glover

Childhood Trauma and Emotion Regulation
Poster Presentation
Undergraduate Student(s): Chanel Lindstrom, Luana Scienza, Nhat Nguyen, Jamie Miller, Rebekah Fallin, Jasmine Williams, Bethany Wyman**,** Jesse Edmond**,** Tiana Britton
Faculty Mentor(s): Ebony Glover, Sharon Pearcey, and V. Doreen Wagner

Understanding Contributions of Estrogen Levels and Hormonal Contraceptives to Emotion Regulation in Women Compared to Men
Poster Presentation
Undergraduate Student(s): Olivia Lauzon, Luana Scienza, Nhat Nguyen, Bethany Wyman, Jesse Edmond, Jasmine Williams, Rebekah Fallin, Tiana Britton, Jamie Miller
Faculty Mentor(s): Ebony Glover, Sharon Pearcey, and V. Doreen Wagner

Sociology and Criminal Justice

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Poster Presentation
Undergraduate Student(s): Joshua Ehrhardt, Wesley Hohensee, Courtney Poulson
Faculty Mentor(s): Darina Lepadatu

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Undergraduate Student(s): Michelle Mendez, Luis Delgado-Zepeda
Faculty Mentor(s): Darina Lepadatu

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Poster Presentation
Undergraduate Student(s): Denver Harris
Faculty Mentor(s): James McCafferty

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Faculty Mentor(s): Heidi Scherer

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Graduate Student(s): Nathanael Riepe
Faculty Mentor(s): Gang Lee

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Undergraduate Student(s): Justin Maslanka
Faculty Mentor(s): Brian Starks

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Poster Presentation
Undergraduate Student(s): Robert Skinner, Henriette N'kodia, Geraldine N'kodia, Eun Sol Chang, Sabrina Anderson, Rosa King
Graduate Student(s): Brandon McCollum
Faculty Mentor(s): Evelina W. Sterling and Christina Scherrer

Mis-Informed Decision-Making: The Marketing of Cancer Treatment Options
Poster Presentation
Undergraduate Student(s): Caroline Benefield
Faculty Mentor(s): Evelina W. Sterling

College of Science and Mathematics

Chemistry and Biochemistry

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Faculty Mentor(s): Michelle L. Head

A Comparison of Over the Counter Medicines Used to Treat Forms of Arthritis Using Gas Chromatography and UV Spectrometry
Poster Presentation
Undergraduate Student(s): Megan Whitlow
Faculty Mentor(s): Huggins Z. Msimanga

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Poster Presentation
Undergraduate Student(s): Devan Patel, Jillian Calderon
Faculty Mentor(s): Huggins Z. Msimanga

A Quantitative Perspective on the Irritating Nature of Hot Pepper Sauces
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Undergraduate Student(s): Reagan Hooper, Francisca Small
Faculty Mentor(s): Huggins Z. Msimanga

A Comparative Study of Drugstore Sunscreen Products Based on Their Sun Protection Factors and Ultra-Violet Spectrometry
Poster Presentation
Undergraduate Student(s): Dalila Arroyave Gomez, Megan Renee Fulwood, Alyssa Katherine Selewski
Faculty Mentor(s): Huggins Z. Msimanga

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Faculty Mentor(s): Huggins Z. Msimanga

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Undergraduate Student(s): Tuan Do, Jeresa Watson
Faculty Mentor(s): Huggins Z. Msimanga

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Poster Presentation
Undergraduate Student(s): Jessica Lauren Harry, Andrew Blake Roberds
Faculty Mentor(s): Huggins Z. Msimanga

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Poster Presentation
Undergraduate Student(s): Patrick B. Glenn, Andrea Green, Caleb Mathieu Veselica
Faculty Mentor(s): Huggins Z. Msimanga

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Poster Presentation
Undergraduate Student(s): Michael A. Baker, Alexander Mason, Angelo Changas, Graeme Bettler
Graduate Student(s): Ashley Carter
Faculty Mentor(s): Daniela Tapu

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Poster Presentation
Graduate Student(s): Ashley Carter
Undergraduate Student(s): Alexander Mason, Michael A. Baker, Graeme Bettler, Angelo Changas
Faculty Mentor(s): Daniela Tapu

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Poster Presentation
Undergraduate Student(s): Graeme Bettler, Angelo Changas
Faculty Mentor(s): Daniela Tapu

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Poster Presentation
Undergraduate Student(s): Reagan Hooper, Alexander Mason, Orrion Kuykendall
Faculty Mentor(s): Daniela Tapu

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Poster Presentation
Graduate Student(s): Richard Justice
Undergraduate Student(s): Andre Berry, Reagan Hooper, Alexander Mason, Pearl Jean
Faculty Mentor(s): Daniela Tapu

Toward the Synthesis of a Novel tris-N-Heterocyclic Carbene
Poster Presentation
Graduate Student(s): Richard Justice, Maleek Montgomery
Faculty Mentor(s): Daniela Tapu

Novel Thione Based Ligands: Synthesis and Complexation
Poster Presentation
Undergraduate Student(s): Alexander Mason, Pearl Jean
Faculty Mentor(s): Daniela Tapu

On the Outside Looking In: Student and Teacher Understanding of First Semester Organic Chemistry Reactions
Poster Presentation
Undergraduate Student(s): Chidinma Candace Uba
Faculty Mentor(s): Kimberly Linenberger Cortes

Use of Biometrics to Determine Differences in How Users Read Metabolic Pathways
Oral Presentation
Graduate Student(s): Kim Kammerdiener
Faculty Mentor(s): Kimberly Linenberger Cortes and Adriane Randolph

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Poster Presentation
Undergraduate Student(s): Sharonjeet Kaur
Faculty Mentor(s): Glen Meades

Development and Implementation of Curriculum for Peer Health Education Program for High School Students
Oral Presentation
Undergraduate Student(s): Jaspreet Singh, Sharonjeet Kaur
Faculty Mentor(s): Glen Meades

Synthesis of 1-Alkenyl Phosphonates using Organopalladium Reagents
Poster Presentation
Graduate Student(s): Ronald Mensah
Faculty Mentor(s): Christopher W. Alexander

Synthesis of 1-Aryl-1-alkenyl Phosphonates using a Organopalladium Reagents
Poster Presentation
Graduate Student(s): Ronald Mensah
Undergraduate Student(s): Nicholas Zemel, Cody Falls, Cody Baum, Zane Bertoli, Matthew Pearson, Tanner Gerschick
Faculty Mentor(s): Christopher W. Alexander

Reacting Organocuprate Reagents with 1-Phosphonovinyl Pseudohalides
Poster Presentation
Undergraduate Student(s): Tanner Gerschick, Skyler Mize
Graduate Student(s): M. Tanner Dawson
Faculty Mentor(s): Christopher W. Alexander

Analysis of Methoxycarbonyl N-Confused Tetraphenylporphyrin
Poster Presentation
Undergraduate Student(s): Andrea Green, Katie Schoen
Faculty Mentor(s): Janet Shaw

Synthesis of N-Confused Tetraphenylporphyrin
Poster Presentation
Undergraduate Student(s): Tamia Cuttray, Kennede' Wallace
Faculty Mentor(s): Janet Shaw

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Undergraduate Student(s): Dorcas Ugbo
Faculty Mentor(s): Marina Koether

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Graduate Student(s): John Goodwin
Undergraduate Student(s): Joan Ndungu
Faculty Mentor(s): Ellen Moomaw

Tartronic Acid and Diethyl Mesoxalate: Inhibition and Substrate Promiscuity of Bicupin Oxalate Oxidase
Oral Presentation
Undergraduate Student(s): Joan Ndungu
Graduate Student(s): John Goodwin
Faculty Mentor(s): Ellen Moomaw

Design and Fabrication of FTMW Spectrometer
Oral Presentation
Undergraduate Student(s): Chris Black
Faculty Mentor(s): Lu Kang

Design of Graphene Sand, Graphene Oxide Sand, and Reduced Graphene Oxide Sand Composites for Water Purification
Poster Presentation
Undergraduate Student(s): Connie Wei
Graduate Student(s): Daniel A. Corella
Faculty Mentor(s): Bharat Baruah

Design of Composite Materials Consisting of Cadmium Sulfide QDs and Nanoparticles: Photocatalytic Activity
Poster Presentation
Undergraduate Student(s): Kristi Moncja
Faculty Mentor(s): Bharat Baruah

Fabrication of Composite Materials Using Silicon Substrate, ZnO Nanospheres and Polymer Stabilized Nanoparticles: Photocatalytic activity
Poster Presentation
Undergraduate Student(s): Matthew Geiger, Christopher Kelley, Kelly M. Jacobson
Faculty Mentor(s): Bharat Baruah and Gregory J. Gabriel

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Oral Presentation
Graduate Student(s): Daniel A. Corella
Faculty Mentor(s): Bharat Baruah

Cotton Fabric Immobilized Composite Materials Containing ZnO and AuNPs: Photocatalytic Applications
Poster Presentation
Undergraduate Student(s): David Agyeman
Faculty Mentor(s): Bharat Baruah

Fabrication of Ternary Composite Materials Containing CdS, AuNPs and TiO_2 on Sand Substrate: Photocatalytic Application
Poster Presentation
Graduate Student(s): William Alejandro Mendez Gil
Faculty Mentor(s): Bharat Baruah

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Poster Presentation
Undergraduate Student(s): James Shell Cox
Faculty Mentor(s): Michael Van Dyke

Ecology, Evolution and Organismal Biology

Brassica juncea Growth Under Nutrient Limitations
Poster Presentation
Undergraduate Student(s): Michelle Jolly
Graduate Student(s): Andrew Thornhill
Faculty Mentor(s): Matthew Weand

Influence of Chinese Privet on Patterns of Litter Fall in Riparian Zones
Poster Presentation
Undergraduate Student(s): Ronnie Adams, Brian Greene, Nathan Kasmar, Taylor Nash
Faculty Mentor(s): Matthew Weand

Oligochaete Growth and Reproduction in Local Streams
Poster Presentation
Undergraduate Student(s): Rebekah Wedermeyer, Brett Beatty
Faculty Mentor(s): Heather Sutton

*Age and Growth of Central Stonerollers (*Campostoma oligolepis*) Across a Range of Urbanization*
Poster Presentation
Undergraduate Student(s): Bijan Moshgelani, Thereshana Tan
Graduate Student(s): Hannah Grice
Faculty Mentor(s): William Ensign

Impacts of Urbanization on the Composition of Gut Microbiota in Campostoma oligolepis
Poster Presentation
Undergraduate Student(s): Joanna Ho
Graduate Student(s): Hannah Grice
Faculty Mentor(s): Thomas McElroy and William Ensign

Assessing Deer Abundance in Kennesaw Mountain National Battlefield Using Motion Detection Cameras
Poster Presentation
Undergraduate Student(s): Victoria Mendiola, Melissa Martin
Faculty Mentor(s): William Ensign

Employment of BioMark HPR Plus Handheld PIT Tag Reader for Monitoring the Movement of Fishes in a Small Stream
Poster Presentation
Graduate Student(s): Andrea Davis
Undergraduate Student(s): William Commins
Faculty Mentor(s): William Ensign

A Preliminary Molecular Assessment of Sediment Microbial Community Diversity and Composition Associated with Seagrass Beds and Unvegetated Areas in Shallow Coastal Waters Around Apalachicola Bay, Florida
Poster Presentation
Undergraduate Student(s): Michelle Edward *[University Honors Scholar]*
Faculty Mentor(s): Thomas McElroy, Julia Morrissey

Before and After: Wastewater Nitrogen Sources in a Local Watershed
Poster Presentation
Undergraduate Student(s): Thereshana Tan
Faculty Mentor(s): Troy Mutchler

Comparing Staining Techniques to Visualize Endomycorrhizal Fungal Colonization in Plant Roots
Poster Presentation
Undergraduate Student(s): Joseph Almengor
Faculty Mentor(s): Paula Jackson

Mathematics

Mathematical Analysis of Tumor Growth Models Combining Chemotherapy and Immunotherapy
Poster Presentation
Undergraduate Student(s): Patrick Schambach
Faculty Mentor(s): Ana-Maria Croicu

A Mathematical Model for the Effect of Domestic Animals on Human African Trypanosomiasis (Sleeping Sickness)
Poster Presentation
Undergraduate Student(s): Sagi Shaier
Faculty Mentor(s): Meghan Burke

Doubly-Chorded Pancyclic Graphs without P4 subgraphs
Poster Presentation
Undergraduate Student(s): Edgar Reyes, Justin Mauer
Faculty Mentor(s): Victor Larsen

Our Community: Our School Climate
Poster Presentation
Undergraduate Student(s): Micaela Bronte Hays
Faculty Mentor(s): David Glassmeyer and Brian Lawler

Molecular and Cellular Biology

Establishment of Primary Cell Cultures from Species Oreochromis Niloticus
Poster Presentation
Undergraduate Student(s): Kristina Howard
Faculty Mentor(s): Jennifer Louten

Techniques for the Characterization of Newly Derived Cell Cultures
Poster Presentation
Undergraduate Student(s): Kirsten Marick
Faculty Mentor(s): Jennifer Louten

Conditions for Isolation and Differentiation of Tilapia Cells
Poster Presentation
Undergraduate Student(s): Aaron Aghai, Abby Kabo
Faculty Mentor(s): Jennifer Louten

Do Neurogenin and NeuroD1 Function Redundantly in Neuronal Cell Fate Specification?
Poster Presentation
Undergraduate Student(s): Elyse Christensen
Graduate Student(s): Zachery Mielko
Faculty Mentor(s): Martin Hudson

Is eor-1 a Transcriptional Regulator of kal-1/anosmin?
Poster Presentation
Undergraduate Student(s): Lauren Leitner
Graduate Student(s): Zachery Mielko
Faculty Mentor(s): Martin Hudson

Do the Transcription Factors sea-1 and ztf-29 Control kal-1 Gene Expression?
Poster Presentation
Undergraduate Student(s): Kaylee Bronson, Victoria Owens
Graduate Student(s): Wendy Aquino Nunez
Faculty Mentor(s): Martin Hudson

Cell Lineaging as a Tool to Identify Novel kal-1 Transcriptional Regulators
Poster Presentation
Undergraduate Student(s): Dalton Carriker
Graduate Student(s): Zachery Mielko
Faculty Mentor(s): Martin Hudson

Ephrin Signaling in C. elegans Interneuron Development
Poster Presentation
Undergraduate Student(s): Christopher Benton
Graduate Student(s): Tyler Hill
Faculty Mentor(s): Martin Hudson

Why the Worm Turned: Eph Receptor Function in C. elegans Locomotion
Poster Presentation
Undergraduate Student(s): Ashtyn B. Johnston
Graduate Student(s): Tyler Hill
Faculty Mentor(s): Martin Hudson

Abnormal Cardiac Patterning and Development in Akirin Embryos
Poster Presentation
Undergraduate Student(s): Madison Hupp *[University Honors Scholar]*
Faculty Mentor(s): Scott Nowak

Interaction of Akirin with Muscles Wasted During Myogenesis
Poster Presentation
Undergraduate Student(s): Courtney Willett
Faculty Mentor(s): Scott Nowak

Comparison of Aflatoxin and Non Aflatoxin Producing Aspergillus SPP. in Contaminated Peanuts
Poster Presentation
Undergraduate Student(s): Paul Branham, Sina Fleke
Faculty Mentor(s): Premila Achar

Lateral Abdominal Muscles as a Model for Studying Muscle Atrophy in Drosophila
Poster Presentation
Undergraduate Student(s): Natasya Tamba
Faculty Mentor(s): Anton Bryantsev

Finding the Key Causative Genes Involved in Muscle Wasting
Poster Presentation
Graduate Student(s): Matthew Giedd
Faculty Mentor(s): Anton Bryantsev

Screening for Genetic Factors that Determine Muscle Specialization
Poster Presentation
Graduate Student(s): Ashley McDougal
Faculty Mentor(s): Anton Bryantsev

Complex Effects of Cadmium Toxicity Revealed with the Fruit Fly Model
Poster Presentation
Undergraduate Student(s): Hannah Mary Stratton
Faculty Mentor(s): Anton Bryantsev

HV1 Proton Channels in Dinoflagellates: Not Just for Bioluminescence
Oral Presentation
Undergraduate Student(s): Gabriel Kigundu
Faculty Mentor(s): Susan M. E. Smith

Changes in pH Dependence Caused by Histidine Mutants of LBP
Poster Presentation
Undergraduate Student(s): Beryl Khakina
Faculty Mentor(s): Susan M. E. Smith

Heat Map Modeling of Cancer Mutations in the Electron Transport Chain - Complex III
Poster Presentation
Undergraduate Student(s): Ben Crews
Faculty Mentor(s): Estella Chen Quin

Voltage-Gated Sodium Channel Auxiliary Subunits
Poster Presentation
Undergraduate Student(s): Kimberly Meyberg
Faculty Mentor(s): Tsai-Tien Tseng

Voltage-Gated Calcium Channel Auxiliary Subunits
Poster Presentation
Undergraduate Student(s): Reagan Foster, Danielle Varljen
Graduate Student(s): Kevin Bennett
Faculty Mentor(s): Tsai-Tien Tseng

Optimization of Bioinformatic Pipelines for Foodborne Pathogen Detection with Next-Generation Sequencing
Poster Presentation
Undergraduate Student(s): Danielle Varljen
Faculty Mentor(s): Tsai-Tien Tseng

Effects of Amphetamines on Conditioned Place Preference Behavior
Poster Presentation
Graduate Student(s): Brad Serpa
Faculty Mentor(s): Lisa Ganser and Adrienne King

Effects of Amphetamine on Zebrafish Behavior
Poster Presentation
Undergraduate Student(s): Miriam (Mik) Chari *[University Honors Scholar]*
Faculty Mentor(s): Lisa Ganser

Correlates of Amphetamine Addiction in the Zebrafish Model
Poster Presentation
Undergraduate Student(s): Paul Hwang-Bo, Luke Dickson, Douglas Grandberry
Faculty Mentor(s): Lisa Ganser and Adrienne King

Detection of Putative Virulence Factors using Multiplex Polymerase Chain Reaction and Nematode Challenge Assay
Poster Presentation
Undergraduate Student(s): Victoria Foltz, Brian D. Sattelmeier, Rahiq R. Rahman
Research Assistant: Pyeongsug Kim
Faculty Mentor(s): Donald J. McGarey

Microbial Source Tracking of Fecal Indicator Bacteria in Three Cobb County Creeks
Poster Presentation
Undergraduate Student(s): Brandi Byler
Faculty Mentor(s): Michael Beach

Fin-folds and Autopods Share a Conserved Shh-Gremlin-Fgf Regulatory Network
Poster Presentation
Undergraduate Student(s): Elishka Holmquist
Faculty Mentor(s): Marcus Davis and Amanda Cass

Statistics and Analytical Sciences

Sample Size and Biased Selection Explains Preterm Infant Growth Measure Selection Disparities
Poster Presentation
Undergraduate Student(s): Wendy Ballew, Jeffrey Chou
Faculty Mentor(s): Louise Lawson and Nicole Ferguson

A Comparison of Decision Tree and Logistic Regression Models for Prediction of Business Credit Risk
Poster Presentation
Graduate Student(s): Jessica M. Rudd
Faculty Mentor(s): Jennifer Priestley

An Analysis of the Complexity and Difficulty Level for the Game, Tumblestone
Poster Presentation
Undergraduate Student(s): David Richmond, Denise Hernandez
Faculty Mentor(s): Joe DeMaio

Reducing Traveling Times for the Cobb County Fire Department
Poster Presentation
Graduate Student(s): Bogdan Gadidov, Lili Zhang, Yiyun Zhou
Faculty Mentor(s): Joe DeMaio and Kurt Schulzke

Prevalence and Incidence of Health Risk Factors Among Adolescent Girls
Oral Presentation
Undergraduate Student(s): Kylah Pollard, Sarai Bauguess
Faculty Mentor(s): Mohammed Chowdhury

College of the Arts

Art and Design

Exploring Modern Sterility Through Cast Multiples
Undergraduate Student(s): Nicole Webb
Faculty Mentor(s): Jeff Campana

Cheers!
Oral Presentation
Undergraduate Student(s): Tyler Cochran
Faculty Mentor(s): Kristine Hwang

Caitlin Keogh: Feminine Feminism
Oral Presentation
Undergraduate Student(s): Madeline Beck
Faculty Mentor(s): Diana McClintock

Metalworks of the Inca Empire and the Question of Authorship
Oral Presentation
Undergraduate Student(s): Hannah Pelfrey, Maria Shah
Faculty Mentor(s): Jessica Stephenson

Dance

Spectacular Spaces of Consumption
Oral Presentation
Undergraduate Student(s): Ellen Grace Watkins
Faculty Mentor(s): Sarah Holmes and Meghan Quinlan

The Danger of Unqualified Dance Instruction
Poster Presentation
Undergraduate Student(s): Angelina Pellini *[University Honors Scholar]*
Faculty Mentor(s): Sarah Holmes

Dance Education in Low Socioeconomic Environments
Oral Presentation
Undergraduate Student(s): Rebekah Sauls *[University Honors Scholar]*
Faculty Mentor(s): Meghan Quinlan

Music

The Hero of Hyrule: Musical Topics in the Legend of Zelda
Oral Presentation
Undergraduate Student(s): Nicole Hamel
Faculty Mentor(s): Jeffrey Yunek and Benjamin Wadsworth

Romantic Transcendence in the Second Movement of Beethoven's Fifth Piano Concerto, Op. 73
Oral Presentation
Undergraduate Student(s): Roger Ibrahim
Faculty Mentor(s): Benjamin Wadsworth

Theater and Performance Studies

The New Lens of Normality: An Exploration of Queer Representation in Fairytales
Performance
Undergraduate Student(s): Dylan Carter
Faculty Mentor(s): Angela Farr Schiller

Go Ahead and Free Yourself: "The Escape; Or a Leap for Freedom", "The Shipment", and The Politics of Art as Emancipation
Oral Presentation
Undergraduate Student(s): DeShon Green
Faculty Mentor(s): Angela Farr Schiller

Decoding the X: Discovering the Black Experience
Oral Presentation
Undergraduate Student(s): Skylar Resna Jackson
Faculty Mentor(s): Angela Farr Schiller

The Octoroon: The Black, The White and A Choice of Color
Oral Presentation
Undergraduate Student(s): Marcia Harvey
Faculty Mentor(s): Angela Farr Schiller

Washing Away Whitewashing in American Theatre
Oral Presentation
Undergraduate Student(s): Riley Schatz
Faculty Mentor(s): Angela Farr Schiller

A Gross Misunderstanding: Theatre as a Reflection of Societal Ignorance Surrounding Transgender and Nonconforming Identity
Performance
Undergraduate Student(s): Emily Musgrove, Tony Fox, Rebekah Mez, Gabriella Bueno, Gwydion Calder, James Strawder
Faculty Mentor(s): Angela Farr Schiller

Murdering Femininity: A Discussion of Medea and the Place of Femininity in Partriarchy
Oral Presentation
Undergraduate Student(s): Samantha McBrayer
Faculty Mentor(s): Angela Farr Schiller

Gender and Injustice in Euripides' Medea
Oral Presentation
Undergraduate Student(s): Jessica Rattray
Faculty Mentor(s): Angela Farr Schiller

The Court Room: A Close Analysis of the Play Twelve Angry Men and the Effects of Racial Biases in the Court Room
Oral Presentation
Undergraduate Student(s): Erica Holcomb
Faculty Mentor(s): Angela Farr Schiller

Outside the Binary: Gender Identity and "The Children's Hour"
Oral Presentation
Undergraduate Student(s): Haley McFadden, Leydi Morales
Faculty Mentor(s): Angela Farr Schiller

The Demographic Disconnect of Theatre: The Overwhelming Whiteness of the American Theatre
Oral Presentation
Undergraduate Student(s): Nathaniel Gesualdo
Faculty Mentor(s): Angela Farr Schiller

Under the Helmet: Woyzeck, Ajax in Iraq, and the Politics of Seeking Help
Oral Presentation
Undergraduate Student(s): Jessica Rattray, Marcia Harvey
Faculty Mentor(s): Angela Farr Schiller

Equality over Patriarchy: A Close Analysis of the Plays Machinal, Mulan Jr., and the Empowerment of the Female Voice in a Patriarchal World
Oral Presentation
Undergraduate Student(s): LaTausha Carter
Faculty Mentor(s): Angela Farr Schiller

President's Emerging Global Scholars (PEGS) Program

A Geographic Information System Solution to Addressing the Food Shortage in Nigeria
Poster Presentation
Undergraduate Student(s): Masood Al Ansar Abdul Salam, Cindi Simmons, Janna Pruiett
Faculty Mentor(s): Tim Blumentritt

Siegel Institute for Leadership, Ethics, and Character

Examining Burnout in Division I Collegiate Athletes: Identifying the Major Factors and Level of Importance in an Athlete's Life
Oral Presentation
Graduate Student(s): Angel Almodovar
Faculty Mentor(s): Linda Johnston

Cosmetic Beauty: The Intrinsic and Extrinsic Motivators
Undergraduate Student(s): Laura Morrow
Faculty Mentor(s): Linda Johnston and Crystal Money

Perception vs. Representation: The Impact of Stereotypes and Eurocentric Standards on Black Women
Oral Presentation
Undergraduate Student(s): Michelle Edward
Faculty Mentor(s): Linda Johnston

Addressing the Issue of Food Deserts in Georgia
Oral Presentation
Undergraduate Student(s): Madison Watson
Faculty Mentor(s): Linda Johnston

Social Acceptability of Factors Contributing to Psychological Abuse
Undergraduate Student(s): Bethany Wyman
Faculty Mentor(s): Linda Johnston

Perceived Taste of Color Food Packaging
Oral Presentation
Undergraduate Student(s): Crystal Jackson
Faculty Mentor(s): Crystal Money

The Information System's Role in Reducing Food Waste in Grocery Chains
Oral Presentation
Graduate Student(s): Zandro Zaragoza
Faculty Mentor(s): Linda Johnston and Crystal Money

Southern Polytechnic College of Engineering & Engineering Technology

Civil Engineering

Mind of Matter
Poster Presentation
Undergraduate Student(s): Nathan Blackwell
Faculty Mentor(s): Amy Gruss

Literary Review of "I Contain Multitudes: The Microbes Within Us and a Grander View of Life"
Poster Presentation
Undergraduate Student(s): Steve Waldron
Faculty Mentor(s): Amy Gruss

Electrical Engineering

Performance Analysis of a Hybrid Particle Swarm Optimization Algorithm for Maximum Power Point Tracking of Solar Photovoltaic Systems
Poster Presentation
Undergraduate Student(s): Brian McCray, Nicholas Foster, Samuel McWhorter, Baker Nour
Faculty Mentor(s): Sandip Das

Mechanical Engineering

Human Powered Submarine
Poster Presentation
Graduate Student(s): Kevin Katz
Undergraduate Student(s): Stephan Shelton, David Bullington
Faculty Mentor(s): Mir Atiqullah

Newspaper Folding Machine
Poster Presentation
Undergraduate Student(s): Robert Miller, Joshua Noll, Thien Nguyen, Marquis Hicks
Faculty Mentor(s): Mir Atiqullah

Railroad Spike Remover
Poster Presentation
Undergraduate Student(s): Jonathan Hawkins, Alex Hood, Zachary Tonsmeire, Kyle Wise
Faculty Mentor(s): Mir Atiqullah

Sapling Snatcher
Poster Presentation
Undergraduate Student(s): Aneela Hameed**,** Nicholas Kinder, Brian McFall, Reid Allen
Faculty Mentor(s): Mir Atiqullah

Aerodynamic Drag Reduction of Class 8 Trailer Trucks using External Attachments
Oral Presentation
Undergraduate Student(s): Emmanuel Nnamani
Faculty Mentor(s): Mir Atiqullah

Alpha Radiation Detector Development and Testing Under Various Conditions
Poster Presentation
Undergraduate Student(s): Kurt Jacobson, Andrew Jones, Shawn Sinclair, Christina Kirby
Faculty Mentor(s): Eduardo Farfan and Sandip Das

Design, Analysis and Control of Five Bar Mechanism
Oral Presentation
Undergraduate Student(s): Jacob Davis
Faculty Mentor(s): Ayse Tekes

Modular Vibration Control System
Poster Presentation
Undergraduate Student(s): Lucas Gilleland, Dominic Kowalke, John Ware, Matthew Salter
Faculty Mentor(s): Ayse Tekes and Richard Ruhala

Modeling and Design of Modular Mechanical Linkage Mechanism
Poster Presentation
Undergraduate Student(s): Skyler Bagley, Jacob Davis, Zachary Hyder, Megan McDowell
Faculty Mentor(s): Ayse Tekes and Richard Ruhala

Trajectory Control of a Slider Crank with Eccentricity
Poster Presentation
Undergraduate Student(s): Michael Douglass
Faculty Mentor(s): Ayse Tekes

Comparison of High Bypass Turbofan Engine Cycle Analyses: A Case Study
Poster Presentation
Undergraduate Student(s): Christopher Roper, Skyler Bagley
Faculty Mentor(s): Adeel Khalid

SCS-527 "Sea-Duck"
Poster Presentation
Undergraduate Student(s): Austin Collett, Shawn Sinclair, Matthew Salter
Faculty Mentor(s): Adeel Khalid

The Super Illumination Wireless Induction Ratchet
Poster Presentation
Undergraduate Student(s): Robert Patterson, Kristyn Patterson, Graham Harrison, Chris Peterson
Faculty Mentor(s): Richard Ruhala

Formula SAE Electric Vehicle Pedal Box Design
Poster Presentation
Undergraduate Student(s): Zachary Morgan, Joshua Lee, Hunter Myrick, Andrew Cochran
Faculty Mentor(s): Richard Ruhala

Infantry Portable Electromagnetic Railgun Design
Oral Presentation
Undergraduate Student(s): Ethan McGowan, Nathan Wascher, Will Howel, Khiem Le
Faculty Mentor(s): Laura Ruhala and Hoseon Lee

A Passive Duct System Solution to Remove Excessive Heat from Truck Trailer Wheels
Poster Presentation
Undergraduate Student(s): Paul Hudson, William Johnson, Jerome Basden, Nicholas Allicock, Thomas Jordan
Faculty Mentor(s): Richard Ruhala

Heat Dissipation in Heavy-Duty Truck Axles
Poster Presentation
Undergraduate Student(s): Matt Roney, Adam Hanes, Chris Hill, Michael Douglass
Faculty Mentor(s): Laura Ruhala

Emergency Cargo Delivery Sysytem
Poster Presentation
Undergraduate Student(s): Danielle Dill, Eamon Quinn, Obafemi Oladapo, Brian Watkins
Faculty Mentor(s): Richard Ruhala

Universal Surgical Platform
Oral Presentation
Undergraduate Student(s): Luis Ruiz, Cameron Reese, Philip Hwang, Joseph Chevrier
Faculty Mentor(s): Laura Ruhala

Waste Heat Recovery and Re-purposing for High Temperature Applications
Oral Presentation
Undergraduate Student(s): Jamey Ackley, Jonathan Atkinson, Erwin Garcia
Faculty Mentor(s): Laura Ruhala and Satish Gurupatham

A Rectilinear Vibration Plant Design for the Mechanical Engineering Department's Dynamics Laboratory
Oral Presentation
Undergraduate Student(s): Freddy Boyd, Patrick Colombo, Yulian Vieta, Gregory Williams
Faculty Mentor(s): Laura Ruhala, Ayse Tekes, and Richard Ruhala

Undergraduate Research Club

Campus Climate for LGBTIQ Students
Poster Presentation
Undergraduate Student(s): Tatiana Smithson, Emma Evans
Faculty Mentor(s): Amy Buddie

Health Behaviors in College Students
Poster Presentation
Undergraduate Student(s): Sharonjeet Kaur, Alyssa Venn, Hannah Bauguess, Eun Sol Chang, Hailey King, Juan C. Almanza
Faculty Mentor(s): Amy Buddie

Fundraising Strategies to Promote More Profitable Organizational Fundraisers
Poster Presentation
Undergraduate Student(s): Kylah Pollard, Sarai Bauguess
Faculty Mentor(s): Amy Buddie

Sleep Deprivation and Stress Levels on Academic Performance
Poster Presentation
Undergraduate Student(s): Raiyan Rahman, Alec Curtis, Collin Avidano, Morgan Peavy, Jessica Melara, Sarai Bauguess
Faculty Mentor(s): Amy Buddie

Generation X versus Millennials: Technology and the Workplace
Poster Presentation
Undergraduate Student(s): Kylah Pollard, Zoe Cesar, David Escobar, Amilynne Graham, Torie Poole
Faculty Mentor(s): Amy Buddie

University College

Integrative Studies

To Little 5 Points
Performance
Undergraduate Student(s): Edmund Tella
Faculty Mentor(s): Tony Grooms

WellStar College of Health and Human Services

Exercise Science and Sport Management

A Comparison of Self-Reported and Measured Levels of Physical Activity in a Free-Living Environment for a Pregnant Population
Poster Presentation
Undergraduate Student(s): AnnaMagee Morris, Eleanor Stevenback
Faculty Mentor(s): Katherine Ingram

Gestational Weight Gain in Relation to Infant Birthweight
Poster Presentation
Undergraduate Student(s): Kidan Kidane, Katherine Gauthier
Faculty Mentor(s): Katherine Ingram and Janeen Amason

Maximal Velocity Adaptations During Unilateral Resistance Training in Older Adults
Oral Presentation
Undergraduate Student(s): Alex Olmos
Faculty Mentor(s): Garrett Hester

The Effect of Sport Specialization on Athletic Performance and the Risk of Injury in High School Swimmers
Poster Presentation
Undergraduate Student(s): Samantha Gunn *[University Honors Scholar]*
Faculty Mentor(s): Gerald Mangine, Trisha VanDusseldorp, Garrett Hester

Increased Resisted Sprinting Load Decreases Bilateral Asymmetry in Sprinting Kinetics
Poster Presentation
Undergraduate Student(s): Jacob Alan McNabb
Faculty Mentor(s): Gerald Mangine, Trisha VanDusseldorp, Garrett Hester

Determining Contributing Factors of PGA Tour Professionals' Long Drives
Poster Presentation
Undergraduate Student(s): Robert Jenkins
Faculty Mentor(s): Gerald Mangine

Interrater Reliability for Dual-Energy X-Ray Absorptiometry and Bioelectrical Impedance Analysis for Measuring Total and Regional Lean Mass
Poster Presentation
Undergraduate Student(s): Taylor Boyett
Faculty Mentor(s): Gerald Mangine, Garrett Hester, and Trisha VanDusseldorp

Motivational Factors that Affect CrossFit Training Based on Years of Participation
Oral Presentation
Undergraduate Student(s): Allyson Box
Faculty Mentor(s): Yuri Feito and Chris Brown

Motivational Factors that Influence Frequency of CrossFit Training
Poster Presentation
Undergraduate Student(s): Angelina Micalizzi, Ashton Matson, Allyson Box
Faculty Mentor(s): Yuri Feito and Chris Brown

The Relationship Between Motivational Factors and CrossFit Training Participation Across Different Age Groups
Poster Presentation
Undergraduate Student(s): Ashton Matson, Allyson Box
Faculty Mentor(s): Yuri Feito and Chris Brown

Self-Reported Performance Measures of Males are Predictive of Overall Performance in the Crossfit Open
Poster Presentation
Undergraduate Student(s): Oladeji Olowojesiku, Paul Serafini
Faculty Mentor(s): Gerald Mangine and Yuri Feito

Autonomic Recovery Following a Short and Long Bout of High-Intensity Functional Training
Oral Presentation
Graduate Student(s): Emily Bechke, Wade Hoffstetter, Cassie Williamson
Undergraduate Student(s): Allyson Box, Paul Serafini
Faculty Mentor(s): Brian Kliszczewicz and Yuri Feito

Response of Metabolic Biomarkers Following a Short and Long Bout of High-Intensity Functional Training
Oral Presentation
Graduate Student(s): Cassie Williamson, Emily Bechke, Paul Bailey
Faculty Mentor(s): Brian Kliszczewicz, Robert Buresh, and Yuri Feito

The Association Between Fat Distribution and Insulin Resistance in Pregnancy
Poster Presentation
Undergraduate Student(s): Kareem Pierre, Danielle Logan, Kidan Kidane
Faculty Mentor(s): Katherine Ingram and Janeen Amason

An Examination of the Reliability of the InBody 770 Bioelectrical Impedance Analyzer
Poster Presentation
Graduate Student(s): Ellie Moore, Justin Knowles, Paul Bailey, Alex Dewitt
Faculty Mentor(s): Cherilyn McLester and John McLester

Health Promotion and Physical Education

The Verbalization of Stress and Its Effect on the Workplace
Poster Presentation
Undergraduate Student(s): Dustin Sergent
Faculty Mentor(s): Mari-Amanda Dyal

Nursing

The Effect of Diabetes Education Versus Usual Care on Clinical Outcomes of Hemoglobin A1C and Weight
Oral Presentation
Graduate Student(s): Kimberly Roberts
Faculty Mentor(s): Janeen Amason and Patricia Hart

Characteristics of Substance Addicted Mothers and Fathers that Predict Graduation from a Family Treatment Court: A Pilot Study
Poster Presentation
Graduate Student(s): Katherine Barnett
Faculty Mentor(s): Genie Dornan and Janeen Amason

Social Work and Human Services

The Role of an Abuser Log: Identifying the Connection between Domestic Violence and Animal Abuse
Poster Presentation
Undergraduate Student(s): Jordan Foster
Faculty Mentor(s): Darlene Xiomara Rodriguez

Volunteer Management: Creating a Coding System for Increased Efficiency
Poster Presentation
Undergraduate Student(s): Holley McGowan
Faculty Mentor(s): Darlene Xiomara Rodriguez

Encrucijada: Transportation and Mobility of Latinos in Atlanta, Georgia
Poster Presentation
Undergraduate Student(s): Jennifer R. Klos
Faculty Mentor(s): Darlene Xiomara Rodriguez and Paul McDaniel

Advocating for Refugee Resettlement on College Campuses
Poster Presentation
Undergraduate Student(s): Kristina Agbebiyi
Faculty Mentor(s): Darlene Xiomara Rodriguez

The Importance of Volunteer Recognition in a Nonprofit Organization
Poster Presentation
Undergraduate Student(s): Sydney Scruggs
Faculty Mentor(s): Darlene Xiomara Rodriguez

Improving Georgia Cares' System of Supporting Unconfirmed Cases of Trafficked Youth
Poster Presentation
Undergraduate Student(s): Kaylie L. Callahan
Faculty Mentor(s): Darlene Xiomara Rodriguez

The Role of a Board Orientation Manual in a Startup Nonprofit
Poster Presentation
Undergraduate Student(s): Kaelyn Meade
Faculty Mentor(s): Darlene Xiomara Rodriguez

Atlanta's Immigrant Crossroads: Factors Making Immigrant Integration Difficult and How to Help
Poster Presentation
Undergraduate Student(s): Kayland Arrington
Faculty Mentor(s): Darlene Xiomara Rodriguez and Paul McDaniel

Development or Damage? Pastors' Perspectives on Short-Term Mission Trips
Oral Presentation
Undergraduate Student(s): Ariel Walley *[University Honors Scholar]*
Faculty Mentor(s): Darlene Xiomara Rodriguez

Developing Advocacy Strategies: An Applied Research Project for The Brian Jordan Foundation
Poster Presentation
Undergraduate Student(s): Sydney Scruggs
Faculty Mentor(s): Jennifer Wade-Berg

Presentation Abstracts

Architecture

Chandigarh: A 21st Century Smart City?
Poster Presentation
Undergraduate Student(s): Dhruvee Patel
Faculty Mentor(s): Ameen Farooq

Research suggests that Le Corbusier proposed design principles for Chandigarh that he conceptualized for Bogota, Colombia and the Radiant Village that were never realized. The aim of this study is to investigate and analyze the current growth patterns of Chandigarh in light of Le Corbusier novel planning principles to actually design Chandigarh that with time conflict with the existing culture. The relevance and functionality of Chandigarh is in under enormous pressure to shift its current planning structure due to the growing population and economic development exigencies and global competitiveness. The current Prime Minister of India is driven to turn Chandigarh into a Smart city. Additionally, the city of Chandigarh was designed with an imposing grid around several villages (Burail, Attawa, Badheri, and Buterla) with no inclusion to their existing culture and spatial structure. Under the current conditions, special attention must be given to define and control the boundaries of between and beyond Chandigarh and its villages. Evolution of growth patterns in the city of Chandigarh is carefully studied in order to understand the evolutionary changes in the city over the years that may directly influence in shaping a "smart" Chandigarh. The analysis reveals that Le Corbusier's design of Chandigarh is more of a prototype model than a site-specific model for a city in India. In conclusion, it fails to capture the essence of Indian culture and community, making it harder to navigate and familiarize with the city. This study provides a broader understanding of the conditions that may support a sustainable approach to developing a Smart Chandigarh.

Constructed Reality: A Study in Virtual Reality Through the Use of Perspective and Cinemetrics
Oral Presentation
Undergraduate Student(s): Jose Rodriguez
Faculty Mentor(s): Christopher Welty and Arief Setiawan

Architecture often begins explorations that lead into various modes of end products. These modes of production and representation could often embed traces that shape the outcome of the design. In his book, "Architectural Representation and The Perspective Hinge," Alberto Perez Gomez says that "Architects do not produce Buildings but instead produce images of buildings." These representational images are an expression of an idea or design. Historically, representation began in static two-dimensions. By bridging into digital environments, these representations become more dynamic. As computing power increases and software broadens,

the use of virtual reality environments and immersion simulations are becoming more accessible. Perception and visualization remain the human system responsible for organization, identification and the interpretation of sensory information which then computes utilize. Therefore, by utilizing virtual environments, the bridging between modes of representation happens between the human eye and the digital lens to create immersive spatial experiences. An example that portrays this is film. Using cinematic principles we can gain an understanding on how to construct a spatial experience in architectural representation. So would it be possible to experience a spatial representation? Within the virtual environment, can architects and designers move beyond representation to experience? Framed around a historical context of perspective drawing, the project is interested in investigating the nature between drawing and space. The research proposes a series of drawing studies using one point and two-point perspectives simultaneously harnessing the malleability of virtual space, the perspective will be tested and then altered to understand the effects on perception. These distortions will lead to an understanding of how does VR spaces translates from a drawing to architectural space, especially experiencing a representation of space and experiencing drawing. The final project outcomes are proposed as an exhibit that presents the findings and allows users to experience the interaction.

Art and Design

Exploring Modern Sterility Through Cast Multiples
Undergraduate Student(s): Nicole Webb
Faculty Mentor(s): Jeff Campana

This project is motivated by intimate psychological experiences that shape a view of the modern world through use of figurative narratives. Currently this narrative explores societal disconnect and how this affects and shapes the individual and its environment. As an artist, I indulge my fascination with human psychology and human interaction. These works begin sculpted in clay, but are replicated via rubber molds to create multiples of the original in various materials. These copied forms are finished differently and used to emotionally charge found environments. By varying the arrangement and setting of the objects, I seek to tell a story or a part of a story that changes with these variables. The objects come to represent avatars frozen in time as the environment changes around them.

Cheers!
Oral Presentation
Undergraduate Student(s): Tyler Cochran
Faculty Mentor(s): Kristine Hwang

Cheers, an up and coming UX/UI mobile app project, identifies the struggles and a solution for the modern day alcohol enthusiast. With the ever-growing abundance of wine, liquor, and

beer supermarkets like Total wine, Sherlock's, etc, the complications of picking out alcohol continue to increase. The first phase of this project identifies this problem of being overwhelmed in alcohol supermarkets and the potential solutions through stakeholder interviews, user flows, and navigation charts. This will give tremendous insight into what features to incorporate in order to assist people in their elixir shopping to the best of the app's ability. The process continues with developing this mobile app through wireframes and user testing in both low and high fidelity prototypes. The usability testing with low fidelity will indicate the initial functions of the app before the high fidelity testing. The high fidelity testing will incorporate the design into a clickable prototype. This gives insight into how to improve the developing app. Post prototyping will involve development, quality assurance, and post-development phases to clarify in order to provide more thoughtful UX design for future consumers.

Caitlin Keogh: Feminine Feminism
Oral Presentation
Undergraduate Student(s): Madeline Beck
Faculty Mentor(s): Diana McClintock

The painter Caitlin Keogh (b. 1982) is a rising star in the Contemporary Art scene in the United States. Currently living and working in Brooklyn, New York, Keogh is one of countless emerging painters in the trendy arts hub, but her work is already receiving international attention and critical acclaim. Her refined use of flat figuration and bold but pastel colors combined with her striking subject matter has situated Keogh distinctly in the Contemporary Art world. Keogh's insertion of feminist discourse, personal identity, and appropriated imagery into her paintings begs a thorough analysis of her work. She implements themes and motifs of womanhood in her art in ways that force the viewer to reevaluate these symbols of femininity and what they fundamentally mean. Keogh does not reject her femininity or typically feminine imagery, but instead re-presents it in her unique style as a way to embrace the world of the female, while still critiquing problems of gender constructs. Keogh may be using typical feminine bodies and motifs, but in her representation the artist is ultimately questioning gender roles and identity, challenging the idea that there is any one way to be feminine or a feminist. Instead of her femininity working against or pigeonholing Keogh in the arts world, it has actually served her greatly -- her nuanced perspective is separating her from the masses and generating conceptual intrigue. This paper seeks to investigate the art historical as well as the social implications of Keogh's body of work, which has yet to be thoroughly examined in Contemporary Art scholarship.

Metalworks of the Inca Empire and the Question of Authorship
Oral Presentation
Undergraduate Student(s): Hannah Pelfrey, Maria Shah
Faculty Mentor(s): Jessica Stephenson

In Ancient American art history, the metal works of two cultures -- the Inca and the Chimú --stand out as significantly intertwined, raising questions about art historical attribution and terminology. The kingdom of Chimú, located along the coast of modern day Peru, thrived from 1000 CE to 1470 CE when they were conquered by the Inca empire. The Incans maintained their empire from about 1438 CE to 1532 CE, at which time the Spanish started to invade South America. The Inca empire's expansionary campaign eventually awarded them the largest territory in the world at the time, with a population of almost 12 million people. As they expanded, the Inca integrated various conquered cultures' knowledge of technology and artistry into their imperial culture. The Chimú were masterful metallurgists, a skill Inca rulers appreciated. Chimú artisans were forcibly taken to the Inca capitol, Cuzco, to work and create art for the Inca empire. Through a formal analysis of art works and technique, this paper explores the impact of Chimú style and technique on metalworks produced by and for the Inca, thus raising questions about classification. Should these works be considered Incan, Chimú, or Chimú -Incan? The paper also addresses the difficulty in defining Inca art without acknowledging where specifically within the empire it came from, using the Chimú as a main example.

Center for Young Adult Addiction and Recovery

Peer Education: The Answer to Prevention on College Campuses
Poster Presentation
Undergraduate Student(s): Lindsay Montgomery, Jessica McDaniel
Faculty Mentor(s): Austin Brown and Teresa Johnston

This study was conducted as part of continuing research on substance use disorder prevention and intervention efforts by the Center for Young Adult Addiction and Recovery (CYAAR) at Kennesaw State University. CYAAR utilized peer educators to inform incoming first year students on risk perception associated with alcohol and other drug (AOD) issues. Self-assessment surveys were gathered (n = 2,256) as part of this research to gauge program impact and campus perception regarding substance use as a normative feature of the college environment. CYAAR trained seven students to present the peer education program to 117 classes. The 50-minute presentation focused on risk perception, specifically highlighting the potential risk associated with social phenomena such as social proof, habituation, and instant gratification. First year students anonymously assessed themselves after the presentation utilizing the Motivational Assessment Prevention Program (MAPP), which employs a five stage (0 - 4) model to gauge risk of dependence and future intent toward risky behavior. Analysis of surveys revealed that 93% of participants appreciated the peer education approach. Of the 1,766 students that reported current low risk levels, 98.7% indicated a future intent to remain low risk. Analysis also revealed interventions and intentions to decrease risk for moderate and high risk levels. The overall data from participants suggested peer disseminated prevention and intervention was generally effective.

Chemistry and Biochemistry

Analysis of General Chemistry Lecture Discourse Regarding Gases and its Effect on Students' Perception of Chemical Representations at the Macroscopic, Submicroscopic, and Symbolic Levels
Poster Presentation
Undergraduate Student(s): Amber Gallimore, Isaac Brozino, Joshua Sukumar, Kersten Forsberg
Faculty Mentor(s): Michelle L. Head

Research has shown students gain greater conceptual understanding and retention of chemical concepts, when students can understand chemical phenomena at all three levels. This study investigated how students perceived and how instructors discussed chemical representations depicted at macroscopic, symbolic, and submicroscopic levels. One goal of the study was to determine if students could accurately identify macroscopic, symbolic, and submicroscopic levels depicted in chemical representations shown during class. The other goal was to see if the students' instructors discussed these representations at the levels depicted or made the connection among multiple levels in a visual aid. To achieve these goals, General Chemistry I students completed a survey where they were assessed on their ability to recognize the various levels that composed a chemical representation. In addition, the lectures were recorded and coded based on the level of representations used and how the instructor discussed the representations shown. Based on the survey results it was revealed that the majority of students correctly identified chemical representations depicted at the symbolic level, while students struggled with correctly identifying representations at the macroscopic and submicroscopic levels. The data also shows that students mostly utilize symbolic representations when studying, and they found symbolic representations most helpful in building their understanding of gases. This finding may be supported by the result that lectures were guided primarily by symbolic representations. Additionally, it was found: students can easily identify the symbolic level, when shown in a purely symbolic representation; in hybrid representations with the macroscopic and symbolic levels, students easily recognized the macroscopic level, when it was the most noticeable level; generally, students fail to recognize, when all three levels are present in a representation; students tend to correctly identify the level in a hybrid representation that was more prominent. The results that are observed regarding the students' perception of the chemical representations may be due to the frequency of each level presented to the students and whether or not the representation was discussed at the level shown. These findings imply that instructors should carefully draw the student's attention to all the features of a representation to ensure that students understand the meaning of the whole model.

A Comparison of Over the Counter Medicines Used to Treat Forms of Arthritis Using Gas Chromatography and UV Spectrometry
Poster Presentation
Undergraduate Student(s): Megan Whitlow
Faculty Mentor(s): Huggins Z. Msimanga

A pilot study was conducted on fourteen over the counter products (OTCs) used for treating arthritis and related ailments with the goal to establish common characteristics among them. The majority of OTCs are not DEA approved and yet are widely used by consumers. In a continuation of a previous study, data collected from GC/MS analysis and UV-Vis spectroscopy were used to identify similarities between fourteen over the counter drugs commonly used to combat some of the symptoms of arthritis. An extraction in one of two solvents (acetone or ethanol) was preformed to isolate the components of each OTC, and the resulting concentrated samples were run through a gas chromatography-mass spectrometry (GC/MS) instrument. The major components of each OTC were identified by GC/MS. Literature search was used to determine any relevance of the compounds found to the treatment of arthritis. Detailed results of this research are addressed in the poster.

Comparing the Active Ingredients of Different Brands of Allergy Medication Using UV-Vis Spectroscopy
Poster Presentation
Undergraduate Student(s): Devan Patel, Jillian Calderon
Faculty Mentor(s): Huggins Z. Msimanga

Medication is evolving and many different companies are competing with those leading brands by producing the same medication at a lower cost; however, there are those that still stay loyal to leading brand name drugs as they are "more effective". So what exactly makes these drugs different from each other? How is it that one company can sell the exact same drug for a cheaper price? In this experiment, we test out four different brands of loratadine: Claritin, Walmart, CVS, and Rite Aid. Loratadine is known for treating allergies and is one of the most common ailments societies deal with every year. Claritin is the leading brand name drug of loratadine, while the other three drugs are the generic, store brand version of the same drug. The purpose of this experiment is to see if the generic can be compared to the brand name drug by identifying whether the generic drugs hold to their values in potency and efficacy. Each of these drugs is acclaimed to contain 10 mg of loratadine as the active ingredient, and the inactive ingredients do not interfere with the active ingredient. We will be using UV-vis spectroscopy to quantify loratadine in these tablets. Detailed results will be discussed in the poster.

A Quantitative Perspective on the Irritating Nature of Hot Pepper Sauces
Poster Presentation
Undergraduate Student(s): Reagan Hooper, Francisca Small

Faculty Mentor(s): Huggins Z. Msimanga

Peppers derive their ability to irritate the skin and mucous membranes from capsaicin -- a compound that is naturally produced by the peppers. Overconsumption of capsaicin or a non-tolerance for the chemical may cause undesirable effects such as difficulty breathing and vomiting. Variation in the concentration of capsaicin in peppers produces a spectrum of irritant strength and perceived spiciness, and hot sauce manufacturers thus can modify the potency of their products via pepper selection and dilution. The presence or absence of capsaicin was determined by GC/MS analysis. In order to quantify the capsaicin concentration in some commonly-available hot sauces, capsaicin in the sauces was extracted with alcohol, and analyzed with HPLC/PDA. Results of this project are discussed in the rest of the poster.

A Comparative Study of Drugstore Sunscreen Products Based on Their Sun Protection Factors and Ultra-Violet Spectrometry
Poster Presentation
Undergraduate Student(s): Dalila Arroyave Gomez, Megan Renee Fulwood, Alyssa Katherine Selewski
Faculty Mentor(s): Huggins Z. Msimanga

Ultraviolet radiation from the sun is a harm for anyone that is spending more than fifteen minutes in the sun per day. Specifically, it is the UVA and UVB rays that are causing the most harm. These rays can penetrate the human skin causing premature aging, skin damage, and even skin cancer. In order to slow down the damage caused by ultraviolet radiation from the sun, products have been created that contain sun-blockers or sun-absorbers. Products that are designed to absorb UV rays contain organic chemical absorbers such as avobenzone, oxybenzone, octisalate, octocrylene, and and homosalate. These chemicals work to give the lotion an oily texture which prevents the product from washing off in water and they contain functional groups such as esters which absorb the UV rays. Sun-blockers contain either zinc oxide or titanium dioxide which can block the UV rays from penetrating the skin. Our research takes ten sunscreen products varying in sun protection factor, or SPF, and analyzes them through UV-VIS in the range of 280-400nm, HPLC and refractive index in order to determine if the claims of sun protection are actually going to protect skin from the UVA and UVB rays which are most harmful to human skin. Our research also aims to determine if there is a maximum SPF, what that value is and what happens when products contain and SPF that is higher than the maximum. Our findings will give consumers of sun protection products more confidence when making a decision about which product to purchase and give awareness to those that are in the dark about the effects of time in the sun.

How Much Caffeine is in Your Cup of Decaf?
Poster Presentation
Undergraduate Student(s): John James Malone, Brady Kevin Smith
Faculty Mentor(s): Huggins Z. Msimanga

It is a common misconception that decaf coffee is actually completely caffeine-free. This project was conceived to test how much caffeine a person will actually consume if they drink nothing but decaf coffee. FDA regulation states that a cup decaf coffee must have reduced its percentage of caffeine by 97.5% to be rightfully labeled decaf. An average coffee drinker has 3.2 cups of coffee a day or 28.8 oz. This corresponds to 6.4 mg to 12.8 mg of caffeine per day if drinking decaf. Quantification of caffeine in coffee was performed to see if coffee roasters are reaching the quality guidelines laid out by the FDA. The data was collected by first confirming presence of caffeine with GC-MS. Then quantification was performed using UV-Vis spectroscopy and standard additions of Stock caffeine on a pre-concentrated solution of coffee. This poster discusses the details of our findings.

Improved Cocaine Analysis of US dollars by Using Solid Phase Extraction and Gas Chromatography/Mass Spectrometry
Poster Presentation
Undergraduate Student(s): Tuan Do, Jeresa Watson
Faculty Mentor(s): Huggins Z. Msimanga

The purpose of this project was to improve experimental conditions of a CHEM 4310L lab by trying out different solid phase extraction (SPE) cartridges and external standard. Previously, when a Baker bond SPE C18 was used, the internal standard (doxepin) did not show up in the chromatogram. When a smaller capacity Waters Sep-Pak Pak was used, both the doxepin and cocaine peaks showed up, but were not completely resolvable at numerous gradient temperatures. In this project, the method was modified to use a different internal standard, but the same 1cc Waters SPE. Another new cartridge from Biotage was also used. Doxepin was substituted by caffeine. Both spiked and unspiked US dollar bills were used as samples. Results were evaluated by plotting calibration curves with and without the internal standard and calculating percent recoveries. The detailed extraction procedure and results of the project are discussed in the rest of this poster.

Extraction and Analysis of Benzaldehyde from Food Products Using UV Spectroscopy and GC-Mass Spectroscopy
Poster Presentation
Undergraduate Student(s): Jessica Lauren Harry, Andrew Blake Roberds
Faculty Mentor(s): Huggins Z. Msimanga

Benzaldehyde, C7H7O, is a component of most artificial cherry flavored and scented substances. Due to its close proximity to N- methylamphetamine, it is heavily regulated by the FDA. Moreover, it has skin sensitizing properties in which the FDA has determined safe concentrations in everyday products. The FDA notes that any consumable product like that of Cherry Coke must not exceed that of 0.1% Benzoic Acid. For oral care products that remain on the skin for an extended period of time, the FDA limits the concentration of Benzaldehyde to

0.2% of the product. According to the FDA, there is no known harm brought on by Benzaldehyde so long as safe concentrations are upheld. Exceeding these concentrations can lead to high fines and could result in hazardous or unsafe products. There is rumor, and reason to believe, that Cherry Chapstick exceeds concentrations that the FDA note is "safe" for consumption. That being said, the goal is to extract benzaldehyde and determine if these products exceed the recommended limits of Benzaldehyde from these 5 products: Cherry Coke, Cherry Chapstick Lip balm, Wild Cherry Burt's Bees Lip balm, Cherry flavored gummy candies, Great Value Cherry Pie Filling.

Quantifying Caffeine Content in Various Thermogenics by UV Spectrometry and HPLC/PDA
Poster Presentation
Undergraduate Student(s): Patrick B. Glenn, Andrea Green, Caleb Mathieu Veselica
Faculty Mentor(s): Huggins Z. Msimanga

Caffeine is one of the most well-known and widely used metabolic stimulants. This stimulant aids in burning fat by speeding up the body's metabolism and increasing lipolysis. Though coffee and tea are some of the most forms of caffeine, thermogenics are also popular sources of this drug. Thermogenics, better known as dieting pills, contain caffeine along with a wide list of other active and inactive ingredients. The price range of these pills is anywhere from $5.00 to $100.00. Our investigation involves the quantification of caffeine in a serving of four thermogenic brands: Neuroshred, Jym Shred, MetaboUp Plus, and 200 mg caffeine tablets. Using UV spectroscopy and HPLC/PDA, the caffeine content of each brand was evaluated and the amounts found were expressed in mg/g sample analyzed. The results of this investigation are further discussed in the poster presentation.

Toward the Synthesis of a New Anionic N-heterocyclic Carbene and its Corresponding Metal Complexes
Poster Presentation
Undergraduate Student(s): Michael A. Baker, Alexander Mason, Angelo Changas, Graeme Bettler
Graduate Student(s): Ashley Carter
Faculty Mentor(s): Daniela Tapu

The chemical industry relies heavily on the use of transition metal catalysts for the economical production of a wide variety of petrochemicals in use today. Catalysis allow transformations to be carried out under mild conditions with high selectivity and yield. As a result, it is imperative to develop new catalyst systems that offer increased activity with inexpensive materials under mild conditions. In the last few decades N-heterocyclic carbenes (NHCs) have emerged as a powerful class of carbon-based ligands. Owing to their unique electronic and steric properties, they have been incorporated in a large variety of catalytically active metal complexes. Vital to the advancement of NHC-based catalysts has been the design and

synthesis of new NHCs that display an array of electronic and steric properties. Herein, the synthesis and structural characterization of the new anionic NHC system is presented.

Nanosized Dianionic Janus-Type N-Heterocyclic Carbenes and their Zwitterionic Gold and Silver Metal Complexes
Poster Presentation
Graduate Student(s): Ashley Carter
Undergraduate Student(s): Alexander Mason, Michael A. Baker, Graeme Bettler, Angelo Changas
Faculty Mentor(s): Daniela Tapu

While early efforts have been made to explore the chemistry of neutral multitopic nonchelating N-heterocyclic carbenes (NHCs), limited progress has been made in the development of their anionic counterparts. This thesis describes the synthesis and characterization of a new dianionic bisNHC. The corresponding thiones was generated by the reaction of the free carbene with an excess of sulfur. The utility of this extended biscarbenes for the construction of homobimetallic systems has been demonstrated by its coordination to two coinage metals. The resulting zwitterionic metal complexes of type [(Ph3P)M(NHC)M(PPh3)] (M = Au, Ag) have been fully characterized by spectroscopic techniques and X-ray crystallography. With its unique topological properties, this system has the potential to serve as building block for the preparation of novel metalorganic frameworks such as supramolecular cages and organometallic polymers, systems not accessible with the current arsenal of neutral Janus-type bis(NHC)s.

New Annulated N-heterocyclic Carbenes and Their Transition Metal Complexes
Poster Presentation
Undergraduate Student(s): Graeme Bettler, Angelo Changas
Faculty Mentor(s): Daniela Tapu

In the last few decades N-heterocyclic carbenes (NHCs) have emerged as a powerful class of carbon-based ligands. Owing to their unique electronic and steric properties, they have been incorporated in a large variety of catalytically active metal complexes. One of the strategies that have been used to modify the ligand properties of NHCs is annulation with different carbo- and heterocyclic groups. It has been shown that annulation in 4-5 position of the imidazole ring significantly influences the stability and the Ï*f*-donor/Ï◎ acceptor properties of the carbene species, and this may be used as a versatile tool for the fine-tuning of their electronic properties. Herein, the synthesis and structural characterization of a new class of fused N-heterocyclic carbene ligands with a rigid bidentate architecture will be reported. Complexes of type [M(COD)Cl] and [M(CO)2Cl] (M=Rh and Ir) were prepared and characterized using spectroscopic and crystallographic methods.

Novel Polycyclic Thiones: Synthesis and Complexation
Poster Presentation
Undergraduate Student(s): Reagan Hooper, Alexander Mason, Orrion Kuykendall
Faculty Mentor(s): Daniela Tapu

Catalysis is a fundamental concept in chemical synthesis. By providing new reaction pathways with lower energetic barriers and by supplanting wasteful stoichiometric reagents, catalysts can drastically reduce the energy and material demands of chemical processes. Cyclic thioureas derived from imidazole (imidazole-2-thiones) have been recently incorporated in a variety of catalytically active metal complexes. Vital to the advancement of thione-based catalysts has been the design and synthesis of new thiones that display an array of electronic and steric properties. This project will target a novel class of imidazole 2-thiones and their transition metal complexes. Our interest in the development of these polycyclic thiones and their corresponding transition metal complexes has arisen due to their potential application in catalysis and in fluorescent devices. These new imidazol-2-thiones provides a promising framework in which the thione center is a component of an electron-rich, extended aromatic system. This feature not only tunes the donor properties of the thione, but also imposes geometric constraints on the N-substituents, influencing their steric impact. Upon the synthesis and full spectroscopic characterization of the target thiones, complexes of catalytically relevant metal centers will be reported. Understanding the chemistry of these compounds has the potential of providing relevant information for the development of new and more efficient ways of making chemical products.

A Propeller-Shaped tris-N-heterocyclic Carbene
Poster Presentation
Graduate Student(s): Richard Justice
Undergraduate Student(s): Andre Berry, Reagan Hooper, Alexander Mason, Pearl Jean
Faculty Mentor(s): Daniela Tapu

This project targeted a new class of tris-N-heterocyclic carbenes for use as ligands in catalysis. No such carbenes have been previously reported. Upon the synthesis and full spectroscopic characterization of these new ligands, their complexes with catalytically relevant metal centers (e.g. silver, gold, palladium, copper, rhodium and iridium) have been targeted. These complexes have been fully characterized by spectroscopic techniques and X-ray crystallography. Understanding the chemistry of these compounds has the potential of providing relevant information for the development of new and more efficient ways of making chemical products.

Toward the Synthesis of a Novel tris-N-Heterocyclic Carbene
Poster Presentation
Graduate Student(s): Richard Justice, Maleek Montgomery
Faculty Mentor(s): Daniela Tapu

N-heterocyclic carbenes have emerged y useful type of ligands for homogeneous catalyst design, due to their high topological and electronic versatility, as well as a great coordination capability. We are interested in the preparation of multifunctional catalysts for their use in catalytic processes. Within this context, we are interested in the synthesis of new NHC-based ligands capable of bridging multiple metals. The preparation of a novel tris-NHC ligand and its coordination to transition metals will be presented.

Novel Thione Based Ligands: Synthesis and Complexation
Poster Presentation
Undergraduate Student(s): Alexander Mason, Pearl Jean
Faculty Mentor(s): Daniela Tapu

Due to their functional and synthetic diversity, air and moisture stability, nontoxicity, as well as a high affinity toward a wide range of main group and transition metals, thione-based ligands have shown remarkable utility as ligands for organometallic catalysts. Vital to the advancement of thione-based catalysts has been the design and synthesis of new thiones that display an array of electronic and steric properties. This project investigates the synthesis and properties of a new class of thiones. This system has not been described yet in literature. This thione has the potential to find tremendous utility as building block for novel main group and transition metal complexes. Understanding the chemistry of these compounds has the potential of providing relevant information for the development of new and more efficient ways of making chemical products. Here we describe the synthesis of the target ligand and its complexation to Bismuth, Indium, and Rhodium.

On the Outside Looking In: Student and Teacher Understanding of First Semester Organic Chemistry Reactions
Poster Presentation
Undergraduate Student(s): Chidinma Candace Uba
Faculty Mentor(s): Kimberly Linenberger Cortes

Understanding organic chemistry is an essential factor in the production of future chemists and biologists. However, students often struggle with the basic concepts of organic chemistry at an under-graduate level. In particular, the common reactions displayed during the first semester. The lack of the basic understanding robs students of the proper foundation required to be successful not only in their first organic chemistry class, but a variety of organic chemistry-related courses offered at an undergraduate and graduate level such as biochemistry, biology, medicine, and pharmacy. The objective of this study is to place a focal point on the common mechanisms seen in organic chemistry at an undergraduate level, in detail, the understanding of these common mechanisms by students and faculty. A card-sorting task will be presented, followed by a series of structured interviews as these areas are examined in order to determine how these typical organic mechanisms are mentally

categorized by both parties. Furthermore, this study will uncover techniques used by faculty to relay the information to students and whether or not these mechanisms are completely understood or retained by the students. The findings from this study suggests that there may be a small conflict between faculty reasoning and the traditional presentation of organic reactions displayed in textbooks.

Use of Biometrics to Determine Differences in How Users Read Metabolic Pathways
Oral Presentation
Graduate Student(s): Kim Kammerdiener
Faculty Mentor(s): Kimberly Linenberger Cortes and Adriane Randolph

The use of schematics for illustrating metabolic pathways is common in most biochemistry textbooks. These external representations can be the key to student understanding, however, to maximize the potential of student learning, it is important to understand how students are approaching the representation and what in the diagram they are focusing their attention. To date, there is little known in regards to how an individual reads and cognitively processes a metabolic pathway representation. This research will will utilize data collected for a Tobii X2-30 Compact Eye Tracker system and EEG to explore the difference in how biochemistry majors read and process metabolic pathway reprsentations prior to and while taking biochemistry. Discusison will include differences in areas of interest (AOI), fixation, scan path analysis, and brain wave frequency to get a sense of students' cognitive load while viewing the metabolic pathways. This study will set the baseline to ultimately determine how best to present and promote visual literacy in classes which utilize external representations for higher level content learning.

10 Week Positive Behavior Change Program for Type II Diabetes Management and Prevention
Poster Presentation
Undergraduate Student(s): Sharonjeet Kaur
Faculty Mentor(s): Glen Meades

Diabetes has become a widespread epidemic in the U.S. population. It is a disease in which one's blood glucose levels are abnormally high. High blood glucose levels can lead to health problems such as nerve damage, heart disease, kidney disease, and glaucoma. In type II diabetes, the body's cells become resistant to insulin output. It is also called adult onset diabetes, but in recent years has increasingly been diagnosed in pediatric patients (NIDDK, 2016). In this 10-week behavior change program, participants will learn how to make healthier lifestyle choices and habits in order to prevent type II diabetes, and those who have already developed type II diabetes will learn how to manage it. The program will be implemented in summer of 2017 and will last 10 weeks. Each week will consist of a different topic, such as nutrition, physical health, mental health, emotional health, and other such topics that can help patients to prevent or manage their type II diabetes. Participants within the community of a

hospital or clinic will be contacted via mail, email, or phone call in order to participate. The program will be held at a community clinic and will be led and monitored by volunteer health professionals including primary care physicians, specialists, dieticians, and health coaches, so there will be no cost for the participants to participate in the program. The health professionals will work together to develop the content of the topics based on their own expertise. The objective of the program is to see positive behavior change by the end of the program, resulting in better prevention or management of type II diabetes. Success of the program will be evaluated through survey evaluations which will be conducted bi-weekly, and medical testing including evaluating blood sugar levels, blood ketone levels, and body mass index (BMI). Successful program results will be reflected through survey data revealing consistent positive healthy habits and lab results revealing lower blood sugar levels, blood ketone levels, and BMI. These results will be used to make changes to the program to maximize patient health and to make sure that there is a low attrition rate. The program can then be implemented in other communities.

Development and Implementation of Curriculum for Peer Health Education Program for High School Students

Oral Presentation

Undergraduate Student(s): Jaspreet Singh, Sharonjeet Kaur

Faculty Mentor(s): Glen Meades

The objective of this program is to educate high school students on how to develop and maintain a peer health education program in order to educate their fellow students on aspects of health promotion and wellness and how to carry healthy habits through adulthood as a method of disease prevention. The program will cover physical, emotional, spiritual, intellectual, financial, occupational, and environmental wellness. The program curriculum will implement the social ecological model (SEM), which is a multilevel approach to creating an environment which fosters disease prevention (CDC, 2015). It will focus on disease prevention through addressing the importance of instilling healthy habits and minimizing risky behaviors. Objectives include: (1) Develop curriculum for high school level peer health education program; (2) Assess and outline community resources needed for program implementation; (3) Implement program in local high school through the social ecological model (SEM); (4) Gather feedback via survey evaluation on program perception and evaluate program success in order to support a more successful program in the future. The target population will be students at a local high school where permission is obtained to implement this program. Announcements will be posted at the school to recruit students who are interested in becoming peer health educators. Interested students must go through an interview process. Once accepted into the peer health educator organization, they will be trained and educated in the significance of wellness and will present programs on health promotion for their peers. Expected outcomes of this project are for high school students to develop knowledge and skills to become peer health advocates and educators, strategically developing outreach and wellness programs which guide students to understanding the

importance of incorporating healthy habits and behaviors into their lifestyles. Successful program development will result in high school students being able to continue and further develop their peer health education program at their school for years to come. Results will be reflected through evaluation data collected in spring of 2018. The significance of this program is to develop a peer health education program for high school students. Positive results will reflect that the program initiates a student-run organization for high school students in order to develop their skills in leadership and advocacy, and develops their knowledge in health promotion and wellness, public health education and outreach, and preventative medicine.

Synthesis of 1-Alkenyl Phosphonates using Organopalladium Reagents
Poster Presentation
Graduate Student(s): Ronald Mensah
Faculty Mentor(s): Christopher W. Alexander

Alkenes are abundant in nature and range in complexity from simple olefins found in petroleum sources to complex natural products and biomolecules found in nature. Phosphonate functionalized alkenes are becoming increasingly important targets for R & D because they have interesting biological, chemical and pharmacological properties. We will present our preliminary results for the synthesis of 1-alkenyl phosphonates by reacting a Î±-phosphonovinyl pseudohalide with catalytic palladium reagents.

Synthesis of 1-Aryl-1-alkenyl Phosphonates using a Organopalladium Reagents
Poster Presentation
Graduate Student(s): Ronald Mensah
Undergraduate Student(s): Nicholas Zemel, Cody Falls, Cody Baum, Zane Bertoli, Matthew Pearson, Tanner Gerschick
Faculty Mentor(s): Christopher W. Alexander

Alkenes are found in nature and range in complexity from simple olefins found in petroleum sources to complex natural products and biomolecules found in nature. Phosphonate functionalized alkenes are becoming increasingly important targets for R & D because they have interesting biological, chemical and pharmacological properties. We will present our preliminary results for an environmentally friendly Pd-mediated Suzuki reaction of 1-phosphonovinyl pseudohalides with aryl boronic acids to afford 1-aryl-1-alkenyl phosphonates.

Reacting Organocuprate Reagents with 1-Phosphonovinyl Pseudohalides
Poster Presentation
Undergraduate Student(s): Tanner Gerschick, Skyler Mize
Graduate Student(s): M. Tanner Dawson
Faculty Mentor(s): Christopher W. Alexander

Alkenes are abundant in nature and range in complexity from simple olefins found in petroleum sources to complex natural products and biomolecules found in nature. Vinyl phosphonates are becoming increasingly important targets for R & D because they have unique chemical, biological, and pharmacological properties. We will present our preliminary results for the reaction of organocuprate reagents with 1-phosphonovinyl pseudohalides in effort to synthesize 1-substituted vinyl phosphonates.

Analysis of Methoxycarbonyl N-Confused Tetraphenylporphyrin
Poster Presentation
Undergraduate Student(s): Andrea Green, Katie Schoen
Faculty Mentor(s): Janet Shaw

Porphyrinic molecules are important in the areas of photodynamic therapy for their light harvesting properties and use in catalysis. N-confused tetraphenylporphryin (NCTPP) is a synthetic variant of regular tetraphenylporphyrin (H_2TPP) with one inverted pyrrole ring. This change in structure leads to reduced symmetry and variable coordination chemistry relative to H_2TPP. This research involves the synthesis and purification of methoxycarbonyl substituted NCTPPs. A modified Lindsey preparation of NCTPP from literature was used for the synthesis of this variant. The H_2TPP fractions were separated from the NCTPP fractions using UV spectroscopy. Identification and verification of the product were accomplished with NMR. Hydrolysis of the methoxycarbonyl functionality will produce a water soluble variant and coordination chemistry of both NCTPPS variants will be explored.

Reversible Inhibition and Irreversible Inactivation of Bicupin Oxalate Oxidase in the Presence of Hydrogen Peroxide
Graduate Student(s): John Goodwin
Undergraduate Student(s): Joan Ndungu
Faculty Mentor(s): Ellen Moomaw

Kinetic investigations employing membrane inlet mass spectrometry (MIMS) and HPLC demonstrate that hydrogen peroxide is both a reversible noncompetitive inhibitor and an irreversible inactivator of the CsOxOx catalyzed oxidation of oxalate. The build-up of the turnover-generated hydrogen peroxide product leads to the inactivation of the enzyme. The introduction of catalase to reaction mixtures protects the enzyme from inactivation allowing reactions to proceed to completion. Circular dichroism spectra indicate that no changes in global protein structure take place in the presence of hydrogen peroxide. Oxalate oxidase is a manganese containing enzyme that catalyzes the oxidation of oxalate to carbon dioxide in a reaction that is coupled with the reduction of oxygen to hydrogen peroxide. Oxalate oxidase has potential applications in pancreatic cancer treatment, to prevent scaling in paper pulping, and in biofuel cells. Oxalate oxidase from Ceriporiopsis subvermispora (CsOxOx) is the first fungal and bicupin enzyme identified that catalyzes this reaction. We apply a MIMS assay to directly measure initial rates of carbon dioxide formation and oxygen consumption in the

presence and absence of hydrogen peroxide. The MIMS method of measuring oxalate oxidase activity involves continuous, real-time direct detection of oxygen consumption and carbon dioxide production from the ion currents of their respective mass peaks. 13C2-oxalate was used to allow for accurate detection of 13CO2 (m/z 45) despite the presence of adventitious 12CO2.

Tartronic Acid and Diethyl Mesoxalate: Inhibition and Substrate Promiscuity of Bicupin Oxalate Oxidase
Oral Presentation
Undergraduate Student(s): Joan Ndungu
Graduate Student(s): John Goodwin
Faculty Mentor(s): Ellen Moomaw

Oxalate oxidase (E.C. 1.2.3.4) catalyzes the oxygen-dependent oxidation of oxalate to carbon dioxide in a reaction that is coupled with the formation of hydrogen peroxide. Oxalate oxidase from Ceriporiopsis subvermispora (CsOxOx) is the first bicupin enzyme identified that catalyzes this reaction. Employing a spectrophotometric assay in which H2O2 production is coupled to the horseradish peroxidase (HRP) catalyzed oxidation 2,2â◎™-azinobis-(3-ethylbenzthiazoline-6-sulphonic acid) (ABTS) and a membrane inlet mass spectrometer assay, we characterize the reaction of CsOxOx with mesoxalate (oxopropanedioic acid), tartronic acid, and diethyl mesoxalate. Analysis of kinetic data using alternative substrates provides structure activity relationship information. Oxalate oxidase is of interest for a number of applications including pulping in the paper industry, as a component of enzymatic biofuel cells, and in pancreatic cancer cell treatment. These and other potential uses motivate efforts to tailor the properties of oxalate oxidase through directed evolution and/or rational design. Understanding the degree of promiscuity (or fidelity) of CsOxOx is an important endeavor as it may provide a basis for these modifications.

Synthesis of N-Confused Tetraphenylporphyrin
Poster Presentation
Undergraduate Student(s): Tamia Cuttray, Kennede' Wallace
Faculty Mentor(s): Janet Shaw

Porphyrins can be synthesized in the laboratory and have been targeted for applications spanning photodynamic therapy for cancer treatment, to supramolecular materials as sensors, light harvesting arrays, and synthetic ion channels. N-confused tetraphenylporphyrin (NCTPP) is an isomer of the more commonly synthesized tetraphenylporphyrin (TPP) that differs structurally by inversion of one pyrrole ring. NCTPP was synthesized to create a versatile intermediate for access to variants with charged functionality at the periphery. This process was carried out by synthesizing and purifying NCTPP. The materials used for this experiment includes: pyrrole, dichloromethane, benzaldehyde, methanesulfonic acid, and DDQ. Activity III basic alumina was obtained by using water and activity I Brockman basic

alumina. NCTPP and TPP were effectively separated using column chromatography, later testing all fractions with an UV-visible spectrophotometer. The NCTPP was recorded to have a lambda max at 440 nanometers, while the TPP had a lambda max at 418 nanometers. Due to this difference, the NCTPP and TPP were properly distinguished. The nuclear magnetic resonance was taken and observed for NCTPP, identifying the peaks for each proton on the structure. This confirmed that the resulting product was NCTPP.

Design and Fabrication of FTMW Spectrometer
Oral Presentation
Undergraduate Student(s): Chris Black
Faculty Mentor(s): Lu Kang

This presentation will show the step-by-step process for the design and fabrication of the components of a semi-confocal microwave spectrometer, and explain the importance of microwave spectroscopy. The semi-confocal Fabry-Perot resonance chamber was designed to minimize signal loss, and is almost half of the length of the confocal design. The smaller chamber will be less expensive to build and operate, as it does not require such a large molecular diffusion pump, 6â◎◎ instead of 14â◎◎, and has only one curved mirror. The semi-confocal chamber employs the idea of a virtual image on a flat mirror as the second curved mirror in the confocal design, so the same affect is achieved with less volume to bring to a high vacuum. Microwave spectroscopy gives hyperfine line spectra which allows for unambiguous molecular structure characterization. It is accurate to 10-3Ã… of the bond length and 0.1 degrees of the bond angle, and is able to characterize molecules with up to 20-30 atoms.

Design of Graphene Sand, Graphene Oxide Sand, and Reduced Graphene Oxide Sand Composites for Water Purification
Poster Presentation
Undergraduate Student(s): Connie Wei
Graduate Student(s): Daniel A. Corella
Faculty Mentor(s): Bharat Baruah

This project reports the in-situ synthesis of graphene immobilized on the sand substrate from the banana peel, a natural and cheaper source of carbohydrate. The as-prepared material was characterized by scanning electron microscopy (SEM) and energy dispersive X-ray (EDX) analysis. The presence of C-signal in EDX and wavy 2-D sheet-like structure in SEM indicate the formation of graphene-sand composites. We have also synthesized graphene oxide (GO) from graphite with a slight modification of literature method. We have deposited purified GO on the pure sand to generate GO@sand composite. The GO@sand composite was further reduced thermally/chemically to convert GO to reduced graphene oxide (rGO) and to obtain an rGO@sand composite. We have compared the adsorption capacity of graphene@sand, GO@sand, and rGO@sand in adsorbing organic contaminant from water. Several dye

molecules were tested to confirm the viability of these composite's adsorbability with the help of UV-visible spectroscopy.

Design of Composite Materials Consisting of Cadmium Sulfide QDs and Nanoparticles: Photocatalytic Activity
Poster Presentation
Undergraduate Student(s): Kristi Moncja
Faculty Mentor(s): Bharat Baruah

Composite materials designed by depositing cadmium sulfide (CdS) quantum dots (QDs) on silicon substrates by SILAR method. Gold nanoparticles were then deposited on the CdS QDs as a plasmonic enhancer. These composite materials were characterized using UV-visible and Raman spectroscopy, scanning electron microscopy (SEM) and energy dispersive X-ray analysis (EDX). These composite materials were then assessed for degrading pollutants and toxic compounds under UV and visible light irradiation.

Fabrication of Composite Materials Using Silicon Substrate, ZnO Nanospheres and Polymer Stabilized Nanoparticles: Photocatalytic activity
Poster Presentation
Undergraduate Student(s): Matthew Geiger, Christopher Kelley, Kelly. M. Jacobson
Faculty Mentor(s): Bharat Baruah and Gregory J. Gabriel

This work attempts to generate photocatalysts on a flexible silicon substrate. ZnO nanospheres were synthesized in the presence of methanol and KOH and deposited on silicone substrate by dip coating and drop casting method. We demonstrate one-pot synthesis of water-soluble cationic polymer capped gold nanoparticles (AuNPs). The water soluble cationic polymers used in here are polyguanidino oxanorbornenes (PGON) at 20 kDa and polyamino oxanorbornenes (PAON) at 20 kDa. Gold ions are reduced to AuNPs in the presence of NaBH4 and polymer in aqueous solution at room temperature. Finally, polymer capped AuNPs were deposited on ZnO nanospheres to create the composite materials. UV-Visible Spectroscopy monitored the photocatalytic activity of the composite materials. All materials were characterized by Raman Spectroscopy, Scanning Electron Microscopy (SEM), and Energy Dispersive X-Ray Analysis (EDX).

3D Macroporous Binary and Ternary Composite Materials Containing IO-TiO_2, CdS QDs and AuNPs: Fabrication and Photocatalytic Applications
Oral Presentation
Graduate Student(s): Daniel A. Corella
Faculty Mentor(s): Bharat Baruah

Materials composed of titanium (IV) oxide (TiO_2) have received enormous scientific interest due to abundance, non-toxicity, and photocatalytic proficiency under ambient conditions. This

work reports the fabrication of 3D macroporous inverse opal (IO) TiO_2 embedded with CdS QDs and in-situ synthesized gold nanoparticles (AuNPs). We subsequently assess the photocatalytic efficiency binary IO-TiO_2-AuNPs, IO-TiO_2-CdS and ternary IO-TiO_2-AuNPs-CdS in degrading organic pollutant analogs. The morphologies of the fabricated photocatalyst are characterized by scanning electron microscopy (SEM), the elemental components are determined using energy dispersive X-ray line analysis (EDX), and Raman Spectroscopy. Photocatalytic reactions are monitored by UV-visible spectroscopy.

Cotton Fabric Immobilized Composite Materials Containing ZnO and AuNPs: Photocatalytic Applications
Poster Presentation
Undergraduate Student(s): David Agyeman
Faculty Mentor(s): Bharat Baruah

The present study demonstrates immobilization of the zinc oxide (ZnO) nanostructure on the cotton fabric (CF) and further functionalization with gold nanoparticles (AuNPs). AuNPs was synthesized ex-situ using citrate method. Various sizes of AuNPs were further deposited on ZnO immobilized on CF thereby generating CF@ZnO and CF@ZnO@AuNP composites. The morphology of these deposited nanostructures was verified by scanning electron microscopy (SEM), energy dispersive X-ray analysis (EDX), and Fourier transformed infrared spectroscopy (FTIR). The photocatalytic degradation of dye molecules by these composites was assessed by UV-visible spectroscopy. CF immobilized composites materials exhibited good catalytic activity with excellent recyclability.

Fabrication of Ternary Composite Materials Containing CdS, AuNPs and TiO_2 on Sand Substrate: Photocatalytic Application
Poster Presentation
Graduate Student(s): William Alejandro Mendez Gil
Faculty Mentor(s): Bharat Baruah

We design ternary composite materials containing CdS quantum dots (QDs), gold nanoparticles (AuNPs) and TiO_2 nanospheres on sand substrate. CdS is first deposited on the sand by SILAR method followed by deposition of ex-situ synthesized AuNPs by dip coating method. Finally, TiO_2 is incorporated as the top layer by hydrothermal method at 180^{o}C creating a sand@CdS-AuNPs-TiO_2 composite. The composite is characterized by Scanning Electron Microscopy (SEM), energy dispersive X-ray (EDX), Raman spectroscopy. The composite materials is tested for photocatalytic degradation of toxins and pollutants using UV-visible spectroscopy.

Characterization of the Thermus Thermophilus Transcriptional Regulator PaaR by the Combinatorial Approach REPSA
Poster Presentation

Undergraduate Student(s): James Shell Cox
Faculty Mentor(s): Michael Van Dyke

The Human Genome Project has granted the scientific world with a wealth of knowledge. Whole organisms can be sequenced in a relatively short period of time, yielding a vast amount of raw data. However, knowing the sequence of a genome does not necessarily mean the function of its genes or their encoded proteins is known. This leads to large grey areas in our understanding of certain protein function within a cell. A large subset of genes within an organism encode for regulatory proteins that respond to changes in the environment, known as transcription factors. The model extremophile Thermus thermophilus HB8 contains 2,245 genes, over 70 of which are thought to be putative transcription regulatory proteins. However, only a fraction of these regulatory proteins has been characterized, limiting our understanding of the biology within the relatively well-studied organism. Through research in our laboratory, a novel combinatorial approach, known as Restriction Endonuclease Protection, Selection, and Amplification (REPSA), has been developed to take the first step in understanding what individual proteins may do within a cell. An orphan transcription factor, PaaR of Thermus thermophilus HB8, was subjected to REPSA, massively parallel sequencing, and bioinformatical analysis to initiate the first steps in understanding its function. Our study provides a proof-of-concept for the application of REPSA in the identification of preferred DNA-binding sites for orphan transcriptional regulators and a first step towards their full characterization.

Civil Engineering

Mind of Matter
Poster Presentation
Undergraduate Student(s): Nathan Blackwell
Faculty Mentor(s): Amy Gruss

This research enlightens the intelligence of microorganisms, and their respective adaptations and accomplishments, specifically in comparison to humans. Frank Vertosick personifies microorganisms in his novel The Genius Within. These characteristics are tied into medical feats. Shapeshifting qualities of living microscopic organisms are crucial to their survival and functionalities, and will be expanded upon in an anthropomorphic fashion in order to self-educate and facilitate audience interpretation. Research articles are reviewed detailing the relationship of microbial physiology to penicillin, which is frequently mentioned throughout Vertosick's book. Another sub focus will link the ability of the human body versus microorganism adaption to cold temperatures. A final proposal that microorganism intelligence triumphs human capabilities in certain scientific areas gains support from these focuses.

Literary Review of "I Contain Multitudes: The Microbes Within Us and a Grander View of Life"
Poster Presentation
Undergraduate Student(s): Steve Waldron
Faculty Mentor(s): Amy Gruss

This research examines the literary work of "I Contain Multitudes: The Microbes Within Us and a Grander View of Life" by Ed Yong. The primary theme of this book is a defensive argument for the various microbiomes found across the globe with a strong emphasis on the numerous mutually-beneficial relationships between humans and bacteria, viruses, and even pathogens. The current zeitgeist regarding microbes, including bacteria, is generally viewed through a negative lens. Yong strongly believes otherwise and writes to introduce a more positive and optimistic perspective by combining his education, credentials and writing skills to offer scores of examples that explain the need for preserving microbiomes and their role in maintaining optimal human and environmental health. A small percentage of said examples, based on poignancy and near-future relevance, will be cross-examined using peer-reviewed journals. By coupling the writings of the book with peer-reviewed journals, a more in-depth knowledge of specific microbiota and their favorable effects on mankind and the environment will be explained in relatable terms.

Communication

Media Relations in a Changing Media Landscape: A Study of Interviews with Public Relations Practitioners
Oral Presentation
Undergraduate Student(s): Toni-Ann Hall *[University Honors Scholar]*
Faculty Mentor(s): Justin E. Pettigrew

This article aims to discover the current state of dialogue between public relations practitioners and members of the media. At its core, media relations deals with the relationships between public relations practitioners and the journalists they frequently interact and hope to build relationships with. Technology changes rapidly, and so does the communication field, so an ongoing assessment of these dovetailing industries is necessary for the productivity of professionals in a digital and multimedia society. This research captures perspectives and experiences from public relations practitioners in agency and corporate environments alongside external, peer-reviewed research. It examines the contributing factors of how technology enhances, neutralizes or diminishes complex journalist-practitioner relationships.

Computer Science

Improving the Prediction Accuracy of Text Data and Attribute Data Mining with Preprocessing
Poster Presentation
Graduate Student(s): Priyanga Chandrasekar
Faculty Mentor(s): Kai Qian

Data preprocessing is a data mining technique that involves transforming raw data into an understandable format. Real-world data is often incomplete, inconsistent, and/or lacking in certain behaviors or trends, and is likely to contain many errors. Data preprocessing is a proven method of resolving such issues. Data preprocessing prepares raw data for further processing. Data preprocessing is used in database-driven applications such as customer relationship management and rule-based applications (like neural networks). Data have quality if they satisfy the requirements of the intended use. There are many factors comprising data quality, including accuracy, completeness, consistency, timeliness, believability, and interpretability. The elements defining data quality: accuracy, completeness, and consistency. The aim of this paper is to identify the importance of preprocessing the attributed/text dataset. The Impact of preprocessing phase on the performance of the Naive Bayes classifier is analyzed by comparing the output of both the preprocessed text dataset result and non-preprocessed text dataset result. Similarly, for the attributed data, the impact of preprocessing on the performance of association rule was analyzed. Result shows that the Preprocessing phase has more impact on both text and attributed data analysis.

Dance

Spectacular Spaces of Consumption
Oral Presentation
Undergraduate Student(s): Ellen Grace Watkins
Faculty Mentor(s): Sarah Holmes and Meghan Quinlan

Many pre-professional dance studios have become consumer driven in response to the growing economic practice of neoliberalism. Neoliberal values have become more prominent in today's economy and inevitably seeped into the lives of dancers and instructors, creating a consumer based pre-professional training school. This paper argues that the current neoliberal state of the United States that values quantity over quality is negatively affecting dance education by reducing specialized and therapeutic training and as a result numbing the creative mind and artists' entrepreneurial abilities. This research begins with the basic definition of neoliberalism along with discussing how the theory of homo politicus and homo economicus individuals and their roles in society are responsible the recent development of what could be called the "superstore" dance school. The "superstore" dance school is a one-

stop shop that offers many different styles of dance including combo classes and does not focus on a central technique. The immense disadvantages to the "superstore" approach of dance education lead to the project's examination of the pedagogies of dance in Israel, where the arts are thriving, to study other approaches to dance pedagogy. The project discusses both the United states and Israel's economies and school systems in relation to teaching styles and government funding for the arts. It studies the differences in pedagogies and theorizes why they vary in approach regarding their economies. Once determined differences are established, the project will, lastly, propose a solution through a marketable lesson plan that offers pedagogical techniques and approaches similar to those found in Israel that negate the neoliberal economy and its effects on education.

The Danger of Unqualified Dance Instruction
Poster Presentation
Undergraduate Student(s): Angelina Pellini *[University Honors Scholar]*
Faculty Mentor(s): Sarah Holmes

While dance classes have become a popular activity for children in the United States, most people are unaware of what constitutes "quality" dance instruction. This idea has been addressed at a collegiate level yet the lack of standards for dance instruction at the studio level has been overlooked. This research draws attention to this issue and the need for a potential solution to the problem. This project answers these questions: Is there a trend between the lack of standards for K-12 dance education and the prevalence of injuries in young dancers? If so, is there a way to address this and establish a detailed set of qualifications that instructors need to meet in order to teach dance? The hypothesis proposes that poor instruction leads to an increase in injuries in young dance students, especially in areas of the body such as the hips and lower back. Further this misguided instruction is a disservice to students hoping to seek careers in professional dance. This topic is important because it affects a large group of young children and possibly leads to their physical harm and failure to thrive in a professional career. In addition to reviewing existing literature, this project conducts original surveys with commercial and pre-professional studios in the Cobb County/Metro-Atlanta area. Comments and data from studio directors, serving a wide range of dance styles, examines the qualifications of studio teachers; criteria that applicants must meet to teach at their studio; and whether or not they have any standard curriculum that teachers must follow.

Dance Education in Low Socioeconomic Environments
Oral Presentation
Undergraduate Student(s): Rebekah Sauls *[University Honors Scholar]*
Faculty Mentor(s): Meghan Quinlan

A form of fine arts education, dance instruction provides social, cultural and educational benefits by developing practical skills and increased social mobility for low income students. In this paper, I examine how dance education has helped individuals overcome poverty and

examples of programs that are designed to do that. The essay draws on a variety of studies that examine how the performing arts have helped individuals overcome poverty and applies that research to dance education. This essay takes the research that others have collected about fine arts education in general and applies it to the dance field. That information is then applied to the implementation of dance education in the metro Atlanta area. In order to draw these conclusions I analyze a variety of sources including journal articles, books and interviews. The essay starts with an overview of poverty in the metro Atlanta area. Following this brief introduction the writing dives into an exploration of what dance education looks like today. Finally, the essay connects the two and examines what types of dance education are available to people in poverty; much of this research relates to the metro Atlanta public school system and how low socio-economic schools are reaching their students with dance education. Finally the essay concludes how dance can effectively reach people living in poverty. Through a variety of research methods and personal connection this essay answers the question, "What social, cultural, and educational benefits does dance education provide for students living in low income areas of metro Atlanta?"

Digital Writing and Media Arts

Search Engine Optimization: The Art and Science of Online Visibility in a Sea of Billions
Oral Presentation
Undergraduate Student(s): Edward Kihara
Faculty Mentor(s): Laura Palmer

In this poster session, I will explain the methodologies and practices used to increase the likelihood that a website will be found and ranked by the major search engines. I will also demonstrate how Google Analytics informs the always-morphing strategies used to attract search engines to a website. Search Engine Optimization (SEO), the process of "making" a website appear on the first page of Google and Bing is not for the faint at heart. With over one billion websites in existence today, SEO practitioners are in a perpetual loop of having to convince search engines that the sites they manage are relevant and deserve a place in the highly coveted first page of results. In TCOM 3245: SEO and Analytics, we conducted research and implemented SEO best practices as a means of generating website traffic. In a little over three months, my client appeared on the second page of Google's Search Engine Results Page (SERP) from organic search. In that same period, the rate at which people immediately left the site (bounce rate) fell to 23%, down from a ghastly 89%. In addition, visitors' time-on-site increased from 15 seconds to 120 seconds per visit. These results meant that the site was findable and thas users were engaging with the content. As with any experimental methodology, SEO is a perpetual process of trial and error; however, as my poster will demonstrate there are several time-tested strategies that yield positive results when implemented properly. My research will highlight the five major phases of development as follows: Phase I: Code Validation (HTML/CSS) and Meta Data; Phase II: robots.txt, .htaccess,

and XML sitemap; Phase III: Competitive Analysis, Keyword Research, and Title Tags; Phase IV: Page Content, Information Architecture, and Link Building; Phase V: Google Analytics Metrics and Trends. Phases I and II were primarily cosmetic and diagnostic evaluations of the client's website to find out whether the code for the site was compliant to current W3C standards. Phases III and IV are both research centered approaches to SEO best practices which also constitute some of the time-tested strategies mentioned earlier. The poster will also show how Google Analytics began to return various data about visitors that came to the client's website. Phase V was strictly analysis of the measurements, modifications, and trends that emerged from the time data started streaming in September, 2016 such as; Audience, Acquisition, and Visitor Behavior Data.

Ecology, Evolution, and Organismal Biology

Brassica juncea Growth Under Nutrient Limitations
Poster Presentation
Undergraduate Student(s): Michelle Jolly
Graduate Student(s): Andrew Thornhill
Faculty Mentor(s): Matthew Weand

As a result of the 2010 nuclear meltdown in Fukushima Japan, radioactive Cesium (Cs) now resides in the soil of surrounding areas where it will remain for centuries unless it can be removed. Plants used in phytoremediation techniques may be able to free Cs bound in the interlayer spaces of clay soil minerals without disruption of the environment and the spread of further contamination. After adsorption of Cs, plant biomass could be easily disposed. In many plants, the ability to uptake Cs is inversely related to potassium (K) availability. However, if K availability is insufficient, plant growth will be impacted. Our goal is to determine a minimum K availability where plants have sufficient K for growth because at this threshold Cs uptake can be maximized. We reared southern giant mustard seed (Brassica juncea) in a soil-less media to which potassium-free fertilizer and varying concentrations of K were added. Seeds received 5 mL per week of either [0.01], [0.05], or [0.2] K for 6 weeks. We hypothesized that germination and growth would be directly proportional to K availability. Results showed that germination was most favorable under the [0.05] K treatment. Contrary to our hypothesis, there was no seed germination under the [0.2] K treatment. This suggest that a switch between K sufficiency and K toxicity may occur over a very small change in availability. Plants receiving [0.05] K had the greatest germination (48%) and growth. Further research will consider alternate K availabilities to more specifically identify a minimal nutrient sufficiency.

Influence of Chinese Privet on Patterns of Litter Fall in Riparian Zones
Poster Presentation
Undergraduate Student(s): Ronnie Adams, Brian Greene, Nathan Kasmar, Taylor Nash

Faculty Mentor(s): Matthew Weand

Changes in the timing and quantity of plant litter can alter decomposition and soil nutrient availability with cascading trophic effects. Chinese Privet (Ligustrum sinense) is an invasive species of shrub commonly found in riparian zones of the southeastern United States. Because privet is evergreen while the majority of native species are not, we hypothesized that privet invasion may alter temporal patterns of litter fall and the quantity of litter inputs to the forest floor. We used a multisite litter collection approach to determine the rate at which Chinese privet drops its leaves compared to native plant species. We collected leaf, woody, and reproductive litter in each site, from under native riparian vegetation and in areas invaded by privet from Fall 2016 to Spring 2017. In areas of privet invasion, privet litter ranged from 1.5% to 94.3% of total litter fall. Preliminary data indicated that in areas of privet invasion, litter fall mass peaked one month later into the winter compared to native vegetation. Our results support the hypothesis that privet alters the timing and quantity of litter deposition. Additional study will determine whether privet invasion, and associated changes to litter affect nutrient availability in the soil food web.

Oligochaete Growth and Reproduction in Local Streams
Poster Presentation
Undergraduate Student(s): Rebekah Wedermeyer, Brett Beatty
Faculty Mentor(s): Heather Sutton

Oligochaetes (Lumbriculus variegatus), also known as blackworms, are sediment dwelling organisms for which standard culturing and toxicity test methods are available. Oligochaetes can be used as bioindicators of chemical contamination as well as of the trophic status of the aquatic systems in which they live. Endpoints that can be measured with oligochaetes include growth and reproduction, as well as changes in feeding rate and behavior. The present study is the initial stage of a screening of sediment from local (Cobb and Paulding County) streams for oligochaete growth and reproduction. Sediment has thus far been collected from Raccoon Creek (a relatively pristine creek in Paulding county that we are using as a reference stream), as well as Butler, Proctor, Pumpkinvine, Noonday, and Ridgewood Creeks, and a local golf course pond. Basic sediment pore water quality measures are also being measured. Sediment from streams that results in poor growth and reproduction of the oligochaetes will receive further testing for both chemical and physical habitat parameters.

Age and Growth of Central Stonerollers (Campostoma oligolepis**) Across a Range of Urbanization**
Poster Presentation
Undergraduate Student(s): Bijan Moshgelani, Thereshana Tan
Graduate Student(s): Hannah Grice
Faculty Mentor(s): William Ensign

Urbanization alters fish communities in a variety of ways and the effects of urbanization vary from species to species in any given assemblage. Although most species are negatively affected, there are some tolerant species whose abundance may increase in urban streams. Past research has indicated that Largescale Stoneroller (*Campostoma oligolepis*) abundance increases in urbanizing watersheds of the Etowah River Basin in the Metropolitan Atlanta area. The current study looks at age and growth of Largescale Stoneroller across a range of watershed urbanization (assessed using landscape measures of impervious surface cover (ISC) using otoliths. Stonerollers were collected from four streams with differing levels of urban impacts (ISC ranging from ~0.6% to ~ 30.0%), euthanized using MS222, measured for total length, and the lapillus otoliths were removed. Otoliths were embedded in epoxy, sanded to expose the nucleus, and then examined under a microscope to identify annuli. Distance from the nuclei to each annulus and to the otolith margin was measured and used to back-calculate length at age. Preliminary results indicate that Central Stonerollers in streams with higher ISC grow more rapidly than those from stream with lower levels of ISC.

Assessing Deer Abundance in Kennesaw Mountain National Battlefield Using Motion Detection Cameras
Poster Presentation
Undergraduate Student(s): Victoria Mendiola, Melissa Martin
Faculty Mentor(s): William Ensign

White-tailed deer (*Odocoileus virginianus*) are an adaptable species that can maintain high-density populations in suburban areas. In landscapes where patches of parkland are embedded in a matrix of suburban development, interactions between humans and deer can have negative outcomes. These include increased frequency of automobile collisions with deer, damage to landscape and horticultural elements, and alteration of the vegetation in the parkland with increased deer browsing. Kennesaw Mountain Battlefield National Park (KEMO), a 992 hectare patch of forest and grassland embedded in the suburban matrix of Cobb County, Georgia is an excellent example of this pattern. To assess deer populations in KEMO, park personnel placed 12 motion detector cameras throughout the park during February 2015. Cameras were baited with corn and set to record activity over a period of two weeks. To use the data from the cameras to estimate abundance requires unique identification of antlered bucks in the photos. Images from two cameras were downloaded and assigned to four independent observers. Each observer was given a written protocol for identification and enumeration of unique bucks based on antler structure and asked to score all bucks in all photos. Initial results indicate that the protocols are effective in produce consistent identifications. Future work will build on these results with the ultimate objective of producing estimates of the KEMO deer population.

Employment of BioMark HPR Plus Handheld PIT Tag Reader for Monitoring the Movement of Fishes in a Small Stream
Poster Presentation

Graduate Student(s): Andrea Davis
Undergraduate Student(s): William Commins
Faculty Mentor(s): William Ensign

Miniaturization of passive integrated transponder (PIT) tags has allowed application of this marking technology to increasingly smaller organisms, including fishes as small as 50 mm total length (TL). In streams the utility of PIT tags has been further enhanced by the development of portable hand held antennas that allow detection of free-ranging fishes. In this study, we assess the probability of capture of PIT-tagged Creek Chubs (*Semotilus atromaculatus*) and Redbreast Sunfish (*Lepomis auritus*) in Kennesaw Creek, Georgia. Prior to sampling, a block net was placed at the lower end of a 200 m sampling reach that was bounded on the upper end by an impassable culvert. Creek Chubs and Redbreast Sunfish greater than 50 mm TL were collected from the reach with a backpack electroshocker, anesthetized with buffered MS-222, injected with a uniquely coded PIT tag, placed in holding containers to allow recovery, and then returned to the stream at their point of capture. The entire reach was sampled four times over two days with the handheld portable antenna and detections noted. Since we sampled a known population of tagged fish, it is possible to estimate overall capture probabilities for the two species. The results of our study can be applied to studies of open populations of similar species in other stream systems.

A Preliminary Molecular Assessment of Sediment Microbial Community Diversity and Composition Associated with Seagrass Beds and Unvegetated Areas in Shallow Coastal Waters Around Apalachicola Bay, Florida
Poster Presentation
Undergraduate Student(s): Michelle Edward *[University Honors Scholar]*
Faculty Mentor(s): Thomas McElroy, Julia Morrissey

The focus of my research project was to characterize the composition and diversity of microbial communities found within and surrounding seagrass beds. This research used modern molecular techniques to determine the diversity of microbial species present, differences in microbial community structure and ultimately their influence on nitrogen cycling within the estuarine ecosystem. We hypothesized that there would be significant differences between microbial communities in vegetated (seagrass) and unvegetated sediments. The research is still ongoing but we hypothesizez that the differences will be related to differences in nitrogen cycling (detected in previous studies done in this area).

Impacts of Urbanization on the Composition of Gut Microbiota in *Campostoma oligolepis*
Poster Presentation
Undergraduate Student(s): Joanna Ho
Graduate Student(s): Hannah Grice
Faculty Mentor(s): Thomas McElroy and William Ensign

Campostoma oligolepis is a species of minnow native to Georgia. Studies have shown that *C. oligolepis* in urbanized watersheds with higher levels of impervious surface coverage (ISC) reproduce earlier, have higher growth rates, and decreased gut length compared to individuals in rural systems. This difference in gut length tends to suggest that *C. oligolepis* from rural systems have access to food resources that are harder to digest, making a longer gut length advantageous to maximize digestive efficiency. With an increase in gut length, we might also expect an increase in the diversity of gut microbiota that aid in the digestion of lower quality resources. Additionally, we would expect to see more diverse and abundant bacterial communities in the hindgut as compared to the foregut. We assessed the gut lengths, and gut microbiota composition in *C. oligolepis* collected from four sites over a gradient of urbanization to try and address the key differences in digestive approach and to see if bacterial diversity plays a role in *C. oligolepis* gut length. We found that *Campostoma* from urban sites did have significantly shorter gut lengths. We also found that there were more bacterial general represented in the impacted sites compared to the rural sites. However, we did not find a significant difference in the foregut and hindgut bacterial composition of fish from the same site.

Before and After: Wastewater Nitrogen Sources in a Local Watershed
Poster Presentation
Undergraduate Student(s): Thereshana Tan
Faculty Mentor(s): Troy Mutchler

Human development can impact stream ecosystems by altering the hydrological regime, reducing the extent of canopy cover, and modifying stream temperature and nutrient profiles. Such changes can elicit shifts in the structure and function of stream communities, altering energy flow and trophic relationships within the system. A recent upgrade to a local wastewater treatment facility presented a unique opportunity to explore how anthropogenic nutrient inputs affect stream food webs. To detect the effects of wastewater treatment facility on food web structure, natural abundance stable isotope compositions of stream organisms were used to reconstruct food webs. Samples were collected before and after the wastewater treatment facility was upgraded. Elevated $\delta^{15}N$ values of organismal tissues indicated strong influences of anthropogenic nitrogen inputs prior to facility upgrade. Ongoing work will allow us to examine how food web structure and function change following the plant upgrade.

Comparing Staining Techniques to Visualize Endomycorrhizal Fungal Colonization in Plant Roots
Poster Presentation
Undergraduate Student(s): Joseph Almengor
Faculty Mentor(s): Paula Jackson

The purpose of this project was to compare the efficacy and complexity of two potential staining methods in order to visualize endomycorrhizal fungal colonization of plant roots

under two different types of microscope. Endomycorrhizae are a group of fungi that have a mutualistic association with plant roots; whereby the plant root benefits from the association through increased access to water and nutrients (mainly phosphorous) and the fungus receives the benefit of carbon products from the plant. We compared the efficacy of the stains and different stages of the staining process with the aim to increase our ability to visualize the association between the plant root and the fungus. Our ultimate goal is to quantify the surface area of contact between these two very different organisms, and thereby better understand the nature of their interaction. We used compound microscopy and laser scanning confocal microscopy (Zeiss LSM 700) to compare the stains: trypan blue and Chlorazol Black (CBE). For this, we first collected root samples from trees of two species Platanus occidentalis L. (American sycamore) and Salix nigra Marsh. (Black willow) that grow in a riparian area within a patch of forest on the Kennesaw State University campus. Our preliminary results indicate that the critical and most limiting step of the staining procedure is the clarification of roots using a dilute potassium hydroxide (KOH) solution. We found that several factors affect the proper clearing of the root cells, which inhibits the overall staining of endomycorrhizae. While most herbaceous roots can be cleared rather easily with KOH, the root samples from the wooded area on campus required additional steps; such as increased soaking time in KOH as well as in hydrogen peroxide (H_2O_2). Once proper clearing of the cellular structures was attained, the roots were treated with the different stains (CBE or Trypan Blue). Examination of the samples under the two microscopes showed different advantages to using each staining technique.

Electrical Engineering

Performance Analysis of a Hybrid Particle Swarm Optimization Algorithm for Maximum Power Point Tracking of Solar Photovoltaic Systems
Poster Presentation
Undergraduate Student(s): Brian McCray, Nicholas Foster, Samuel McWhorter, Baker Nour
Faculty Mentor(s): Sandip Das

This paper presents a maximum power point tracking (MPPT) technique based on a hybrid particle swarm optimization (PSO) algorithm to optimize the energy harvested from a solar photovoltaic (PV) module. The PSO algorithm was designed to search and locate the maximum power point (MPP) on the power-voltage curve, and then automatically switch to perturb and observe mode to keep track of the MPP. The hardware consisted of a buck-boost converter operating at 1 MHz frequency. 16-bit resolution analog-to-digital (ADC) converters were used to accurately measure the voltages and currents at the module side and the load side simultaneously, which was then read by a microcontroller (Arduino micro) to implement the hybrid PSO algorithm. The MPPT algorithm was executed on the microcontroller, which controls the MOSFET switches of the power converter by varying the duty cycle to achieve MPP tracking. Our investigation focuses on the effect of several key operating parameters of

the PSO technique, and optimizes these parameters to achieve highest possible efficiency. When using the PSO algorithm, a relationship exists between the numbers of particles used, the speed at which algorithm execution is performed in the microprocessor, and the size of the PSO search space relative to all possible solutions. Increasing the PSO particle count affects algorithm performance by increasing accuracy at the expense of algorithm processing time. Processing time is also affected by the system execution speed, which depends on the hardware capability and is directly related to system cost. As a result of these relationships, MPPT design represents tradeoffs between these characteristics. In our investigation, the hybrid PSO algorithm with typical parameter values was used as a benchmark, while the number of PSO particles, the algorithm execution speed, and the search space characteristics were varied across a wide range of values. The resulting system performances are presented.

English

College Reflective Writing Practices: Pedagogies in Writing Courses
Oral Presentation
Undergraduate Student(s): Kailee Kivett
Faculty Mentor(s): Lara Smith-Sitton

Reflective writing or journaling is one of the most valuable skills a student can learn while in college. However, to students reflective writing is a classroom practice that is often not considered important. This research project explores why students often fail to understand the importance of this practice and how grading rubrics and assessments from their teachers can improve their engagement with these kinds of assignments. This paper will examine how reflective writing assignments given in composition and writing courses can be extremely valuable to college students both in and out of classroom settings. College students can develop writing skills needed for future endeavors in their personal and professional lives through these kinds of classroom exercises. This paper will discuss what the research reveals about reflective writing and how journaling skills can transfer to professional writing in the workplace. This presentation traces the way writing class reflective writing can also have positive psychological effects in a student's personal life by considering how journaling is used in therapeutic settings. This paper is part of a larger research project that explores specific ways in which students at Kennesaw State University were affected by their experiences with reflective writing and journaling in the college classroom.

College Reflective Writing Practices: Writing Center Support for Students with Disabilities
Oral Presentation
Undergraduate Student(s): Emily Deibler
Faculty Mentor(s): Lara Smith-Sitton

Approximately 11% of undergraduate students report living with a disability of some nature. Trauma and chronic disabilities, such as a mental illness, can potentially hinder a students' progress as a student writer. This paper, which grew out of research conducted about how writing centers can better support students with disabilities, explores ways that reflective writing practices can be catharsis for college students facing disabilities and illnesses. College writing centers provide accessible spaces for college students with disabilities to explore journaling and reflection while also offering academic writing support. This paper will explore how writing center practices develop reflective writing skills that have a multitude of positive outcomes for college students.

College Reflective Writing Practices: Writing Outside the Classroom for Healing
Oral Presentation
Undergraduate Student(s): Lindsey Walden
Faculty Mentor(s): Lara Smith-Sitton

College students cope with tremendous amounts of stress on a daily basis. However, not all of this stress is exclusively academically related. More than 60,000 individuals between the ages of twenty and thirty-nine are diagnosed with cancer each year. Cancer also accounts for approximately 10% of deaths within the young adult age bracket—the age of traditional college students. Young adults diagnosed with cancer face hardships that other age groups suffering from cancer do not. College-aged students are caught between being a child with cancer and being an adult with cancer, which can lead to severe feelings of isolation. College Cancer Support Programs could be an extremely beneficial resource for students affected by cancer during their academic career and help them identify strategies to continue their studies. A valuable part of a cancer support system for college students would include reflective writing and journaling. Reflective writing not only reduces the patient's anxiety but also creates a language that can reach a larger college community. This presentation will explore the benefits of reflective writing for young adults impacted by cancer and how a college support system might can include this in the services offered. This paper is part of a larger project that explores the impact of cancer on college students and the resources that can support healing and recovery.

What is a Meme?
Poster Presentation
Undergraduate Student(s): Amira Menkara
Faculty Mentor(s): Jeanne Bohannon

When evolutionary biologist Richard Dawkins first coined the term "meme" in his book The Selfish Gene, he had no idea that this specific "unit of imitation," which he used to refer to replication of cultural phenomena, would grow into a global construct used in digital spaces to convey meaning. In their usage today, memes combine textual and visual rhetorics to generate meanings and imitation of cultural experiences.

Memes are, indeed, a form of unconventional grammar, and when they function rhetorically they can actually change the meaning of a conversation. Memes come in a variety of contexts. They can be images with captioned text on it, GIFs (Graphic Interchange Format), or videos. Memes have become important in grammar and social communication. They usually relay a message of importance or humor to the receiver from the sender. Due to how quickly memes advance in American Culture, I have updated my research to catch up with the current mainstream meme. In my project, I will conduct a linguistic ethnography and observe memes transmit pragmatic meaning across digital platforms such as blogs and social media.

The Role of Punctuation on the Social Media Platform Tumblr
Poster Presentation
Undergraduate Student(s): Sara Omer
Faculty Mentor(s): Jeanne Bohannon

Digital media scholars such as Andrea Lunsford and others have noted a trend in how people write across social media spaces. Pew Research reports that Tumblr is a platform that finds most of its audience in young adults, aged 16-29. Jeanne Bohannon has further postulated that social media spaces like Tumblr provide ripe linguistic data for studying how this demographic group re/mixes traditional language conventions into completely new constructions. On Tumblr, unique grammatical conventions have evolved to facilitate interaction between discourse communities, especially fandoms. In the Fall of 2016, I conducted a digital forensic analysis of Tumblr pages and textposts, looking specifically at trending posts to examine syntactic patterns that pointed to a shared pragmatic meaning, so I could redefine and synthesize the associated grammatical conventions on the Tumblr platform. Because of the young-trending demographic, Tumblr is an important indicator of the future of grammatical conventions. Understanding how grammar is used on Tumblr is important for non-digital natives who might misinterpret meaning. Punctuation and capitalization are particularly integral in conveying tone on the platform, although even in very specific discourse communities there are exceptions to "hard" rules, and using prescriptive grammar does not necessarily exclude writers. In this textual analysis, I examined the situational use of prescriptive grammar and drew conclusions about the future of grammatical conventions.

Harnessing Social Media for Social Movement: Intersectional Feminism and the Digital Publication Model
Oral Presentation
Graduate Student(s): Laurel Ann Lowe
Faculty Mentor(s): Letizia Guglielmo

Too often, the potential of digital space to communicate and develop ideas is ignored in favor of the traditional print publication model, which is foisted on academics in order to provide

evidence of purported scholarly productivity. The traditional print model is inadequate for fields that are rapidly growing, that require a multitude of voices, or that seek to inspire social movement or activism beyond the academy. Specifically, intersectional feminism, which seeks to explore the ways in which oppressive institutions are inextricably connected, requires the assembly of diverse experiences in direct conversation, a feat more readily accomplished through collaborative digital publication than the limiting traditional print model. In this presentation, I will explore the potential of online communities to network diverse voices to enhance and develop intersectional feminist theory and activism, which includes reaching outside the academy to tether experiential study and personal accounts to theoretical study. Blogs- and other forms of online serial publication- are uniquely poised to take this information and transform it into physically and intellectually accessible content, and that original content becomes inseparable from the contribution made it to it by the community surrounding it, mirroring the very essence of intersectional feminism.

Literacy, Rhetoric, Language Barriers and Academia
Oral Presentation
Graduate Student(s): Estefany Palacio
Faculty Mentor(s): Sergio Figueiredo

This project looks to share my story of immigration, the physical act of permanently moving from one country to another, and how that story shaped the process of migration in my academic life. As an immigrant child, I was forced to acculturate to a new set of rules, customs, and ways of life. As an academic in training, I have made the decision to migrate between mediums of content delivery in order to understand the role of rhetoric and communication to its surroundings. I embrace the commonly accepted ways of delivering ideas, palpable materials like paintings, essays, columns on magazines and newspapers. I also invite the use of different modes of content creation and reproduction. I invite the use of digital media and actually embrace it more so than the everyday essay. As a current student of professional writing, I understand that as part of a society driven by the constant technological changes, I need to be up to date with the different modes of creation (hardware, software, and whatever else comes along). I believe that incorporating the digital with the classical is a combination for success. I look back to my freshman English 1101 class and the discussion we had about the three rhetorical appeals, and I can assure every reader of this chapter, that I carry those three words with me everywhere I go: ethos, logos, pathos. There is no mode of communication or act of communication that I do not see and stop to think about the person or persons that created the work, their backgrounds and understanding of the subject, the actual work, its contents, whether reliable or not, and the emotion that is included in each work, does it actually work? Add the digital and you get movies, photo essays, podcasts, videos, digital magazines, and many more forms of content delivery that can reach a larger number of audience members, and most importantly, directly invite them to the conversation, not just by asking questions and leaving cliffhangers on a piece of paper, but by truly inviting the person to follow the author, the piece, by asking the audience to reply in a “comments” box, by

allowing the audience to "like" or "dislike" the work. That is the beauty of digital media and communication, the interactivity, and malleability. The chapter is a look into my immigration story and how it has shaped my literacy practices, my outlook on rhetorical studies, and of course, my pursuit to remain in the academic field after graduating.

Valerie Smith, A Poetry Reading
Oral Presentation
Graduate Student(s): Valerie Smith
Faculty Mentor(s): Tony Grooms

Valerie Smith is a poet and writer of creative nonfiction.

Curlie Blue

The Blues down south would cut you
like a paper mill and let your rotten stink
blow all the way north on a hot summer breeze.
That's how she left, you know.

She was the second oldest of thirteen,
stocky as a sawed-off shotgun, red hair,
freckles and plump green eyes that traced
an un-retraceable line.

When I met her, she was Sunday dressed
in a full-length cashmere coat and matching
camel-colored hat. The wide brim tilted over
her right eye leaned into each heavy stride.

Legend has it, she snatched a black snake
out an oak tree in mid conversation and
ripped his head off in the street. She gripped
my hand and pulled a knife one night

we stayed too late at Menlo Park Mall
and had to walk out the service exit.
I was just tall enough to see the blade
flash in the corner of my eye.

Her anointing hands could rub a rash clean
and make me believe the Blues
were always one bitter snuff can away

from spittin' out the truth.

Curlie Raised the Blues

in a North Jersey brownstone
a three-story standalone above a cellar door
alarmed with tin cans, her parlor and blue china
shined with impeccable taste.

She was there waiting with fresh biscuits and gravy
when the Blues escaped the south on busses and trains.
Her home became a refuge and depot for siblings
to be raised alongside her only son.

She never laid a hand on him.
She taught him to read,
put her little brothers on big rigs,
and married her sisters off to affable men.

When I met her, we were swimming
in the above-ground pool, eating watermelon
at the picnic table with all my second cousins,
kicking pincher bugs off our toes.

One day I lost hold of her dog and chased him
past the Puerto Ricans around the city block.
She told me to get a switch from the yard,
but she couldn't bear to use it.

She'd rather read the Bible in the evening
licking her thumb to catch its thin pages
the shotgun hid safe under bed
and Harlequins resting in the attic.

Exercise Science and Sport Management

A Comparison of Self-Reported and Measured Levels of Physical Activity in a Free-Living Environment for a Pregnant Population
Poster Presentation
Undergraduate Student(s): AnnaMagee Morris, Eleanor Stevenback
Faculty Mentor(s): Katherine Ingram

Introduction: Physical activity plays a key role in maternal health and can be measured in a variety of ways, some measured directly and others assessed by participant self-report. Surveys that allow participants to provide their recollection of daily physical activities have been found to underestimate sedentary time and overestimate active time. An example of a self-reporting survey of particular interest to this study is the Pregnancy Physical Activity Questionnaire. The PPAQ contains several categories of questions, reported in hours spent per day or per week, which include the performance of household, caregiving, and occupational tasks, as well as the engagement in leisure time sport, exercise, and sedentary behavior. Purpose: Our purpose is to determine the validity of free-living activity categories according to the self-reported PPAQ when compared to the direct measures of accelerometers. Methods: PPAQ and accelerometer data were collected at approximately the 20th gestational week from 32 nulliparous pregnant women (average age: 26, average BMI: 31.7kg/m^2) who were recruited from metro-Atlanta OB/GYN clinics. Subjects were given the PPAQ to self-assess their physical activity level for an average day during the second trimester. The PPAQ results were analyzed through a labeling system, where each question was given a metabolic equivalent (METs) equating to an activity level (sedentary<1.9 METs, light=2.0-2.9 METs, moderate=3-6 METs, vigorous>6 METs). Also, the subjects were given Actigraph GT3x accelerometers to wear for 7 days. Tri-axial accelerometer data was analyzed to yield METs using Crouter's 2010 regression equation and minutes spent in each activity level per day using Mathew's 2005 cut-points. All data were converted to ratios of time spent in given activity level to total time documented. These ratios of time spent in sedentary, light, moderate, and vigorous activity from the PPAQ were compared to the same ratios from the accelerometers at 10+, 12+, and 14+ hour wear-time validations (total valid hours worn per day deduced by accelerometer counts). Results: Final results will be presented at the 2017 Symposium of Student Scholars in April.

Gestational Weight Gain in Relation to Infant Birthweight
Poster Presentation
Undergraduate Student(s): Kidan Kidane, Katherine Gauthier
Faculty Mentor(s): Katherine Ingram and Janeen Amason

INTRODUCTION: Metabolic disorders and obesity, which are related to physical inactivity and diet, are becoming more prevalent in pregnant women. Excessive weight gain during pregnancy can have adverse effects not only on the mother, but also on the newborn baby. Maternal metabolic dysfunction may lead to infants that are born small or large for their gestational age. This classification can be used to determine the overall health of the infant. Understanding the relationship between maternal health and infant health will help to improve prenatal care and decrease child morbidity. AIM: The aim of this research is to examine the relationship between gestational weight gain and infant birthweight. METHODS: A total of thirty-three primiparous pregnant women were recruited for this study. The average age of the group was 26 years and BMI was 30.7kg/m2. Medical records were used to monitor

pre-pregnancy BMI and body weight changes throughout pregnancy. Body fat content was analyzed with bioelectrical impedance (InBody 720) at approximately 20 weeks of pregnancy. Fasting glucose and insulin were collected at 24-26 weeks of pregnancy. Insulin resistance was calculated via the homeostasis model assessment (HOMA-IR) using the formula (insulin(mU/L) X Glucose (mg/dL)/405). Infant information was documented using the medical records; measurements included weight, length, head/chest/abdominal circumference, and gestational age. Correlation and regression analyses will be used to assess relationships between gestational weight gain and infant birthweight. RESULTS: The results and conclusion of our research project will be presented at the 2017 KSU Symposium of Student Scholars.

Maximal Velocity Adaptations During Unilateral Resistance Training in Older Adults
Oral Presentation
Undergraduate Student(s): Alex Olmos
Faculty Mentor(s): Garrett Hester

Maximal velocity parameters are negatively affected by aging; however, little is known regarding the short-term effects of resistance training (RT) on maximal velocity variables in older adults. Furthermore, whether or not unilateral RT induces maximal velocity adaptations in the untrained limb has not been determined. PURPOSE: To examine the effects of unilateral RT on maximal velocity parameters of the ipsilateral and contralateral leg in older males. METHODS: Twenty-one untrained older males were randomly assigned to a training (TG; n = 10, age = 64.70 ± 6.91 yrs.) or control (CG; n = 11, age = 65.56 ± 11.56 yrs.) group. The TG performed 3 sessions per week of unilateral isokinetic RT for 4 weeks. RT sessions consisted of maximal concentric knee extensions at 45°·s^{-1} for 4 sets of 10 repetitions. Subjects were instructed to "kick out as hard and fast as possible" during each RT session. Maximal concentric isokinetic testing of the knee extensors for the trained (TL) and untrained (UL) leg at 500°·s^{-1} ($ISOK_{500}$) was performed before (PRE), at week 2 (MID), and after week 4 (POST) of RT. There was no resistance during $ISOK_{500}$, with the exception of the lever arm mass, as the velocity was above all subjects' maximum velocity. The highest velocity attained (PV; º·s^{-1}) and the linear slope of the velocity-time curve (RVD; º·s^{-2}) were recorded for analysis. For the TL and UL, one-way repeated measures analyses of variance were used for the TG and CG separately. RESULTS: PV and RVD remained unchanged in both legs for the CG ($p > 0.05$). PV did not change in the TL ($p = 0.084$), while RVD increased from PRE to POST (+5.8%; $p = 0.029$) and MID to POST (+4.1%; $p = 0.038$). PV ($p = 0.644$) and RVD ($p = 0.523$) were unaltered in the UL. CONCLUSION: RVD appears to be more sensitive to change during the early-phase of RT compared to PV in older males. However, neither PV nor RVD in the UL appear to be affected by short-term unilateral RT. Since many neural adaptations are expressed bilaterally, the improvement in RVD for only the training leg suggests the adaptation is more likely mechanical in origin.

The Effect of Sport Specialization on Athletic Performance and the Risk of Injury in High School Swimmers
Poster Presentation
Undergraduate Student(s): Samantha Gunn *[University Honors Scholar]*
Faculty Mentor(s): Gerald Mangine, Trisha VanDusseldorp, Garrett Hester

Introduction: Specialization in one sport has become a popular trend within youth athletics, particularly amongst swimmers. Athletes who specialize typically compete on multiple teams within the same sport throughout the year, accumulate more practice hours and guidance from their coaches. These deliberate practices may enhance development of sport-specific skills and potentially lead to greater athletic success in the specific sport. However, specialization may also increase the likelihood of "burnout" (i.e., decreased interest in a specific sport) and the risk of overuse injury. Further, it may inhibit the development of athletic traits that are not the primary focus of the specific sport yet still important for success. Thus, it is not clear, whether specialization benefits sports-specific performance over individuals who participate in multiple sports. Purpose: The purpose of this proposed project is to assess the effectiveness of specialization on swimming performance and injury risk in high school athletes. A secondary purpose is to determine if the age in which the athlete specializes in swimming also has an effect on performance and injury risk. Methods: This project will survey Georgia high school student athletes who specialize in swimming and students who participate in other sports in addition to swimming. The best swimming performance times will be compared between high school swimmers who specialize in swimming and those who compete in multiple sports.

Increased Resisted Sprinting Load Decreases Bilateral Asymmetry in Sprinting Kinetics
Poster Presentation
Undergraduate Student(s): Jacob Alan McNabb
Faculty Mentor(s): Gerald Mangine, Trisha VanDusseldorp, Garrett Hester

INTRODUCTION: The magnitude and bilateral symmetry of sprinting kinetics are known to affect sprinting performance and the risk of injury. Traditionally, sprinting performance is assessed by time to completion while bilateral symmetry is assessed independently (e.g., during a separate strength or power measurement). However, athletic motion during sport rarely occurs un-resisted and the kinetics involved often determine success. Consequently, it may be more appropriate to measure sprinting kinetics and bilateral symmetry simultaneously during a sprint. PURPOSE: To investigate the effect of resisted sprinting load on bilateral sprinting kinetics in college rugby players. METHODS: Following a standardized warm-up, 16 male college rugby players (21.2±1.7 yrs; 89.5±16.4 kg; 178.4±6.7 cm) completed 3 maximal, 40-m resisted sprint trials while tethered to a robotic resistance device. The first two sprints (S1 and S2) were performed against minimal resistance (1-kg) with S1 being used as a familiarization trial. The final sprint (S3) used 15-kg of resistance. A minimum of 3 minutes of rest was provided between each sprint. To assess the effect of resistance on sprinting kinetics,

peak and average sprinting power (P_{PK} and P_{AVG}), velocity (V_{PK} and V_{AVG}) and force (F_{PK} and F_{AVG}), as well as peak rate of force development (RFD) for each leg were compared between S2 and S3. Additionally, the bilateral percent difference (%DIFF) for each variable was also compared. RESULTS: Significant decreases ($p < 0.001$) in sprinting velocity (peak and average) as well as in %DIFF for F_{PK} (S2= 6.7±4.4%; S3= 0.4±0.3%; $p < 0.001$), F_{AVG} (S2= 2.5± 2.0%; S3= 0.4±0.3%; p= 0.001), P_{PK} (S2= 11.4±7.4%; S3= 2.3±2.0%; $p < 0.001$), P_{AVG} (S2= 3.7±2.3%; S3= 1.9±1.9; $p = 0.043$), and RFD (S2= 6.6±4.5; S3= 0.3±0.3%, $p < 0.001$) were observed during S3 compared to S2. Conversely, peak and average sprinting force, RFD, and power all increased ($p < 0.001$) from S2 to S3. CONCLUSION: Applying greater resistance to a 40-m sprint reduces velocity and increases force, rate of force development, and power. Interestingly, bilateral differences in sprinting force, rate of force development, and power during a 1-kg resisted sprint are reduced when a greater resistance (15-kg) is used, while bilateral differences in sprinting velocity remain unaffected. PRACTICAL APPLICATION: Bilateral asymmetry may negatively influence sprinting performance and increase the risk of injury. The incorporation of resisted sprinting in an athlete's training regimen by strength and conditioning professionals may improve bilateral differences in sprinting kinetic measures.

Determining Contributing Factors of PGA Tour Professionals' Long Drives
Poster Presentation
Undergraduate Student(s): Robert Jenkins
Faculty Mentor(s): Gerald Mangine

Purpose: To examine influences of physiological and performance characteristics on driving performance in professional golfers. Methods: Descriptive and performance data from professional golfers with top 50 longest drives during the 2016 PGA Tour were collected from a publicly-available website. Descriptive measures included each player's age, experience, height, body mass; body mass index (BMI; kg · m2) was calculated from each player's body mass and height. Driving performance data included the number of driving attempts, longest (LNG) drive, average (AVG) drive, average clubhead speed (CHS), and driving accuracy (ACC). The player's shortest (SRT) drive was estimated by subtracting LNG from AVG. Driving range was calculated by subtracting SRT from LNG. Results: Pearson product-moment correlations revealed significant ($p < 0.05$) relationships between ACC and AVG ($r = 0.29$), ACC and LNG ($r = 0.46$), CHS and AVG ($r = 0.72$), and CHS and LNG ($r = 0.34$). No other relationships were observed. Stepwise regression indicated that ACC ($R^2 = 0.28$) to be the best predictors of LNG, while CHS ($R^2 = 0.51$) was the best predictor of AVG. Conclusion: The data suggests that driving accuracy has the greatest impact on driving length with reduced distances occurring with greater accuracy. However, individuals who consistently generate greater clubhead speed have the greatest potential for hitting a longer drive on a regular basis. Player size and experience did not influence driving distance. Practical Applications: Individuals looking to improve their driving distance should focus on the development of clubhead speed at the expense of accuracy. Although body size and experience did not play a

role, factors not investigated in this study (e.g., swing mechanics, lean mass, strength, and power) may also be important.

Motivational Factors that Affect CrossFit Training Based on Years of Participation
Oral Presentation
Undergraduate Student(s): Allyson Box
Faculty Mentor(s): Yuri Feito and Chris Brown

INTRODUCTION: CrossFit Training (CFT), a fitness modality that has seen exponential growth over the last decade, is a unique training method that promotes an active lifestyle. Intrinsic and extrinsic motives have been shown to alter as one begins and maintains an exercise program. PURPOSE: To determine motivational factors of individuals with varying years of experience in CFT. METHODS: 732 adults (32.4 ± 8.2 years) with more than three-months of CFT experience (<1yr, n = 267; 1-3yr, n = 221; >3yr, n = 244) completed an online version of the Exercise Motivation Inventory (EMI-2) survey. The response rate was estimated at 89%. Data were collected between December 1, 2011 and March 1, 2012. RESULTS: Spearman's rho indicated correlations between years of participation (YOP) and Enjoyment (ϱ=0.094, p=0.011), Affiliation (ϱ=0.094, p=0.011), Competition (ϱ=0.138, p<0001), and Weight Management (ϱ= -0.208, p<0.001). A Kruskal-Wallis test revealed that individuals with >3YOP scored higher than those with <1YOP in Enjoyment (p=0.034), Affiliation (p=0.038) and Competition (p<0.001). Additionally, those with >3YOP scored higher than those with 1-2YOP in Competition (p=0.020). For Weight Management, those with <1YOP scored highest (3.44 ± 1.36; on a 5-point scale) compared to those with 1-2YOP (3.09 ± 1.43, p=0.015) and those with >3YOP (2.78 ± 1.39, p<0.001). CONCLUSION: Those with more CFT experience reported motives related to relatedness for their participation, while those with the least CFT experience were motivated by weight management. Future research should examine whether greater exercise program adherence can be promoted by helping participants develop stronger motives that promote competence, autonomy, and relatedness.

Motivational Factors that Influence Frequency of CrossFit Training
Poster Presentation
Undergraduate Student(s): Angelina Micalizzi, Ashton Matson, Allyson Box
Faculty Mentor(s): Yuri Feito and Chris Brown

INTRODUCTION: High Intensity Functional Training (HIFT) is characterized by various weight training, gymnastic, and body weight movements performed at high intensity. HIFT presents participants with the opportunity to improve factors related to physiological and psychological health. Considering its global growth, it is important to recognize the motivational factors behind participation in this training modality, known as the "sport of fitness". PURPOSE: We sought to examine what motivational factors were most important among participants engaging in HIFT at different frequencies throughout a week. METHODS: 732 adults (32.4 Â± 8.2 years) with more than three-months of HIFT experience (<3 d/wk, N =

114; 3-5 d/wk, N = 413; >5 d/wk = 205) completed an online version of the Exercise Motivation Inventory (EMI-2) survey. RESULTS: Significant Spearman rho (Ï◎) correlations were seen between HIFT frequency and all EMI variables except those related to health pressures (Ï◎ = -0.036; p = 0.331), ill health avoidance (Ï◎ = 0.011; p = 0.774), and appearance (Ï◎ = -0.025; p = 0.506). Kurskal-Wallis H test and post-hoc comparisons showed that individuals training 3-5 and more than five days per week scored higher in factors related to enjoyment, affiliation, and competition. Also, those training more than five days a week showed higher levels in factors related to challenge, social recognition, strength and endurance, and nimbleness. In factors related to weight management, those who train more than five days per week score significantly lower compared to the other two groups. CONCLUSION: This is the first study to express differentiation of motivational factors in HIFT participants based on their weekly training frequency. Considering its growth and expansion, it is important to understand the psychological motives to successfully implement programs targeted towards an individual's motivation. Future studies should look at how these motivational factors impact adherence based on the workout frequency, age of the participants, and number of years training.

Interrater Reliability for Dual-Energy X-Ray Absorptiometry and Bioelectrical Impedance Analysis for Measuring Total and Regional Lean Mass
Poster Presentation
Undergraduate Student(s): Taylor Boyett
Faculty Mentor(s): Gerald Mangine, Garrett Hester, and Trisha VanDusseldorp

Dual-energy X-ray absorptiometry (DXA) and bioelectrical impedance analysis (BIA) are capable of assessing total and regional body composition using different technologies. DXA is considered more reliable to evaluate body composition, but BIA may be a more cost efficient option. The agreement between these measures has not been determined in Rugby athletes. **PURPOSE:** To assess the interrater reliability between two devices that are capable of assessing total and regional lean mass in athletes. **METHODS:** Body composition was measured in sixteen male rugby players (21.1 ± 1.60 y; 88.3 ± 14.2 kg; 1.78 ± 0.06 m) prior to the onset of their competitive season. Total body estimates of percent fat (%FAT), fat mass (FM), and lean mass (LM) were determined by DXA (Lunar iDXA) and BIA (InBody 770). Regional lean mass estimates were also determined for the arms and legs from both devices. To assess the agreement between DXA and BIA on these measures, intraclass correlation coefficients (ICC), 95% limits of agreement (95% LOA), and coefficients of variation (CV%) were calculated. **RESULTS:** The agreement between DXA and BIA for total body estimates %FAT (ICC2,1 = 0.81, 95% LOA = 0.91 - 1.34%, CV% = 10.5%), FM (ICC2,1 = 0.48, LOA = 0.63 - 0.92 kg, CV% = 10.1%) and LM (ICC2,1 = 0.67, LOA = 0.92 - 1.00, CV% = 2.3%) was variable, while regional values for lean arm mass (ICC3,1 = 0.91, 95% LOA = 0.93 - 1.06%, CV% = 3.3%) and lean leg mass (ICC3,1 = 0.89, 95% LOA = 1.05 - 1.15%, CV% = 2.4%) was consistent. **CONCLUSION:** These data suggest that the interrater reliability between dual-energy X-ray absorptiometry and bioelectrical impedance analysis is high when estimating total and

regional lean mass but not for estimating fat mass or body fat percentage. It may be possible to use these devices interchangeably for tracking lean mass.

The Relationship Between Motivational Factors and CrossFit Training Participation Across Different Age Groups
Poster Presentation
Undergraduate Student(s): Ashton Matson, Allyson Box
Faculty Mentor(s): Yuri Feito and Chris Brown

INTRODUCTION: CrossFit Training (CFT) embodies various functional movements performed at high intensity. CFT participation has greatly increased over time. Yet, motivational factors influencing participation in CFT may differ by age group. PURPOSE: To determine the relationships between motivational factors and age differences among CFT participants. METHODS: 732 adults (32.4 ± 8.2 years) with more than three-months of CFT experience (<26yrs, N = 184; 26-36yrs, N = 366; >36yrs, N = 182) completed an online version of the Exercise Motivation Inventory (EMI-2) survey. Response rate was estimated at 89%. Data were collected between December 1, 2011 and March 1, 2012. RESULTS: Significant Spearman's rho correlations were found between age groups and all motivational factors except for Revitalization (ρ=0.041, p=0.266), Affiliation (ρ= -0.047, p=0.205), Nimbleness (ρ= -.037, p=0.318), and Positive Health (Ï◎=0.033, p=0.379). A Kruskal-Wallis test revealed that younger participants (<26yrs) scored higher compared to the >36yrs and 26-36yrs in Challenge (p=0.002, p=0.007; respectively), Social Recognition (p<0.001, p=0.003), and Competition (p<0.001 for all age groups). In addition, those <26yrs also scored higher compared to those in the 26-36yrs group in Strength and Endurance (p=0.037) and Nimbleness (p=0.048), and higher than those >36yrs in Enjoyment (p=0.037). Moreover, those >36yrs scored higher compared to those <26yrs and 26-36yrs in Ill Health Avoidance (p<0.001, p=0.006; respectively), Health Pressures (p=0.004, p=0.035; respectively), Weight Management (p<0.001, p=0.001; respectively), and Appearance (p=0.001, p=0.002; respectively). CONCLUSION: This study provides a first look into what motivational factors influence CFT participants across different age groups. Participants from the oldest age group scored higher on health-related motives, while younger participants scored higher on competitive and social-related motives. Programs that support relevant motives for each age group could be more effective for adherence. Future studies should investigate how motivational factors correspond to adherence based on frequency, years of experience, and gender differences.

Self-Reported Performance Measures of Males are Predictive of Overall Performance in the Crossfit Open
Poster Presentation
Undergraduate Student(s): Oladeji Olowojesiku, Paul Serafini
Faculty Mentor(s): Gerald Mangine and Yuri Feito

PURPOSE: To determine if measures of strength and skill, obtained from online athlete profiles, could distinguish overall performance in the 2016 CrossFit® Open (CFO). METHODS: The highest ranking male competitors (n = 1500; 27.18 ± 8.4 y; 85.2 ± 7.88 kg; 177.01 ± 6.47 cm) of the 2016 CFO were split into quintile groups (Q1 – Q5). Subsequently, quintile comparisons were made using self-reported performances for a one-repetition maximum (1RM), squat (SQ), deadlift (DL), clean and jerk (CJ), snatch (SN), 400-m sprint, 5,000-m run, and benchmark workouts (Fran, Helen, Grace, Filthy 50, and Fight-gone-bad) via separate one-way analysis of variance. RESULTS: Greater ($p < 0.011$) performance scores were reported by Q1 for DL (232.4 ± 20.5 kg), SQ (201.6 ± 19.1 kg), CJ (148.9 ± 12.1 kg), SN (119.4 ± 10.9 kg) and Fran (2.3 ± 0.2 min) compared to all other quintiles. For Grace, Q1 (1.7 ± 0.4 min) reported faster ($p < 0.001$) completion times than Q3 – Q5, while their performances in the 400-m sprint (59.3 ± 5.9 sec), Helen (7.6 ± 0.6 min) and Fight-gone-bad (430 ± 70 repetitions) were only better than Q3 (62.6 ± 7.3 sec, $p = 0.022$), Q4 (7.9 ± 0.7 min, $p = 0.007$) and Q5 (398 ± 73 repetitions, $p = 0.010$) respectively. No specific quintile differences were observed in 5,000-m or Filthy-50 performance. CONCLUSION: These data indicate that the most successful male athletes in the 2016 CFO possessed the greatest strength and power. Further, these athletes performed the best in a short-duration (< 3 min) sports-specific workout (i.e., Fran) that emphasized these characteristics. Lower ranking athletes should focus on strength and power development once sufficient anaerobic, aerobic, and sports-specific proficiency has been attained.

Autonomic Recovery Following a Short and Long Bout of High-Intensity Functional Training
Oral Presentation
Graduate Student(s): Emily Bechke, Wade Hoffstetter, Cassie Williamson
Undergraduate Student(s): Allyson Box, Paul Serafini
Faculty Mentor(s): Brian Kliszczewicz and Yuri Feito

The autonomic nervous system (ANS) regulates homeostasis of the body through the parasympathetic (PNS) and sympathetic (SNS) branches. A known stressor to ANS (i.e. homeostasis) is exercise, with magnitude of affects being influenced by the duration and intensity of the activity. High-Intensity Functional Training (HIFT) is a style of exercise performed using various modalities and durations with unknown influence on ANS recovery. Purpose: To examine differences in the recovery of autonomic regulation following a short (< 5-min) and a long (15-min) bout of HIFT. Methods: Ten apparently healthy males (28 Â± 5 yrs) participated in this study. Two HIFT sessions were performed in a crossover fashion. The short-bout (SHORT) consisted of 30 power-clean and jerks (61kg) for time, while the long-bout (LONG) was a 15-min circuit of 250m row, 20 kettlebell-swings (24kg), and 15 dumbbell-squat-presses (16kg). Heart Rate Variability (HRV) index of Root Mean Square of Successive Differences (RMSSD) was used as the marker of PNS activity, plasma Epinephrine (EPI) and Norepineprine (NEPI) were used as SNS markers. Each visit consisted of three RMSSD recordings: at rest (PRE;10-min), post exercise (P;45-min), and two-hours post (P2HR;10-min). RMSSD was analyzed in 5-min segments: the last segment of PRE, the last eight segments of

the 45-min recording P (P1-P8), and the last segment of P2HR. Blood draws were completed at rest (PRE), post-exercise (P), and one-hour post (P1HR). EPI and NEPI were examined PRE, P, and P1HR. Results: RMSSD violated normality and underwent a natural log transformation (lnRMSSD). Repeated Measures ANOVA did not reveal significant trial dependent differences between the SHORT and LONG bouts in lnRMSSD ($p = 0.822$), EPI ($p = 0.052$), or NEPI ($p = 0.205$). A significant time effect was observed in both trials with a depression in lnRMSSD occurring from P1-P8 ($p < 0.05$) and recovering by P2HR ($p = 0.141$). Concurrently, EPI and NEPI showed significant increases in both trials from PRE to P ($p < 0.05$) and recovered by P1HR ($p > 0.05$). Conclusion: This study indicates that SHORT and LONG bouts of HIFT result in similar autonomic stress and recovery. Therefore, it can be suggested that the duration of the examined bouts of HIFT do not greatly influence the rate of autonomic recovery in a physically fit population.

Response of Metabolic Biomarkers Following a Short and Long Bout of High-Intensity Functional Training
Oral Presentation
Graduate Student(s): Cassie Williamson, Emily Bechke, Paul Bailey
Faculty Mentor(s): Brian Kliszczewicz, Robert Buresh, and Yuri Feito

Regulation of metabolism is essential for the maintenance of homeostasis, and is achieved through modulations of several biomarkers, including insulin and glucose. Exercise is an influencing factor that alters metabolic demand and thus circulating levels of insulin and glucose. When related to exercise, levels of plasma glucose and insulin are greatly influenced by the duration, modality, and intensity of the exercise bout. High-Intensity Functional Training (HIFT) is a mixed-modality style of training that utilizes multiple energy systems and focuses on both aerobic and resistance training. HIFT bouts are generally high-intensity in nature, but vary greatly in duration from 15-minutes to less than 5-minutes. To this point, it is unknown how glucose and insulin respond and recover following a short and long bout of HIFT. PURPOSE: To examine the effects of a short (< 5-min) and long bout (15-min) of HIFT on plasma glucose and insulin levels. METHODS: Ten-male participants (28 5 years) with 6-months of HIFT experience participated in this study. Two HIFT sessions were performed in a cross-over fashion; SHORT: 30 Clean & Jerks for time, LONG: 250m Row, 20 Kettlebell-Swings (24kg), and 15 Dumbbell-Thrusters (16kg). Blood draws were taken to analyze plasma glucose (GLU) and insulin (INS) at four time points; before exercise (PRE), immediately post-exercise (IPE), one-hour post-exercise (1-HR), and three-hours post-exercise (3-HR). RESULTS: Repeated measures ANOVA showed no trial dependent difference between the SHORT and LONG bout in INS ($p = 0.504$) or GLU ($p = 0.109$) concentration. A main time dependent effect was observed in both INS (8.5 Â± 5.9 vs. 14.9 Â± 7.13 mU/L $p = 0.010$) and GLU (84.2 Â± 13.5 vs. 117.45 Â± 18.62 mg/dl $p = 0.000$) IPE, where plasma levels increased. A return to baseline was observed in INS at 1-HR ($p = 0.066$) and 3-HR ($p = 0.427$). Similarly, GLU returned to baseline at 1-HR ($p = 0.806$) and 3-HR ($p = 1.000$). CONCLUSION: There were no statistical differences regarding the plasma glucose and insulin response between the SHORT and

LONG bouts of HIFT. Though several factors have been shown to influence post-exercise metabolic responses, the findings of this study suggest that the duration of the HIFT bouts were not the determining factor in the metabolic responses within healthy individuals.

The Association Between Fat Distribution and Insulin Resistance in Pregnancy
Poster Presentation
Undergraduate Student(s): Kareem Pierre, Danielle Logan, Kidan Kidane
Faculty Mentor(s): Katherine Ingram and Janeen Amason

Purpose: To examine the relationship between fat distribution and insulin resistance in pregnancy. Methods: Thirty-one women (age 27 ± 4.5, BMI 27 ± 7.83) were recruited from an OB/GYN clinic. Body composition was assessed at approximately 20 weeks gestation, including overall percent body fat via bioimpedance (In Body 720), abdominal fat via ultrasound, and regional fat depots via 7 skinfold sites. Regional fat distribution was defined as sums of 2 deep abdominal ultrasound measures, 2 subcutaneous abdominal ultrasound measures, 5 trunk skinfold measures and 2 peripheral skinfold measures. Fasting plasma insulin and glucose were measured at 24-27 weeks. Insulin resistance was assessed through the Homeostasis Model Assessment of Insulin Resistance (HOMA-IR). At 4 weeks post-partum, DXA analyses of regional (gynoid vs. android) and overall body fat were conducted. Skinfolds and bioimpedance were repeated post-partum. After testing for normality, HOMA-IR was log transformed for all analyses. Correlation analyses were used to assess relations between fat depots and HOMA-IR. Results: HOMA-IR correlated with percent body fat ($r=.667$, $p=0.002$), deep abdominal fat ($r= 0.888$, $p<0.001$), abdominal subcutaneous fat ($r= 0.731$, $p<0.001$), and trunk skinfolds ($r=0.699$, $p=0.001$), but not peripheral skinfolds ($r=0.386$, $p=0.069$). It also correlated with post-partum DXA android ($r=0.459$, $p=0.042$) but not gynoid ($r=.342$, $p>0.140$). Conclusions: Gestational insulin resistance is strongly associated with abdominal and trunk, but not peripheral, fat distribution in both pregnancy and postpartum.

An Examination of the Reliability of the InBody 770 Bioelectrical Impedance Analyzer
Poster Presentation
Graduate Student(s): Ellie Moore, Justin Knowles, Paul Bailey, Alex Dewitt
Faculty Mentor(s): Cherilyn McLester and John McLester

PURPOSE: To investigate the reliability of body fat percentage (BF%) as measured by the InBody 770 (IB770) bioelectrical impedance analysis (BIA) device. METHODS: 65 participants (male = 29, female = 36) aged 25.6 ± 7.3 years, volunteered for this study. Each participant completed 3 days of testing with 24-72 hours between visits. Prior to testing participants refrained from alcohol and exercise for 24 hours and eating for 4 hours. BF% was assessed with the IB770 and a reference method of dual energy x-ray absorptiometry (DXA). RESULTS: Overall the DXA produced higher BF% on each trial compared to the IB770 ($p < 0.001$). However, repeated measures ANOVA showed no differences in BF% between visits for the IB770 ($p = 0.173$) or by sex ($p = 0.731$). The BF% for trials 1-3 are as follows: males were 16.1 ±

1.3, 16.0 ± 1.4, and 15.9 ± 1.4 respectively (p = 0.737) and females were 27.4 ± 1.2, 27.0 ± 1.3, and 27.0 ± 1.3 respectively (p = 0.114). There was also no difference between trials for the DXA (p = 0.297) or by sex (p = 0.758). The DXA BF% for trials 1-3 are as follows: males were 19.6 ± 1.2, 19.6 ± 1.2, and 19.5 ± 1.2 respectively (p = 0.250) and females were 30.6 ± 1.1, 30.5 ± 1.1, and 30.5 ± 1.2 respectively (p = 0.444). CONCLUSION: These results suggest that the IB770 is a reliable BIA device for assessing BF% in both sexes across multiple visits. While the IB770 produced lower BF% than the DXA both devices behaved similarly across trials in terms of consistency.

Geography and Anthropology

Archeological Efforts to Locate Slave Dwellings at a Civil War Era Plantation Site in North Georgia
Poster Presentation
Undergraduate Student(s): Ethan Williams
Faculty Mentor(s): Terry Powis

In Fall of 2015, previous archaeological research conducted at the Walnut Grove Plantation in Cartersville, GA, was designed to locate the enslaved African quarters that once stood on the property. The methods used in this investigation included archival research, mapping, Phase I shovel testing, metal detecting, and Phase II test units. The aforementioned methodology yielded a robust assemblage of artifacts including nails, brick, stoneware, glass, as well as charcoal and burned brick. According to the past research, this assemblage suggested that structures once stood in the field adjacent to the Walnut Grove Plantation house. The objective of this current research is to continue to search for the slave cabins. As a means of furthering the 2015 investigations, additional methodologies have been incorporated in the investigation. Most notably, Phase III excavation tactics, including backhoe scrapes, are utilized, in hopes of revealing cultural features, including the stone/brick foundational remains upon which the cabins were built. The search for material evidence pertaining to the enslaved African population of the Walnut Grove Plantation has the potential to reveal information about a group of people who, though often marginalized, played a very distinct role in the history of this region.

Ceramic Analysis from the Middle Woodland Lower Dabbs Site in Cartersville, Georgia
Poster Presentation
Undergraduate Student(s): Briana Johnston
Faculty Mentor(s): Terry Powis

The Middle Woodland period in the Southeastern United States lasts from about 300 BC to around AD 650. The Middle Woodland period is marked archaeologically by permanent villages and the cultivation of plants, namely corn, beans, and squash by prehistoric Native Americans. Chronologically, it is marked by the influence of the Hopewell culture seeping into

north Georgia. With this, we see a change in the way ceremonial objects are made, what objects are traded, and, most importantly to our research, how ceramics are made and decorated. While there is not much information available about the Middle Woodland period in north Georgia, we have identified a small village in Cartersville, Georgia called the Lower Dabbs Site, named after its location by the later-occupied (Mississippian period: AD 1000-1450) Upper Dabbs Site. This lower field is situated directly across the Etowah River from the Leake Site, which is the preeminent Middle Woodland site in the region. By analyzing the pottery we have recovered from the Lower Dabbs Site, which includes washing, sorting, cataloguing, and typing, we can identify decorative patterns that were shared by all three sites. Shared patterns in pottery may reveal other patterns in the daily and ritual lives of the occupants, or how people from different sites communicated. For this project, we are specifically interested in dating the decorative pottery from the Lower Dabbs Site and then comparing the results to the other two sites, particularly the Leake Site. By doing this, we hope to gain more information about the social, economic, and political organization during the Middle Woodland period in north Georgia.

Contradictions: A Historical Archeological Analysis of the Life of Corra Harris
Poster Presentation
Undergraduate Student(s): Jordan Lashaun Gentry *[University Honors Scholar]*
Faculty Mentor(s): Terry Powis

In 2008, Kennesaw State University acquired the 56-arce homestead of Corra Harris' home she called "In the Valley" (ITV). The KSU administration stated they hoped the property would provide students with "valuable research and field experience by examining the archaeological, environmental, and social and literary history of the site" (www.kennesaw.edu). However, in 2014, the property caused controversy after KSU ordered the removal of an art piece on display in the Zuckerman Museum of Art. The exhibition piece dealt with Harris' racism presented in her 1899 letter to the magazine the Independent, which started her successful literary career. After the controversy, research and field work came to a standstill. This paper is the first to report on the findings of the historical archeological research done on the property. The purpose of this research is to compare her public life to her private one in the hope of understanding why these two personas might have differed. Using previous research on Harris' writings and comparing those findings to the personal letters, legal documents, and artifacts analyzed for this paper, this study found that her beliefs portrayed in her writings differed wildly from the beliefs she held in her personal life. This research suggests that this is possibly due to the fact that Harris' writings helped her maintain financial security; therefore, she continued to let her writings express different ideas than her personal beliefs, so that she could continue to be successful.

Investigation of a 19th Century Cabin at Troup Factory: A Former Servant's Quarter to a Freeman's House
Poster Presentation

Undergraduate Student(s): Cynthia Sun
Faculty Mentor(s): Terry Powis

Enslaved Africans played an important role in Georgia's history, both economically and politically. They are an underrepresented group that contributed to the success of the South's reign over the cotton industry. The purpose of this research is to assess and examine the potential of a servant's quarter located at Troup Factory. Troup Factory is a mid-19th century cotton mill located on Flat Shoals Creek in Troup County. The factory, owned by Robertson, Leslie and Company, is Troup County's first cotton mill and Georgia's second established grist mill. The research focuses on mapping, unit excavation, lab analysis, and archival records to identify the likelihood of a slave cabin. Investigations at the factory have unearthed a structure that, based on its dimensions, is consistent with known examples of slave cabins located elsewhere in the State. Artifacts, such as square and round nails, alkaline glazed stoneware, and glass, provide further support for this structure as that belonging to the only enslaved African (named Sam) living at Troup Factory. In the late 19th century, Benjamin Ashford (a freeman) and his family occupied the cabin. The cabin is located between Leslie's barn and the mill, which would have been ideal for Ben who was hired as a waggoner. After the Civil War, many freemen sought jobs as tradesmen, waggoners, etc. In the south, the outcome of the Civil War and the Reconstruction Era, were not met with great enthusiasm. Because laws created after the Civil War with the intention of limiting the freedom of freemen, research on this underrepresented group will help provide important details on freeman to the archaeological records.

Investigating Usefulness of Canoe Travel on the Etowah River
Poster Presentation
Undergraduate Student(s): Jordan Whiteman
Faculty Mentor(s): Terry Powis

Understanding how past people moved throughout their landscape is an extremely important part of the anthropological record. Investigating this movement, why it was undertaken and what it provided is often very revealing to the way of life of that group of people. The question of how this movement was made was the topic of my research, focusing on the locomotion of those who lived at the preeminent Mississippian site in the Southeast, Etowah, as well as those who occupied a significantly smaller site just 3.2km away named the Dabbs Site. Being that Etowah was a paramount chiefdom, those who occupied the Dabbs Site were certainly under the control or potentially an extension of the larger Etowah site, making movement between the sites almost certain. Like nearly all large sites in the Mississippian Period, Etowah was located right alongside a river way as was the smaller Dabbs Site, begging the question if that was a strategic location for transportation purposes. This focused investigation allowed me to compare two different locomotion strategies: walking in the most direct path between the two sites compared to traveling via waterway both up and downstream. To make this testing as authentic as possible, I crafted a dugout canoe out of a 10-foot white pine tree located a short

distance from the sites in the mold of what would likely have been used to travel the Etowah River. Testing the movements was done off the basis of a relatively new subject of study called least cost path analysis which measures how a traveler would get from Point A to Point B in a manner that keeps accumulated cost as low as possible. Costs in this particular study being energy (calories), transportation ability and time. By performing the tests, I was able to use obtained quantitative measurements to answer the question of what path would provide the least resistance while also gauging how valuable using water ways for travel may have been.

How One Skeleton Opens the Window into the Daily Lives of Romanized Cretans
Poster Presentation
Undergraduate Student(s): Eden Ryan
Faculty Mentor(s): Susan Kirkpatrick Smith

Research in Anthropology is a qualitative endeavor. However, since Anthropology is a science the techniques and regulations assigned to other sciences get imposed on it. One such regulation is that of quantity. Quantity is the amount or number of a material or immaterial thing not usually estimated by spatial measurement. In this paper, I argue that the concept of quantity is not sufficient in regulating the publication for Anthropological finds because Anthropology is more of a qualitative field, in which even minimal data finds could provide insight into the bigger overall picture. I use as a case study, a Greco-Roman skeleton excavated from a site in Ierapetra, Greece which presented with pathologies and abnormalities not found in other skeletons from the same population. I used the sciatic notch as well as different sites on the skull to determine sex. The skeleton overall had very gracile features that pointed to female. Age of the skeleton was determined using the auricular surface in conjunction with suture closure. The skeleton was on the older end of young adult (20-35 years) and the younger end of middle adult (35-50 years); I determined her age to be between 28-32 years of age. In regards to her pathologies, I observed that she had signs of advanced stages of osteoarthritis present on her phalanges and severe malocclusion wear on her teeth. The abnormal pathologies seen in this skeleton lead to research questions that would have otherwise been unobserved if she had not been studied. Research questions such as: What work were women on Roman Crete doing that would include use of their teeth? How early did children start working? Was this due to family or community obligations? Having only one skeleton present with such severe teeth wear and early onset arthritis allowed for me as an anthropologist to think more meaningfully about this population. Anthropology needs to focus carefully on qualitative data more than quantitative data because qualitative data lends itself better to the type of research questions suited to Anthropology.

Blast Trauma Injuries to the Skull: Comparison Between Primary and Secondary Injuries
Poster Presentation
Undergraduate Student(s): Desiree Smith-Plourde
Faculty Mentor(s): Susan Kirkpatrick Smith

Explosives have now become one of the major contributors to death in this day in age due to terrorism. Most of the deaths that are recently seen are due to small handmade devices used in public places. When these devices detonate, they can be deadly, sending out shock waves and items such as shrapnel, effecting the people around it. Explosions lead to blast injuries which are divided up into primary, secondary and tertiary injuries. Only the primary and secondary injuries will be examined in this study. Blast injuries that have been studied on the skull, show that there are multiple types of fractures associated with it and that there is a distinctive pattern to it and the severity of the injuries. It is important to study the difference in primary and secondary injuries to the skull because it can be used to better determine whether an individual was effected by the blast wave, fragments and shrapnel, or both. There has not been much study on the effect of blast trauma from explosives to the skull. Therefore, I will be determining if there is a visual difference between secondary or primary blast injuries. This will be tested with 12 (N=12) pig skulls that have encountered blast trauma from explosive devices. Data will be collected on the multiple types of fractures that the individual skulls portray, both incomplete and complete, and where they are most commonly seen. Data will also be taken of the different types of wounds that are present and whether they exhibit internal or external beveling. Additionally, measurements of both blast trauma and gunshot wounds, entrance and exit wounds, will be taken. Primary blast injuries are expected to be compared to secondary injuries by studying the patterns of trauma displayed on the skulls. I expect to find that a difference can be seen in the primary blast injuries due to its lack of an entrance wound. More of these studies should be done because terrorism has escalated, and by studying these injuries, distinct patterns can be found and assist in the understanding of physical characteristics from blast trauma. This can also help determine the types of device mechanisms used.

Periosteal Reaction and Signs of Stress Found in Skeletal Remains from Ierapetra, Crete
Poster Presentation
Undergraduate Student(s): Logan Howard
Faculty Mentor(s): Susan Kirkpatrick Smith

In this study, I focused on looking at periosteal reactions within a population to determine evidence of stress and disease. The bones studied date from the Roman Crete period, which ranged from 69 BC to 961 AD. This period is historically marked as a time when the island was part of a very prosperous trade route. While there are some studies which include examinations of evidence of disease present on skeletal remains, the Roman Crete period is largely unaccounted for. This study seeks to recognize patterns of perosteal reaction from a population excavated from Ierapetra, Crete. These Roman period skeletons were studied over four seasons from 2013 to 2016. The data were subsequently analyzed. Overall, eighty-four instances of periosteal reaction were recorded and analyzed. We compared the results to populations from Santa Barbara, Mycenae, and The Democratic Republic of Congo because there was existing research on these populations. We found that the patterns of periosteal reactions studied pointed to a probability of stress afflicting the overall population.

Linear Enamel Hypoplasia in Roman Ierapetra
Poster Presentation
Undergraduate Student(s): Morgan McKenna
Faculty Mentor(s): Susan Kirkpatrick Smith

This study focuses on the prevalence of linear enamel hypoplasia in a sample of teeth from the Roman site of Ierapetra in southeast Crete. Linear enamel hypoplasia (LEH) is a dental defect that can be caused by childhood physiological stress like malnutrition or illness. It can be observed macroscopically as a horizontal line across the tooth where the enamel stopped growing and then started growing again later after the period of stress had ended. The presence of linear enamel hypoplasia was recorded by tooth rather than by individual, because some of the remains were commingled and in poor condition, which made it impossible to say for certain how many individuals were present, and which teeth belonged to which individual. Out of 858 total teeth, 805 could be assessed for linear enamel hypoplasia. Out of the 805, 73 were found to have the dental defect, or 9.1%. Using chi-square tests, it was found that there was a significant difference between the frequencies of LEH between Ierapetra and two Hellenistic sites, Agios Nikoloas and Chania, both also on Crete. Agios Nikolaos had a much higher rate of LEH that Ierapetra, while Chania had a much lower rate. Two other Roman sites, Paphos and Kourion, on the island of Cyprus, were not significantly different when compared to Ierapetra. A Proto-Byzantine site, Eleutherna, on Crete, also did not have a significant difference in the amount of LEH in the population compared to Ierapetra. Mediterranean island populations in the Roman period seem to have consistent levels of childhood stress from the common numbers of LEH that have been found, while Hellenistic sites appear to be more variable.

The Decline of the Indus Valley Civilization: A Children's Book Perspective
Poster Presentation
Undergraduate Student(s): Kelcey Bartkowiak
Faculty Mentor(s): Teresa Raczek

The purpose of this project is to gather data from children's books on the decline of the Indus Valley Civilization and compare the information to existing theories within the archaeological community. The Indus Valley Civilization was one of the world's first great urban societies. It began about 5,000 years ago, and flourished for approximately 700 years in what is now modern Pakistan and western India. Several major cities, including Mohenjo-daro and Harappa, have been excavated and have provided archaeologists with a great deal of information on how the Indus Valley people lived. The people had a form of writing that has yet to be deciphered by archaeologists, but other forms of technology have yielded a great deal of information about them. These technologies include well building, a comprehensive drainage system throughout the cities, irrigation systems for farming, jewelry making, as well as pottery made by artisans. The method used for this project was creating a database using six

children's books about the Indus Valley civilization. Each line of text, figure, and map information was entered as data. After the information was included in the database it was then assessed for both facts and interpretations to understand the accuracy of the information provided. This assessment was then applied to the original research question pertaining to children's books perspectives on the decline of the Indus Valley civilization in comparison to present theories. There are a few theories on why the Indus Valley civilization declined including Aryan invasion, climate change, city abandonment, and floods. Some theories have consensus in the archaeological community, while others disproven. Archaeologists have learned the Indus Valley cities were rebuilt several times. The most agreed upon theory on the decline of the Indus Valley civilization is that the climate changed causing the monsoon season to become too intense for survival in the area. The people moved on in waves, instead of all at once so this change occurred through time. The cities were never fully restored to their former glory. The children's books used for this project mostly agree with the theory that climate change was a direct cause of the Indus Valley decline, however these books also highlight the possibility of Aryan invasion playing a large factor which has been disproven throughout the archaeological community.

Conversion of Labs for Geography 1112 and Geography 1113
Oral Presentation
Undergraduate Student(s): Justina Edwards
Faculty Mentor(s): Nancy Hoalst-Pullen and Mark Patterson

The ultimate goal of this project has been to convert the labs for Geography 1112 (Weather and Climate) and 1113 (Introduction to Landforms) from Google Earth to ArcGIS Online and ESRI Story Maps. The process for one lab conversion involves using the ArcGIS desktop suite and ArcGIS Pro software to convert the KMZ file to Layer files that are compatible with ArcGIS Online. After the data is converted, it is shared as a Web Map to ArcGIS Online under the Kennesaw State University-GISc Program. Once it is shared, the web map is used to create multiple Web Applications and Story Map Journals, which are then put together into a single Story Map Series. The above steps are used for each of the 20 labs. Considering Google Earth is going to be discontinued, it is very important that the labs be converted to a new platform. The lab aspect of these courses is a crucial part of the general education curriculum, because it provides students with a practical and applied approach to the topics of environmental systems and landform patterns.

A Study of Homeopathic Methods and the Reasons Behind Their Use
Oral Presentation
Undergraduate Student(s): Taelor Moran
Faculty Mentor(s): Kenneth Williamson

As practices such as acupuncture and aroma therapy become more popular, more and more families are opting for the use of homeopathic remedies over conventional remedies. This

study delves into the use of homeopathic methods, and the reasons why this method of healing is chosen over others. Through interviews, tours of homeopathic labs, and surveys, data has been collected regarding the opinions of the different methods from multiple perspectives, the pros and cons of both conventional and homeopathic methods, and the efficacy of both methods. This study also investigates the possibility of integrating homeopathic methods with conventional methods. The two methods of healing have been successfully combined in many other countries in the past, suggesting a very positive outcome for this integration in the United States for the future.

KSU's First Interactive Sustainability Maps
Oral Presentation
Undergraduate Student(s): Hannah Knab
Faculty Mentor(s): Tim Poe

Kennesaw State has taken many initiatives towards their Climate Action Plan to become a more sustainable campus. I have taken every sustainable feature that KSU has established and created a virtually interactive public map for everyone to see that are interested.

The Plight and Determination of First-Generation Latino Students in the United States
Poster Presentation
Undergraduate Student(s): Tania Benavidez
Faculty Mentor(s): Brandon D. Lundy

First-generation Latino students are important to study because they are the future leaders of tomorrow. By guaranteeing their academic success, our education system can assure that they have the necessary tools to navigate multi-identities in an integrated world. Unfortunately, structural violence limits educational opportunities for many first-generation students, who are often low-income, having limited opportunities to pursue higher education. Those that do attend higher education should have programs dedicated to their retention and success. Family responsibilities, long work hours, and lack of encouragement from family and faculty are setting first-generation Latino students up for failure. My research surveys these students to examine what makes them academically and socially successful and what some of those barriers to success may be in higher education. I am planning to ask approximately 15 students to respond to an open-ended survey to determine which issues, positive and negative, are more prevalent in our Kennesaw State University community when it comes to Latino success. I anticipate finding that very few students will feel like they can utilize sources on campus to help when/if they are struggling due to cultural and resource barriers. My poster may help influence a change at KSU by raising awareness of what first-generation students endure as they determinedly pursue a degree.

Grocery Shopping for Your Fur Child: Humans Buying Food for Cats
Poster Presentation
Undergraduate Student(s): Natasha Lee
Faculty Mentor(s): Brandon D. Lundy

Humans have a much less restricted diet than a cat. Due to anthropomorphism and marketing tapping into this innate human tendency, many pet owners are providing their pets with diets that may not be ideal. A cat can only survive on a diet of animal protein, but cat food is laden with fillers including vegetables and grains. Since cats are one of the most popular companion animals in the United States with 85.8 million cats kept as pets, a significant amount of the population should care what goes into their pets' food bowls. By surveying cat owners and interviewing cat food sellers and a vet, general baseline knowledge about feline nutrition will be established. It is expected that the vet will know the most about a cat's diet while the casual shopper will know the least. In any case, the results will likely show that what is needed is a deeper knowledge of feline nutrition and how we as humans are manipulated through marketing to make choices counterproductive to better pet care. Marketing strategies must be deconstructed to demonstrate that popular is not always better when it comes to pet nutrition.

Gaggles of Gamers: Gamer Group Dynamics in a Virtual Reality Setting
Poster Presentation
Undergraduate Student(s): Adam Cusick
Faculty Mentor(s): Brandon D. Lundy

With virtual reality as a rapidly expanding new technology, it is important to examine the potential effects of this technology on various facets of society. As such, this study explores the influence of VR technology usage on behaviors of a standard group of video gamers. This poster looks at how the introduction of VR technology alters the dynamics of the video gaming social group and the reasons why these shifts occur. Current theory on social gaming purports that gaming communities come together and feel kinship based on uniformity in regards to rewards from games, common interests, and shared effects on their character or beliefs from the games. The examination of this phenomena was investigated using a quasi-experimental design by simulating video gamer group nights with the use of a VR gaming headset. Follow-up interviews with each of the study participants were conducted to compare their gaming experiences through this new medium. The anticipated findings for the study are that gamers who use VR in a group setting feel less cohesive due to the current limitations of the technology not facilitating group gaming as effectively as other platforms. Thus, participants will be more likely to lose interest in being a part of the gaming group. The study may illuminate how technology in social gaming fashions and alters social dynamics within gaming communities.

Friend Request: Identifying the Impact Social Media Networking has on a Non-Governmental Organization in Atlanta, GA
Poster Presentation
Undergraduate Student(s): Ashely Nicole Dawson
Faculty Mentor(s): Brandon D. Lundy

Social media has become a popular platform for networking and promotion. Now, more than ever, corporations and organizations are attempting to take advantage of the benefits associated with having an active social media presence. Researchers have used social marketing theory as a measure for understanding this phenomenon, as the use of this technique has been shown to promote socially valuable behavior and information. This study identified and analyzed the impacts of maintaining an active social media presence within a non-governmental organization in Atlanta, Georgia. Semi-structured interviews with the organization's communications coordinator, digital marketing coordinator, and communications assistant were conducted, as well as, surveys with the organizations clients to gauge the effectiveness of their methods. These interviews provided expert opinions and insight into the influence of their active social media campaign. Data was also collected through content analysis of the organization's social media posts and profiles. Currently, the non-governmental organization's active social media presence generates positive results in term of mass marketing and community outreach efforts.

KSU's Initiatives toward Student Healthy Eating
Poster Presentation
Undergraduate Student(s): Richonna Sanders
Faculty Mentor(s): Brandon D. Lundy

Kennesaw State University has been invested in the health of students for years. Since 2011, they have taken initiatives to have better eating options on campus, create sustainability practices, and maintain good waste management. College students tend to neglect their eating health; yet, it is important for the school they attend to get them thinking about healthy options to promote overall student success. Focus comes from a healthy mind which can be influenced by the way someone eats. The school is focused on retention rates, recruitment, and graduation rates, which are all affected by campus initiatives around dining and healthy eating. For example, the Commons dining hall has won several international awards that then helps to promote the university and recruit students. KSU's farm encourages outdoor activity, which has been shown to improve educational outcomes. In other words, a healthy body promotes a healthy mind. When the school focuses on the individual's needs for health and wellbeing, the individual can go out and influence societal health, therefore supporting a healthier society. This study considers the ongoing healthy initiatives on campus. Management and workers at places like the Hickory Grove Farm and The Commons dining hall on campus were interviewed for this research. Because many students neglect their health mostly in their freshman year of college, having active institutional supports to help them take

steps toward healthy eating on campus can change the way many students think about and behave around food. These initiatives should also have long term outcomes promoting better global citizens who consciously and regularly think about wellbeing and sustainability.

Read All About It! Marketing Anthropology to Students at Kennesaw State University
Poster Presentation
Undergraduate Student(s): Elizabeth Pomawski
Faculty Mentor(s): Brandon D. Lundy

Student recruitment and retention in liberal arts at universities across the United States are declining as STEM degrees become more emphasized. The anthropology program at Kennesaw State University has grown between 2008 and 2013, but it seems to be stagnating in terms of the recruitment and retention of new students into the degree. This poster identifies strategies used in KSU's anthropology degree program to increase student enrollment and graduation rates through semi-structured interviews with anthropology faculty and three focus groups with 18 students from a qualitative research methods class. There seems to be a consensus that the anthropology program should be advertised by alumni and advanced majors to freshmen taking introductory college courses as well as to high school students thinking about college. The results from this study can be used by the Geography and Anthropology Department to develop plans to recruit students into the degree.

Yoga in Westernized Media: Perspectives and Expectations of the American Yogi
Poster Presentation
Undergraduate Student(s): Kendra Thomas
Faculty Mentor(s): Brandon D. Lundy

The practice of yoga has become a hot commodity in the United States. In the 2016 Yoga in America Survey, an estimated thirty-seven million adults in the United States engaged in the practice of yoga within the last six months. With yoga becoming increasingly popular, mainstream media has played an integral part in shaping how individuals view this ancient practice, putting yoga at the forefront of the fitness community in the media. The purpose of this study is to understand how people's perceptions and expectations of yoga are influenced by the media. Thirty surveys and ten semi-structured interviews were completed by both yoga students and teachers in the metro Atlanta area. Social media proved to be the most influential form of media within the yoga community. Social media outlets such as Facebook and Instagram are popular platforms for "yogi's" to show off their latest achievements using photography and blog entries. While participants had varying explanations of the yoga images they chose to post on social media, a commonly recognized theme was self-acceptance -- a theme that seems to contradict the commercialized yoga media seen in magazines and on television that often objectify the body.

Swipe Right If You like Long Walks on the Beach: Online Dating and How Race, Gender, Education, and Sexuality Factor into Romantic Selection on Dating Sites
Poster Presentation
Undergraduate Student(s): Zoe Heard
Faculty Mentor(s): Brandon D. Lundy

This research examines some of the identifiable traits or factors that go into profile selection on online dating sites. Using focus groups of 5-7 individuals and semi-structured interviews, the study collected data on desirable traits prioritized when viewing a dating profile. The goal is to show how issues like racial bias, African-alienation, and gender preference influence an individual's dating choices. Previous studies have shown that race plays a significant factor in dating, but this study hopes to take this a step further and analyze if race affects college students, men, women, and the LGBTQ communities differently. This research should add an additional layer of understanding to the ways in which online dating and mate selection work among millennial college students.

Involvement of Women in Outdoor Recreational Activities
Poster Presentation
Undergraduate Student(s): Samuel Sims
Faculty Mentor(s): Brandon D. Lundy

This research seeks to discover the reason why outdoor recreational sports such as rock climbing and biking at Kennesaw State University seem to be gendered. While female undergraduates outnumber their male counterparts at KSU, women are still a minority in the field of outdoor recreation although participation has increased in the last few years. This study seeks to understand why and how women become involved in outdoor recreation in order to increase their participation overall. I am conducting this research because people who engage in outdoor recreation are healthier in both mind and body, which should make them better students. The method for data collection used in this research was semi-structured interviews with female undergraduates at KSU who participate in outdoor recreation activities. The data was compiled to best represent the most common and divergent responses. Potential participants were approached through convenience sampling in one of three locations, the KSU bike shop, KSU climbing gym, or KSU Outdoor Adventures Desk, all of which are operated by the university's Outdoor Adventures program. Additionally, female staff members of Outdoor Adventures were interviewed. I hypothesize that the main factors that encourage females to participate in outdoor recreation are family member or peer involvement. Family and friends are the driving force for people gaining new interests and hobbies. People are more likely to get involved and stay involved in an activity if someone they know is already an active member. If this hypothesis is supported, then the number of women getting involved in outdoor recreation should have a compounding effect as more women share the activities with their friends and family producing a cycle of wellness.

How Do College Students Choose Their Presidential Candidate?
Poster Presentation
Undergraduate Student(s): Evan Talmadge
Faculty Mentor(s): Brandon D. Lundy

It is important for a democracy to occasionally audit the voting behaviors of its population to understand what is influencing the democratic process and how it functions. Determining how university students decide which candidate to vote for in a presidential election can shed light on aspects of the democratic process practiced in the United States. By conducting semi-structured interviews with several randomly selected students on the campus of Kennesaw State University, the study examined how and why students arrived at their voting decisions. The interviews were designed to understand how students gather information on political topics, become informed about candidates, and involve their family and peers in their political perceptions. Questions also helped determine the level of political knowledge each student had about the five most popular candidates in the 2016 presidential election. This study expects to find that most university students determine who to vote for via voter cues, which are simplifications of political platforms into basic facts about a candidate such as their party alignment and money spent on their campaigns. The information gleaned from this research should be useful to both the electorate and potential candidates in future campaigns. Candidates may be able to use the information to run a more effective campaign, and electorates may find this information helps them be more self-aware in their political decision-making process.

Lost Skills and Ancient Arts: Stone Tool Culture Preservation and Education
Poster Presentation
Undergraduate Student(s): Ellie Stanley
Faculty Mentor(s): Brandon D. Lundy

Flint knapping is a fading art; the ancient techniques and skills used to create cultural meaning from stones are vanishing. Very few understand how stone tool cultural artifacts were created, but the experimentation of replicating these artifacts helps archaeologists to visually understand the process of ancient tool making. Students who study archaeology have limited education about the process of how stone tools and artifacts were created by past cultures. Therefore, expert flint knappers and museum employees are uniquely situated to help educate people about these technologies. Through semi-structured interviews, information was gathered from expert flint knappers about this art. Data was also be gathered from employees and educators at the Etowah Museum in Cartersville, GA. Preliminary results suggest that flint knapping is essential to understanding ancient cultures and archaeological concepts used to study them. The research also suggests how experts can help anthropology students learn about cultures through the skills of flint knapping. Students are educated by observing and participating in the process of stone took making and lithic analysis by watching flint knapping demonstrations and the attempting the flaking processes. Specifically, the results

might encourage flint knapping experts to visit anthropology classes to demonstrate skills and increase interest and understanding from anthropology students.

Why Do International Students Come to the United States to Study?
Poster Presentation
Undergraduate Student(s): Yasmin Alamin
Faculty Mentor(s): Brandon D. Lundy

This research examines why international students come to the United States to study and what influences their decision. The research was conducted at Kennesaw State University. This study investigated the factors that influence international students' choices in coming to KSU as a study destination. The results could assist the KSU administration create and sustain a welcoming, supportive, and inclusive campus environment for international students and develop and strengthen partnerships with diverse communities globally. Results could also help guide KSU in improving their international retention services enhancing the university's diverse student body. Previous literature shows that the country and institution choices of international students are greatly influenced by push/pull factors such as political, cultural, economic, and environmental. I used semi-structured interviews with international students at KSU to collect my data and analyzed it using thematic analysis. The major contribution of this study is to understand the push/pull factors that influence international students' decisions to study outside their home country and to improve the understanding of the multiple factors that make up students' decisions concerning choosing a study destination.

Challenges and Opportunities for Integration in an Emerging Gateway: A Spatial Analysis of Atlanta's Immigrant Population
Poster Presentation
Undergraduate Student(s): Christopher Sipes
Faculty Mentor(s): Paul McDaniel and Darlene Xiomara Rodriguez

The Atlanta metropolitan area is a major-emerging gateway for immigrants in the Southeastern United States. The large number of immigrants within the metro area has made Atlanta a hub for organizations geared towards different immigrant and refugee groups. Many of the organizations provide services for these groups that would otherwise be hard to obtain due to things such a legal status, paper shuffling or language barriers while communicating what they need as a group. The same organizations often serve as anchor institutes for these different groups. However, little research has been done to examine the geography of these organizations in relation to the particular immigrant and refugee groups they serve. Data and research suggest that the different groups show expansion and movement away from the core city of a metropolitan area towards adjacent suburban areas. As this is indeed the case for Atlanta and the metropolitan area, this can be seen in areas like Clarkston, Doraville, and many other municipalities surround the core city. This is a process occurring in many new immigrant gateway destinations around the United States. The

research done within this project is examining the organizations that support and help integration of these groups, and if they are moving outward with the groups they serve. Further, it is examining whether there are spatial discrepancy between these organizations and the largest clusters of the populations they serve. In instances where there are spatial discrepancies, are there transit services close enough or within the areas of both that it is a viable option for these groups to use to acquire access to the organizations they need. By studying these different aspects it will provide information to help better understand the geography of immigrant and refugee settlement in the Atlanta metro area. It will also provide valuable information on the integration of immigrants and refugees into communities where they have the largest populations. The different organizations and institutions serving Atlanta's growing immigrant and refugee population could then use this information to focus in on those areas where there are larger populations of those groups that are not being serviced, and have a recent representation of the immigrant and refugee groups within the Atlanta metro area.

Understanding Archaic Livelihood in Southern Georgia
Poster Presentation
Undergraduate Student(s): Gregory Smart
Faculty Mentor(s): Terry Powis

The Archaic Period in North America began approximately 10,000 years ago and lasted until 3000 years ago. While we do have information about how people lived during this period, it is less detailed than other, later time periods. This aceramic period is marked by people living in band level societies, traveling around the landscape hunting small game, and procuring wild plants, primarily grasses and berries. Archaic culture groups are typically divided by the implementation of different lithic technologies; these range from development of different styles of projectile points to the carving of steatite. During the Late Archaic, we note the advent of pottery and a general trend towards sedentism that continues through subsequent millennia. Within Georgia, it is typically thought that during the Late Archaic people began their first steps toward restricted movement, regional trade, and the development of more complex material culture. Given our knowledge of the Late Archaic, there is somewhat of an information vacuum when it comes to our understanding of subsistence patterns and the daily activities of people living during this time period. There is a consensus of these people being generalized hunter gatherers; however, this is primarily based on the lack of evidence for other types of activities. This information gap may be a result of too few sites for study or research designs of professional archaeologists that focus on other time periods. In Southwest Georgia, the Traversant Site, located on Flat Shoals Creek in Troup County, has the potential to unlock the mystery of the daily life of Late Archaic peoples, including which resources were available to them and what was actually utilized. Archaeological investigations over the past two years have revealed a considerable quantity of artifactual material, primarily lithic tools, which helps to shed light on this topic. Various tool technologies coupled with different source materials give evidence for different strategies and resource exploitation, even within the same cultural

strata. By recovering and analyzing what has been left behind, a clearer picture begins to appear of what life may have been like for people during this early period of cultural development.

Health Promotion and Physical Education

The Verbalization of Stress and Its Effect on the Workplace
Poster Presentation
Undergraduate Student(s): Dustin Sergent
Faculty Mentor(s): Mari-Amanda Dyal

Background: Stress is a reality of life, as certain as death and taxes. Its intensity has grown over time setting the stage for a rich research base. However, there is limited research exploring the reasons for this growing intensity, especially since the first notion of stress was realized in the early 1900s. Nevertheless, stress is a staple of today's culture suggesting that there is more stress today than yesterday. The current research suggests otherwise with the assertion that the verbalization of stress is to blame. The verbalization of stress effortlessly becomes a topic of discussion in many informal and formal settings; one being the workplace. In fact, stress has been identified as one of the main causes of workplace absenteeism even though social interactions in the workplace are thought to be a coping resource for stress. If the verbalization of stress dominates these social interactions in the name of commiseration, then it could be argued that this coping resource warrants more discussion (so to speak). Methods: A review of the literature was necessary to explore this concept specific to the verbalization of stress and 1) its impact on perceptions of stress and 2) its impact on the quality of social interactions in the workplace. Several databases were accessed to ensure full literature review, such as PubMed, CINAHL, and PsychINFO, and keyword search terms included workplace stress, verbalization, social stress, emotional demands, and social interactions. Results: The review revealed inadequate research in these areas. However, noteworthy themes emerged lending credence to this discussion. First, the verbalization of tasks (i.e., reading aloud) activates the sympathetic system, which is the powerhouse of the traditional stress response with increases in blood pressure, respiration, skin temperature, etc. Second, supportive social interactions in the workplace are advantageous for the giver of support rather than the receiver. Lastly, the verbalization of stress should capture and consider the language that is used in both self and social talk. Discussion: The verbalization of stress is a commonplace occurrence and warrants more research by way of theoretical underpinnings and implications for those workplace social interactions that are considered protective. Social interactions within this setting are of great importance because they can be valuable resources or emotionally demanding burdens. When coupled with the verbalization of stress, their protective nature becomes compromised, which requires an understanding of how the verbalization of stress can generate the power to create and conquer stress.

Thomas Paine: Abolitionist
Oral Presentation
Undergraduate Student(s): Savannah Beeson
Faculty Mentor(s): Jim Piecuch

Although Thomas Paine is best known as an advocate for American independence and increased political rights for citizens, Paine became an active opponent of slavery long before he wrote his famous political pamphlet "Common Sense." This paper examines Paine's antislavery views as expressed in his writings, his work with the abolitionist movement, and the relation of these views to his later political writings.

The Great War: Economic and Social Turning Points of World War I in United States History
Poster Presentation
Undergraduate Student(s): Emily Rolader
Faculty Mentor(s): Katherine Perrotta

World War I was called the Great War and the "war to end all wars." For the United States, it was a great war, but it did not end all wars. America entering World War I was a major turning point in United States history because it helped speed up the transition from an agricultural economy to an industrial one and it started the first wave of American feminism. When the United States entered the war in 1917, the demand for more wartime manufacturing and factory workers increased. When the war was over, these newly developed industrial capabilities were turned to commercial ventures which accelerated the industrialization of the country. Much of the country's post-war economic growth was due to this industrialization. World War I created a turning point for the American economy, changing it from an agricultural to an industrial economy. Another change spurred by the industrialization of America during World War I was related to women's rights. During the war, many men were not available to provided the necessary industrial labor, which created new opportunities for women and minorities. World War I made available positions that were previously only for men, who were now serving in the war overseas. Women who worked during the industrial boom the war created was a crucial enabler for the United States winning the war. The vitality of women's work and support of the war effort is credited as a factor for the passing of the 19th amendment, in 1920. The passage of the 19th amendment was a major achievement of this first wave of feminism in America. World War I was a great war in many ways. It was a major turning point in American history both economically and socially which continue to evolve. Economically, the war sped up America's transition to an industrial country, which led to manufacturing and consumer spending booms of the 1920's. Socially, the war created economic and political opportunities for women, which started the modern women's

movement in America. These economic and social trends continue today as the nation is recovering from the most recent recession of the 21st century.

Sweeping Change in America Via the New Deal's Glass-Steagall Act
Poster Presentation
Undergraduate Student(s): Margaret Boggs
Faculty Mentor(s): Katherine Perrotta

Turning points -- these vivid moments in time in which society undergoes a fundamental departure from its past -- still hold lasting effects and reverberations today. The purpose of this research was to examine the legacy of the Glass-Steagall Banking Act of 1933 and to explicate why this marked an important turning point for the history of the United States. In the wake of the Great Depression's crippling effects on the economy and the job market, this act was one of many initiatives implemented as part of FDR's New Deal. The separation of commercial and investment banking enforced by Glass-Steagall and the protection of depositors installed by the act's Federal Deposit Insurance Corporation (FDIC) were put in place with the intentions of creating financial security, but the act also inherently increased government intervention and subsequently redefined liberty. Once Franklin D. Roosevelt was in office, gone were the laissez-faire attitudes of Coolidge and Hoover before him; concerning the notion of banks taking risky investments in the stock market, the government began to regulate, more than ever before, what commercial banks could and could not do. Like today, many skeptics existed during Roosevelt's tenure who were concerned with the concept of a heightened government role in the welfare of citizens. As our nation continues to face economic troubles and polarizing controversy concerning the ideas of freedom and liberalism, studying Glass-Steagall (most of which was repealed in 1999) becomes an important means of using the past to further our understanding of present conditions. Specifically speaking, in 2008, George W. Bush signed the Emergency Economic Stabilization Act, which temporarily raised the FDIC limit on deposit insurance from $100,000 to $250,000 in order to give depositors more confidence in the bank in spite of the recession. In addition, during the 2016 Democratic primary debate, Bernie Sanders argued in support of bringing back Glass-Steagall regulations, claiming that the act's repeal, which allowed banks to be involved in stock market transactions, contributed to the recession. By examining the workings of Glass-Steagall and its effects on our country, we can become more informed and in-tune to address the economic and political issues of today.

Inclusive Education

Implementing Peer Training as an Evidence Based Practice to Support Social Communication and Interactions in Young Children with Autism
Oral Presentation
Graduate Student(s): Jasmine Ennis
Faculty Mentor(s): Melissa Driver

The difficulty with impaired social communication and interactions for students with autism spectrum disorder (ASD) has been a topic of interest in the research world for many years. This deficit may lead to aggression, avoidance, and escape behaviors stemming from frustration over the inability to communicate their wants and needs. Additionally, evidence based practices have been developed and a plethora of variations are in use to both encourage and support social communication and interactions for students with ASD in the classroom setting. The peer training package is an evidence based practice that can be used in the elementary school setting to aid students in the areas of social communication and interactions by employing peer mentors. A child with autism can benefit from watching and learning social skills from a peer mentor, which could be a sibling or classmate. When selecting a peer to assist with the interventions, it is important to choose someone who is socially skilled, compliant, and able to follow a model. They will then require proper training to understand the skills necessary to model for the child with ASD (National Autism Center, 2009).

A Cross-Cultural Framework to Bridge the Cultural Clash between Teachers and Students
Oral Presentation
Graduate Student(s): Cleopatra Sorina Iliescu
Faculty Mentor(s): Melissa Driver

While the student population in our k-12 schools reached over the 50 percent mark of minorities, the teacher characteristics remained consistent with more than 80 percent white, middle-class, and female. The racial / ethnical discrepancy between teachers and students creates a major cultural divide difficult to bridge. Although the literature recognizes the need for enhanced cultural competence, what exactly means cultural competence to tackle the diverse cultural background of our students continue to elude many educators and programs for training educators alike. In addition to being knowledgeable and experienced in their subject matter and in cultural relevant pedagogy, white teachers must be better educated and better prepared to confront race and racism in themselves, their classrooms, schools, and society. The significant question remains, what can help teachers reflect on their own biases and facilitate them to understand more fully their students' lives outside of the classroom? And, what means to be a culturally competent teacher? The current study tries to implement a cross-cultural dimension framework from the businesses and communication literature in order to provide a guideline to aid teachers and students discover those differences, improve their relationship, and the outcomes of teaching and learning.

Integrative Studies

To Little 5 Points
Performance
Undergraduate Student(s): Edmund Tella
Faculty Mentor(s): Tony Grooms

A spoken word performance piece on Little 5 points. The piece explores the history of the area, its beauty, character, and current state. The piece also focuses on the process of gentrification which is currently under way in Little 5 Points, contemplating the nature of the process and what may happen as a result of it. It is a piece which seeks to pay homage to the importance of a place in the hearts of its people, and a declaration against those who would seek its undoing.

International Conflict Management

The Root Causes of Difficult Aid Delivery in Afghanistan
Poster Presentation
Graduate Student(s): Cyrel San Gabriel
Faculty Mentor(s): Brandon D. Lundy

Afghanistan has been buffeted by conflict for more than three decades. The country has suffered continuous devastation, displacing millions of Afghan people, causing extreme poverty, and undermining human development. Despite the massive amount of foreign aid, the country is still beset with extreme poverty. The Asian Development Bank's (ADB) recent analysis shows that there has been no improvement in Afghanistan's country performance assessment from 2008 to 2015, which means that aid's impact has not made a difference over that period. Scholars generally attribute difficult aid delivery to donor's lack of coordination, unsound performance-based models on fund allocation, and the fragile nature of conflict-affected situations. However, their analyses have been based from a macro-level perspective that is tied to a universal theory. This study aims to narrow down the macro-perspectives offered by the scholars and look at the micro-causes of difficult aid delivery within the local context of a conflict situation in Afghanistan. While it is obvious that conflict and fragility as well as external factors contribute to difficult aid delivery, these are broad categories that need to be unpacked and fleshed out. Metaphorically, these are just symptoms of a disease which should not be the target of treatment, but instead it should be the root causes that should be better understood. This research project examines the root causes of difficult aid delivery in Afghanistan. Specifically, it will look at how conflict, fragility, and external factors interact with each other, and what underlying factors drive conflict and fragility in Afghanistan that result in difficult aid delivery. Content analysis of ADB project completion and evaluation reports in Afghanistan as well as two expert interviews (with the ADB focal point for fragile and conflict-affected situations and a development economist in Afghanistan) are employed to

generate hypotheses on the root causes of difficult aid delivery. The study sets a foundational knowledge for international and local policymakers on the key areas they need to prioritize in crafting sound development strategies. A subsequent area for further research is whether domestic policies and governance can transform development practice that will eventually lead to aid effectiveness.

Breaking the Glass Ceiling: Experiences of Female Engineers in the United States
Poster Presentation
Graduate Student(s): Yeju Choi
Faculty Mentor(s): Brandon D. Lundy

Approximately 40 percent of women who earn engineering degrees in the United States leave their profession. Although there is a neoliberal push in society to encourage people to go into STEM (Science, Technology, Engineering, and Mathematics) fields and a simultaneous move to address the gender pay and equity gaps in these fields, women still leave science and engineering at a higher rate than men. What factors affect female decisions regarding entrance and retention in the engineering profession in the United States? To answer this question, this study uses both an online survey and semi-structured interviews to create a portrait of the professional arc of female engineers from choosing their major through their decision to stay or leave the field. Based on the initial findings of the survey results, semi-structured interviews were conducted with female engineers who were entering their program of study, just started out in the field, had a clear identity within their chosen profession after years of work, and left the profession. By providing overarching and in-depth experiences of female engineers, this study presents stories of discrimination, empowerment, equity, and prejudice. The findings of this study will contribute to the understanding of female employees' experiences in male-dominated professions. Also, this study aims to improve the workplace culture by helping employers and organizations understand female employees' workplace needs in the engineering profession.

Diversifying Our Assets? The Impact of Institutional Funding to Student Organizations on Student Perceptions at Kennesaw State University
Poster Presentation
Graduate Student(s): Jonathan Taylor Downs
Faculty Mentor(s): Brandon D. Lundy

Kennesaw State University provides funding to many different types of student organizations on campus. Drawing from literature on in-group/out-group bias, contested identity, social contact, and inter-group grudges, this poster examines how institutional funding to student organizations affects their participants' perceptions of other student organizations at KSU. As a population group with many different levels and constructions of identity, university funding potentially creates prominent delineations between different student groups and identities on campus, creating and reinforcing perceived essentialisms and differences among

students. For example, an academic organization may believe that their group contributes more to the university than other types of organizations and grows upset that they receive the same level of funding as an organization focused around a hobby, leading them to disparage the hobby organization's contribution to the university community. Semi-structured interviews and participant observations were used to determine how student organizations impact student identity and perceptions of the "other" at KSU, and if funding played a role in shaping and perpetuating those perceptions. This research seeks to shed light on how student organizations at KSU view one another, and how institutional funding to student organizations impacts the campus environment and student organization identities.

Marketing and Professional Sales

How Can Neuromarketers Optimize Dating Websites to Attract Customers Based on Design?
Poster Presentation
Undergraduate Student(s): Dustin Bearden, Shensen Gao
Faculty Mentor(s): Sandra Pierquet

The concept of this research is to look at defining the relationship that neuromarketing has on dating website design and how it influences consumers to use their resources. Most dating websites understand the underlying motivations of their consumers including companionship, seeking sexual partners, romance, freedom from commitment, and ease of meeting new people (Clemens). As the internet grows and becomes more complex, the importance of design using neuromarketing techniques may become crucial for website design in order to stand out from the competition to potential consumers. Efforts to examine links between website design and consumer interest are few. The outcome of this research is to help bridge that gap. An eye tracker and other applicable primary research will be used in the process.

How Can the Layout of the Makeup Store Sephora Be Improved by Applying Neuromarketing Research to Positively Impact Purchasing Behavior?
Poster Presentation
Undergraduate Student(s): Kinza Tariq, Bailey Thompson
Faculty Mentor(s): Sandra Pierquet

This research will try to provide a holistic understanding of how the store layout of Sephora affects consumer decision making based on primary and secondary neuromarketing research and neuromarketing theories combined with the subject areas of sociology, psychology, and store layout research. This research may give the retailer the ability to be better informed about best store layout practices.

How Do Evolutionary Factors Influence Intra-Sexual Competition in Males and Females in Their Personal Branding and Subsequent Purchase Decisions?
Poster Presentation
Undergraduate Student(s): Kaci Giles, Sarah Rice
Faculty Mentor(s): Sandra Pierquet

There are conscious and subconscious motivations for mate choice, self-presentation and self-branding. Research will explore both evolutionary motivations in conjunction with neuro-processing to uncover relationships that can be applied to the consumer decision process.

Sex Sells: Determining How Explicit Advertising Impacts Men and Women Differently Through the Application of Neuromarketing Theory
Poster Presentation
Undergraduate Student(s): Robert Bernard, Kristen Grodd
Faculty Mentor(s): Sandra Pierquet

It is a commonly believed that "sex sells." This study will consist of how explicit advertising neurologically impacts men and women. Explicit or "racy" ads are often used in the United States, but are they truly designed to reach the target market? For example, are Victoria Secret commercials designed to evoke responses in men or women, and is this form of advertising effective? Research will be conducted using an eye tracker as well as secondary research. The study will explore which parts of the brain are impacted by explicit images and how these reactions differ between men and women. Relevant research already exists however it is almost entirely conducted outside of the United States.

Beauty, Brains, and Brand Loyalty
Poster Presentation
Undergraduate Student(s): Maria Ford
Faculty Mentor(s): Sandra Pierquet

This purpose of this research is to connect neuromarketing theory, cosmetics and the purchase behavior women to increase the probability of developing cosmetic product brand loyalty. Under consideration are factors that include psychological needs satisfaction, brain activation and beauty seeking and spending habits.

How Health/Beauty Brands Can Use Cuteness to Affect Consumer Purchase Behavior
Poster Presentation
Undergraduate Student(s): Rachael Eidson
Faculty Mentor(s): Sandra Pierquet

It is not a coincidence that cute animal and baby videos are some of the most popular clips you can find on social media websites like Facebook, Instagram or YouTube. Health and beauty

companies have successfully marketed brands using cute features and logos to influence consumer purchase behavior. This research project will identify the neurological reason behind a human desire for cuteness and how it can be used to study consumer behavior and product purchase for health and beauty brands. This research project will explore how cuteness can be used to create better marketing strategies for relevant brands, human motives behind an attraction to cuteness and will be explained with relevant research.

How Can Marketers Effectively Identify and Target Consumers Using Self-Esteem as a Driver Through the Application of Neuromarketing Theory?
Poster Presentation
Undergraduate Student(s): Tyler Hightower
Faculty Mentor(s): Sandra Pierquet

This paper will establish a correlation between neuromarketing and self-esteem with the intention to further marketing effectiveness to consumers with either high or low self-esteem. Research has already made progress in the area of self-esteem on focused topics, but this paper hopes to form a process that can be applied to varying fields.

Mathematics

Mathematical Analysis of Tumor Growth Models Combining Chemotherapy and Immunotherapy
Poster Presentation
Undergraduate Student(s): Patrick Schambach
Faculty Mentor(s): Ana-Maria Croicu

Ordinary differential equations have been already used to generate numerous mathematical models of tumor growth. Usually several specific populations are used to model the spread of cancer cells. The purpose of our study is to examine two cancer treatment methods, chemotherapy and immunotherapy, with the goal of optimizing treatment protocols.

A Mathematical Model for the Effect of Domestic Animals on Human African Trypanosomiasis (Sleeping Sickness)
Poster Presentation
Undergraduate Student(s): Sagi Shaier
Faculty Mentor(s): Meghan Burke

The Human African Trypanosomiasis (HAT) parasite (which causes African Sleeping Sickness) is transmitted by the tsetse fly as a vector, but has several possible hosts, including wild and domestic animals, who are not as negatively impacted by the disease as the human host. It has long been assumed that because domestic animals can be a host for the parasite,

that keeping domestic animals near human populations increases the spread of the disease. However, several parameters found in the literature, including the shorter lifespan of the male vector, and the female vector's preference for domestic animals, made us question this assumption. We developed a differential equation compartmental model to examine whether increasing the domestic animal population can be used to deflect the infection from humans, and reduce its impact.

Doubly-Chorded Pancyclic Graphs without P4 subgraphs
Poster Presentation
Undergraduate Student(s): Edgar Reyes, Justin Mauer
Faculty Mentor(s): Victor Larsen

A graph is a set of vertices, or nodes, and connections between these vertices. Graphs are useful objects for modeling many scenarios such as ecological networks, traffic systems, and cellular networks. By studying structure and properties of various graphs, we hope to gain a deeper understanding of many complex systems. Our research examines the properties of graphs with certain imposed restrictions. The highly connected graphs we look at have certain restriction that ensure any pair of vertices are not too far apart; specifically, certain structures are forbidden as induced subgraphs. A graph, which meets these restrictions, has special properties and certain structures that we seek to analyze. Our goal is to find cycles of all possible sizes with at least two chords, where a chord is an edge not on the perimeter of the cycle. We have discovered that if the graph consists of seven or more vertices then doubly-chorded cycles of every possible size exist in the graph due to the graph's density. It is also important to note why six vertices will not work, to show that our theorem is sharp.

Our Community: Our School Climate
Poster Presentation
Undergraduate Student(s): Micaela Bronte Hays
Faculty Mentor(s): David Glassmeyer and Brian Lawler

This study explored how high school students' perceptions about how to use mathematics for social justice changed as the students engaged in a statistical lesson focused on their school climate. This lesson had one class of secondary students mathematically consider a recent report of U.S. students' feelings of safety at school in relation to harassment levels and support groups available at their school. The participants of this study then engaged in group discussions about bias they noticed within the given study, and devised a plan to execute their own survey with the least amount of bias possible. After creating the survey, the students distributed it to their peers in order to learn about their own school climate. Once the data was collected, the students organized, analyzed, and created visual displays of their results. These visual displays also included an action plan for influencing their own school's climate in a positive way. The research question was "How do student perceptions of using math for social justice change as they engage in a statistical lesson focused on their school climate?" To answer

the research question, data were collected using a pre- and a post-survey documenting students' perceptions about harassment and safety within minority groups in their school. Additionally, survey questions asked students the impact of the lesson on their view of teaching mathematics for social justice. Observations were conducted to document student progression throughout the lesson. This presentation will summarize our results and offer recommendations for other educators at the K12 and university level for how mathematics can be used for social justice while ensuring a safe environment for such discussions. The results and implications of this study and lesson will be reported for others' use and reference.

Mechanical Engineering

Human Powered Submarine
Poster Presentation
Graduate Student(s): Kevin Katz
Undergraduate Student(s): Stephan Shelton, David Bullington
Faculty Mentor(s): Mir Atiqullah

The purpose of this project was to design a human powered submarine that would compete in the bi-yearly collegiate competition International Submarine Races. The goal for the competition was to design a submarine that would compete in the competition, where the submarine would sprint 100 meters, fastest top speed, slalom course, obstacle course, and more. The design problem statement dictated that the submarine must be human-powered, less than 2.13 meters wide, filled with water, use propellers for propulsion, and be competitive in the 100 meter sprint during the International Submarine Races. Our specific design incorporates a single person propeller-driven submarine, specifically optimized for the 100 meter sprint. We created a three dimensional CAD model, complete with pedal drivetrain and steering system. The computer model was simulated for strength, propelled by human powered propellers and glide fast underwater. Through these simulations, we were able to reduce the drag coefficient of the shell, lighten internal parts while still retaining our target factor of safety, and choose an appropriate propeller for our application. By the end of the design cycle, a buildable design was completed with a theoretical top speed of 2.62 knots, enough to be competitive in the 100-meter sprint. The final design utilizes face forward form, with the driver operating the rudder controls in the front and pedaling from the rear. Propulsion is provided from two propellers at the middle. The inner mechanicals of the submarine are wrapped in a computer optimized carbon fiber shell with a polycarbonate front window for visibility. In the near future this design could be further optimized and a student competition team could enter the race and win for KSU.

Newspaper Folding Machine
Poster Presentation
Undergraduate Student(s): Robert Miller, Joshua Noll, Thien Nguyen, Marquis Hicks
Faculty Mentor(s): Mir Atiqullah

A newspaper company in Marietta currently uses human workers to fold and deliver their newspapers. The folding process usually takes one to two hours and is completely manual. A machine that could fold these newspapers automatically at a faster rate more reliablly would save time for the delivery personnel. To improve the company's labor and productivity situation an economical newspaper folding machine was designed that was portable by two people, efficient to be able to output as much as a human worker, reliable with the proper operator supervision, and affordable for the company to purchase as an alternative to human workers. Current machines that fold newspapers are very bulky, immobile, and too expensive, whereas the newspaper folding machine satisfies the needs of the company. The design involved 3D CAD models, mechanism design, computer simulation for strength, motion, and durability. The design utilized high strength 8020 aluminum extrusions as a frame. The loading system also designed parts made of plastic as well drive shafts with printer rollers to feed the papers. The folding system is composed of two flaps that fold the papers into thirds and a moving sled. These flaps and the sled are actuated by linear actuators. The unloading system is a chute that keeps the papers folded until it is bagged. The chute is sized and positioned so that the paper can fall through it without becoming unfolded. At the end of the chute, the paper is dropped into a bag and moved away for storage.

Railroad Spike Remover
Poster Presentation
Undergraduate Student(s): Jonathan Hawkins, Alex Hood, Zachary Tonsmeire, Kyle Wise
Faculty Mentor(s): Mir Atiqullah

The challenge was to design a mechanical system that could match productivity and increase safety of the process of removing railroad spikes from ties. Current mechanical spike removing devices have not been very successful in providing an ergonomic, portable, and economic way of removing spikes from railroad ties since the 1800's. Claw bars have been the traditional method of removing spikes but can cause employees of these companies many problems including fatigue and a range of injuries. The new design should limit all of these health risk and improve on the quality of work as well as be durable, and not be cumbersome in handling. The use of a crowbar or prybar to remove spikes has many flaws and drawbacks. Current mechanical pulling mechanisms have been designed while majority of them rely on the external power source. The primary focus of this design is to harness the hydraulically amplified force of a bottle jack redirected into a pulling motion. As the user manually pumps the jack the arm with a specially designed, dualÂ-toothed claw will be lifted. The claw is made to grab the average railroad spike by sliding under grooves on both sides of the head. The design was unique in its ability to remove railroad spikes manually, safely and economically.

The design requirements set by the external sponsor was met and design will be patented soon.

Sapling Snatcher
Poster Presentation
Undergraduate Student(s): Aneela Hameed, Nicholas Kinder, Brian McFall, Reid Allen
Faculty Mentor(s): Mir Atiqullah

The Sapling Snatcher is an ingenious concept that is catered to DIY (do-it-yourself) modern day landscaping and outdoor housekeeping. The term "sapling" refers to an unwanted budding tree with a slender trunk occupying valuable real estate in the ownerâ®™s yard or outdoor living space. The mission was to design, develop and potentially prototype an affordable mechanical tool in a small form-factor that could be safely used to snatch small trees and saplings, handling a maximum uprooting load of up to 400lb, maximizing the efficiency with minimum user force required. The design would be useful for both young and old adults, landscaping professionals, and outdoor living enthusiasts. Research helped outline the user needs that the design should satisfy. Fundamental requirements were functionality, manufacturability, ease of usability, durability, and reliability. Specific user needs were then translated into metrics, as we needed a way to measure or quantify the designâ®™s ability to meet user needs. The design process involved preparation of system-level design, simplifying and streamlining initially hand-sketched concepts, translating design to Solidworks 3D CAD, and making iterative corrections to meet user requirements. Using a proprietary CES EduPack 2014 software, extensive research was conducted to determine the suitable materials to be used for the core structure machinability to other incorporated components such as pins and hinges. The deciding parameters were Young's Modulus, Yield Strength, Tensile Strength, hardness, fatigue strength and fracture toughness. These materials decisions and design specifications culminated in creation of our final product. These finalized features allowed for the calculations of bill of materials, which ended up being $48 (excluding manufacturing cost). Moving forward, we aim to develop a testable prototype of the design to ensure we have conquered intended functionality. Overall, the group accomplished its goals. The design has been rated with a minimum factor of safety of 2.03 on the lever arm and has a mechanical advantage of 15.833 while achieving the proper motion to uproot a sapling while keeping the device both lightweight and portable.

Aerodynamic Drag Reduction of Class 8 Trailer Trucks using External Attachments
Oral Presentation
Undergraduate Student(s): Emmanuel Nnamani
Faculty Mentor(s): Mir Atiqullah

In recent studies, the demand reduction for gasoline consumption is quit a big issue in the automotive industry. Recent studies also show that aerodynamics has a whole lot to deal with fuel/diesel consumption and how to spend less money on fuel/diesel. The primary objective of

this research is to determine the aerodynamic drag for large commercial trailer trucks and how to reduce the drag, especially at high speed and long distance transportation for better fuel mileage. The study of aerodynamic drag can be performed by scale models in a wind tunnel. The drag effect can also be done by utilizing a 3D CAD model and the use of Computational Fluid Dynamics (CFD) software. Currently, the drag coefficient number for large commercial truck (class 8) is 0.55 with a frontal area of 10.408 m2 and a rolling resistance coefficient of 0.005. In this research our goal was to reduce that drag coefficient number of 0.5 to a 0.3. In order to achieve this result, a 3D fully scaled truck model was developed in SOLIDWORKS and tested using CFD. A wind tunnel test will be done to get an average result of both analyses. In order to achieve a definite result using the wind tunnel, the design model tractor trailer will be scaled to 0.017 using the same Reynolds number (flow characteristics) for both sizes. The wind tunnel model design will be about 15 inches in length, compared to over 70 feet for a real trailer truck. There will be different external attachments to improve the aerodynamic drag (i.e., front fairing, trailer top, side skirt, gap filling and rear end closure). The attachments will be measured in high speed as well as yaw angles to inspect how the different parts react to the drag. Furthermore, this research will demonstrate the importance of optimizing a tractor trailer by improving the air force around the skin. After several testings, the results obtained from of this study was successfully achieved, the collected drag coefficient data were significantly lower than the average Cd number for the present tractor trailer. The overall outcome clearly demonstrated the effect of the external attachments in reducing the aerodynamic drag. This research would be of interest to trucking industry for reducing fuel consumption and thereby help the environment.

Alpha Radiation Detector Development and Testing Under Various Conditions
Poster Presentation
Undergraduate Student(s): Kurt Jacobson, Andrew Jones, Shawn Sinclair, Christina Kirby
Faculty Mentor(s): Eduardo Farfan and Sandip Das

A low-cost, portable alpha particle detector with integrated microcontroller capable of precise radiation measurement has been developed for radiation monitoring applications. The device works on the Chang-Rosenblum principle - spark generation in a strong electric field under incident alpha radiation. The detector consists of 45 m diameter tungsten wires (anode) stretched over a highly polished stainless steel cathode held at ground potential. The electric field between the cathode and the anode was varied between 25 - 50 KV/cm during the experiments by changing the output voltage of the HV power supply from 4 - 8 KV. Experiments were performed with air, N2 and Ar as the filling medium between the cathode and the anode. The detector showed highest efficiency with Ar as the filling medium. A novel electronic circuit was implemented for conditioning the high voltage pulses generated as a result of avalanche discharge within the filler gas during interaction of the alpha particles with the gas molecules. The conditioned pulses were fed to a digital input pin on an open-source electronics platform, Arduino, for analysis and pulse counting (counts per minute). Calibration was performed using a Ludlum Model 44-9 pancake Geiger-Mueller tube and a Model 2200

Scaler Ratemeter to achieve accurate quantitative measurements of an unknown radioactive source strength. Experiments were performed using Am241, Po210 and natural uranium as the alpha source to evaluate the performance and efficiency of the detector. Detailed design of the device and experimental results with varying electric field, filling medium, and alpha sources will be presented.

The Experimental Investigation of Temperature Influence on the Oscillations of Particles on Liquid Surfaces
Poster Presentation
Undergraduate Student(s): Daniel Shah, Alhagie Taal
Faculty Mentor(s): Sathish Gurupatham

It was shown recently that small particles and powders spontaneously disperse on liquid surfaces when they come into contact with the interface for the first time. This happens due to the combined effect of the capillary force, buoyant weight of the particle and the viscous drag that the particle experiences in the liquid. The particle undergoes oscillations normal to the interface before it comes to rest on the interface. These oscillations, in turn, induce a flow on the interface which disperses the particles radially outward. This phenomenon has a significant role in the pollination of sea plants such as Ruppia in which the formation of "pollen rafts" is the first step. This work investigates, experimentally, the influence of temperature of the liquid on which this dispersion occurs. It was observed that the frequency of oscillations of the particles decreased with the increase in the temperature of the liquid. It is because the magnitude of capillary force also decreased when the temperature of the liquid increased.

Design, Analysis and Control of Five Bar Mechanism
Oral Presentation
Undergraduate Student(s): Jacob Davis
Faculty Mentor(s): Ayse Tekes

In this study, two degrees of freedom rigid five bar mechanism is designed, analyzed and controlled to achieve desired tasks. The mechanism consists of four links, two DC motors and five revolute joints. System is modeled by using vector closure loop equations and inertia of the links in Matlab Simulink. A traditional PID controller is created to follow the desired trajectory of the tip point of five bar mechanism. The theoretical model is validated using Solidwork analysis and the experimental setup.

Modular Vibration Control System
Poster Presentation
Undergraduate Student(s): Lucas Gilleland, Dominic Kowalke, John Ware, Matthew Salter
Faculty Mentor(s): Ayse Tekes and Richard Ruhala

The engineering department currently uses an Educational Control Products (ECP) model 210 Rectilinear Plant to model spring-damper systems for the Vibrations and Controls Laboratory. This model suffers from both outdated, bulky electronics and design flaws that hinder experiments and students learning. To replace this system with a duplicate ECP model would cost the school $12,000, and other manufacturer's rectilinear plants cost as much as $30,000. Our group is working for Dr. Ayse Tekes, Assistant Professor at Kennesaw State University, to design a new rectilinear plant for under $1000. After researching other rectilinear plant designs and linearly actuated systems in general our team developed a decision matrix to analyze each design based upon given requirements. This matrix led to the selection of a dual shaft design which utilizes linear bearings to minimize friction, while adding the freedom to attach a pendulum to the carts. Our design will also feature the ability to attach springs in parallel, use compliant members instead of springs between the carts, as well as a camera system that will take position readings and import data directly into MATLAB in real-time. We will use Matlab and Mathworks Simulink to model the system based on equations of motion, while confirming this data with SolidWorks motion analysis. Solidworks modeling software is used to model the physical components of our design. We will provide a complete assembly manual with detail drawings to make replicating the system easy. Overall we hope to provide an improved economical replacement for the current rectilinear plant to ensure the quality of education for engineering students at Kennesaw State University.

Modeling and Design of Modular Mechanical Linkage Mechanism
Poster Presentation
Undergraduate Student(s): Skyler Bagley, Jacob Davis, Zachary Hyder, Megan McDowell
Faculty Mentor(s): Ayse Tekes and Richard Ruhala

The Dynamics Lab at Kennesaw State University lacked a compliant mechanism; therefore, working with Dr. Tekes, Assistant Professor in Mechanical Engineering, the team was able to design and analyze a reliable crank slider mechanism with optional compliant joints. With educational purposes in mind, the team set forth to make the mechanism inexpensive, lightweight, and modular. The materials and parts cost of the mechanism needed to be under $1000. With a more modular mechanism, more experiments could be done with the same mechanism, increasing the opportunity for student learning and research. The team created various concepts that met the three main design goals. For the purpose of the initial analyses, the compliant joints were assumed to be rigid, simplifying the system. First, equations were derived using principles of kinetics and kinematics. The equations were then modeled in a Matlab package called Simulink. During this analysis phase, a motion study in SolidWorks, a finite element analysis package, was also completed. After comparing results from the models, the team was able to validate the accuracy of the simulations. Since the rigid system worked, the models were updated to include compliant joints. The physical model was machined and built as to the design constraints and criteria of the project, which included size, cost, and modularity. The physical system was given the same inputs as the simulated systems to see how the results compared. The team then began to control the system. A certain part of the

mechanism needed to have a desired trajectory, so a program will be written to solve for the characteristics of the mechanism at that position, including the torque needed to get to that position. Through a camera and image processing, the actual trajectory of that part of the mechanism will be found. To control the system, the actual trajectory will be compared with the desired trajectory and adjustments will be made to the torque using a controller. The new mechanism will be placed in the lab to be available for use starting May 2017.

Trajectory Control of a Slider Crank with Eccentricity
Poster Presentation
Undergraduate Student(s): Michael Douglass
Faculty Mentor(s): Ayse Tekes

In this study, single degree of freedom slider crank mechanism with eccentricity is explored. The mechanism consists of two links, a slider, 3 revolute joints and the base link is excited by DC motor. The mathematical model of the slider crank mechanism is derived by using vector closure loop and force-moment inertia equations of the links. The dynamic response is obtained under applied torque using Runge Kutta methods. The aim of this research is to control the speed and the position of the slider. A PID controller is designed to follow the desired trajectory.

Comparison of High Bypass Turbofan Engine Cycle Analyses: A Case Study
Poster Presentation
Undergraduate Student(s): Christopher Roper, Skyler Bagley
Faculty Mentor(s): Adeel Khalid

The study includes comparison of low bypass ratio turbo fan engine analytical performance and experimental engine test bench results. Variations in variables such as altitude, throttle setting, and freestream velocity are explored and their effect on the engine performance at various stages is analyzed to determine thrust force, thermal efficiency, propulsion efficiency and total efficiency. Student feedback is collected and the efficacy of this student involved research is discussed.

SCS-527 "Sea-Duck"
Poster Presentation
Undergraduate Student(s): Austin Collett, Shawn Sinclair, Matthew Salter
Faculty Mentor(s): Adeel Khalid

The objective of this project/competition is to design a multi-mission amphibious aircraft, which follows the requirements that was set forth by the AIAA (American Institute of Aeronautics and Astronautics). This aircraft is needed to accomplish three different missions: The first mission is to fly at least 20 passengers, and the aircraft would have to travel a range of 1000 nautical miles, the next mission is a cargo transport mission holding 5,000 pounds of

payload, and traveling 500 nautical miles. The last mission this aircraft is needed to accomplish is a maritime mission that required a 3,000 pound payload with a 10 hour loiter. The team accomplished this task through the studies that were obtained from the aerospace classes that have been taken. Also, the team accomplished designing this aircraft through CAD and CFD analysis, and through the research that was done throughout the project. The main process of designing this aircraft came from the textbook "Aircraft Design A Concept Approach" by Daniel P. Raymer. This project begins with the preliminary weight calculations for each mission and continues through design layout and performance verification. Solidworks CAD/CFD is being created for the aircraft to facilitate both aerodynamic studies of the wings but also hydrodynamic studies of the hull. Additionally, the use of augmented lift is being studied for this project to meet requirements. In addition to using the CAD model for analysis the team wishes to use this CAD to enter our design into the flight simulator at Kennesaw State University for further stability testing.

The Super Illumination Wireless Induction Ratchet
Poster Presentation
Undergraduate Student(s): Robert Patterson, Kristyn Patterson, Graham Harrison, Chris Peterson
Faculty Mentor(s): Richard Ruhala

The Super Illumination Wireless Induction Ratchet is a new hand tool containing unique features and utilizing an innovative manufacturing process. The unique features included in this tool are three built in light emitting diodes, LEDs, an internally wired circuit system, and a rechargeable lithium polymer 3.7v 2200mAh battery that can be recharged via 0.5A USB input or wireless inductive charging. Due to the complex design of the internal passageways, that allow for the tool to be internally wired, the tool must be created through the Direct Metal Laser Sintering additive manufacturing production method. In the ratchet design there are three LEDs constructed to fit into the head of the tool surrounding the ratcheting mechanism. The LEDs are facing in the direction of the working surface and are out of the way of most sockets or extension pieces. These lights are internally wired and completely contained inside the tool leaving no loose wires exposed and a clean, easy to handle body. The expected brightness is 25 lumens per LED which will effectively illuminate any dark situation while retaining a nearly 14-hour calculated battery life. The power switch is threaded in the base of the handle with an O-ring seal for ease of access to the charging cavity and to provide maximum resistance to any liquid/chemical intrusion. The tool is printed through the additive manufacturing technique of 3D Direct Metal Laser Sintering using a martensite-hardenable tool steel premixed powdered material. With a layer thickness of only 100 microns (0.004in) and a yield strength as built of 1000 MPa before any type of hardening, this strong material combined with a tested design produces a Factor of Safety comparable to a traditional solid neck and handle ratchet.

Formula SAE Electric Vehicle Pedal Box Design
Poster Presentation
Undergraduate Student(s): Zachary Morgan, Joshua Lee, Hunter Myrick, Andrew Cochran
Faculty Mentor(s): Richard Ruhala

The purpose of this capstone project is to design and realise a pedal box for the Formula Society of Automotive Engineers Electric Vehicle Team here at Kennesaw State University that meets all the design criteria and constraints given to us by the International Society of Automotive Engineers, as our Senior Design project. A pedal box is the assembly in a vehicle which contains the brake and throttle input and controls systems. The Electric Vehicle Team (EVT) here at Kennesaw State does not currently have a pedal box for their vehicle that is supposed to be completed and raced in Lincoln, Nebraska in June of 2017. This team did not have a pedal system for the car and could not purchase one pre made that would fit the specifications of the 2017 Formula SAE EVT rules and regulations as well as the size constraints for the vehicle. Research was done to determine the material choices and dimensions of components for the product in order to withstand the required 2000 Newtons of braking force. The 2017 Formula SAE EVT rules and regulations state that each vehicle must be designed to meet the anthropomorphic size data for the 90th percentile male. In order to meet these design criteria we created many adjustable parts and and entirely customizable assembly in order to meet the height and size requirements of the driver. A CAD model was created using Solidworks and simulations were ran to determine maximum stress and strain, factors of safety, strength, ultimate strength, yield strength and other FEA analysis. After running the FAE analysis, it became apparent that material could be removed in order to save cost, reduce weight, and improve the overall ergonomics of the assembly. After all of these FEA analysis had been ran, a prototype was then constructed and other tests will be run to determine if anything needs to be changed or if it can sustain the forces it will be put under during a hard race. When the final product is constructed, it will be installed in the car and the EVT will be able to be use it for the race in June of 2017. This pedal box will be less expensive and more sustainable than something the team could have purchased on the market. Finally, the EVT should be able to use this pedal box in the future and build new components to make the car's design more efficient.

Infantry Portable Electromagnetic Railgun Design
Oral Presentation
Undergraduate Student(s): Ethan McGowan, Nathan Wascher, Will Howel, Khiem Le
Faculty Mentor(s): Laura Ruhala and Hoseon Lee

An infantry railgun was designed for a Mechanical Engineering capstone design project. The railgun is a device for accelerating a projectile to a ballistic velocity using electromagnetic forces rather than the detonation of powder. A comprehensive literature review indicated that exclusively seen as a system for delivering a large payload at a long distance. The goal of this design project was to scale down the technology to the size of an infantry rifle, such as the M-

16A2, without sacrificing firepower or reliability. Multiple design challenges were identified and prioritized. The primary challenge was to design a power source that is small enough for infantry use, yet powerful enough to fire a projectile at a velocity of no less than 1500 m/s. This velocity is taken from data acquired through NATO EPVAT testing. We ultimately designed a power system capable of accelerating a projectile to a target velocity of 2000 m/s using a step-up voltage circuit coupled with a system of capacitors. These capacitors are charged using a battery pack stored in the magazine, allowing for fresh batteries to be easily swapped for depleted ones with every magazine change. An additional design challenge was that the military is now concerned with the damage done to the environment using lead-based rounds. This project attempted to design an ammunition that achieved the proper ballistic performance, while preventing the harmful contamination to the environment and infrastructure created by lead projectiles. Ultimately, we developed a caseless, lead free ammunition, which is similar in impact energy to the current issue 5.56x45mm NATO ammunition, without sacrificing performance. This projectile improves on the current ammunition by using a graphite jacket encasing an iron or tungsten core to achieve both high energy transfer from the shattering graphite, and excellent penetration of soft to lightly armored targets. To make this system as easily reproducible as possible, most components come from off the shelf parts already available in large quantities, such as the receiver, stock, and electrical components. Computer analyses, including Finite Element Analysis (FEA) of both individual parts and the completed system, were conducted to confirm that this weapon system meets military guidelines for infantry equipment as set forth in the military standards MIL STD 810G and MIL STD 1540D. Upon completion of the analyses and iterative design changes, a scale model was built for use as a presentation tool.

A Passive Duct System Solution to Remove Excessive Heat from Truck Trailer Wheels
Poster Presentation
Undergraduate Student(s): Paul Hudson, William Johnson, Jerome Basden, Nicholas Allicock, Thomas Jordan
Faculty Mentor(s): Richard Ruhala

In recent years, several undesirable thermal events have occurred on automobile transport trailers. During these thermal events, excessive heat generated within the rear wheel well, due to the braking system and improper tire pressure, which may lead to the ignition of the rubber tires. The steel reinforcing bands within the tires are susceptible to corrosion due to the moisture content of the air diffusing through the rubber in a deteriorating process called pyrolysis. When the bands are critically corroded, the excess pressure caused by the heat from the brakes can lead to premature tire failure which increases the likelihood of ignition of the rubber. A number of design features on the trailers contribute to these thermal events; the largest contributor is the lack of airflow in the trailer wheel well. This lack of flow is due the wheels being almost entirely enclosed by sheet metal to maximize the carrying capacity of the trailers and to reduce the risk of road debris damaging the cargo. A passive duct system has been designed to redirect air passing along the trailer into the wheel wells. The focus is to flush

the volume of the wheel well to remove heat and reduce the operating temperatures of all components within the wheel well. The duct system consists of three major components: the inlet, connector, and outlet, all of which have the necessary symmetry to enable their use on either side of the trailer. The inlet features a 108 in2 cross section which is uniformly divided in to five sections using baffles. This cross section reduces to 18 in2. The baffles prevent excessive eddying during reduction in cross section, increasing the flow velocity at the outlet tremendously. The connectors have been designed in 1â™ and 2â˜ lengths, allowing the assembly to be adjusted such that the inlet position can be optimized. The connectors attach at the inlet and the outlet using a transition fit and a simple clamping mechanism for easy removal. The outlet reduces the cross section of flow from 18 in2 to 9 in2 and directs airflow. The analysis for this project is largely done using the computational fluid dynamics (CFD) features of Dassault Solidworks 2017. The CFD analysis provides information about flow through the parts and the flow characteristics around the entire truck.

Heat Dissipation in Heavy-Duty Truck Axles
Poster Presentation
Undergraduate Student(s): Matt Roney, Adam Hanes, Chris Hill, Michael Douglass
Faculty Mentor(s): Laura Ruhala

A car hauler company in the United States has been experiencing thermal issues in the wheel wells of their tractor-trailers. The thermal events are mechanical failures due to excessive heat generation, potentially resulting in fires. The problem was presented to the Mechanical Engineering Department at Kennesaw State University for the senior design teams to propose a valid solution. Research indicated the heat is generated from three sources - the brakes, bearings, and tires. Failure to adequately cool the braking system is the primary cause of the thermal events. Finite Element Analysis was conducted to determine the steady-state temperature of the brake drums. Heavy braking can result in temperatures exceeding the safe operating temperatures, leading to failure of the braking system. This failure would result in constant brake application, generating heat and resulting in a mechanical failure and fire. The proposed system utilizes the truck's existing belt-driven air compressor. This system would add two five-gallon air tanks, one on the tractor and one on the trailer. An infrared temperature sensor, placed in each wheel well, will monitor the temperature of the brake drums. If the temperature of the brake drum exceeds the calculated steady-state temperature, the sensor will send a signal to and open a solenoid valve that is upstream of the nozzle. This will allow the compressed air from the air tank to flow through the nozzle and across the brake drum. The induced airflow will increase the amount of heat dissipated by the brake drum, reducing its temperature. After returning to a steady-state temperature, a signal will close the solenoid valve. Since safety is an important factor in the design, this proposed system will not interfere with existing air systems (air brakes, tire pressure, and suspension). Air tanks were selected based on a volume that allows the system to adequately reduce the temperature of eight brake drums without the need to be constantly refilled. SolidWorks was used for Computation Flow Simulation (CFD) to determine the heat transfer rate of the compressed air

system. Based on choked flow principles, the mass-flow-rate could be calculated and applied to the simulation. Directing the nozzle at the friction surface of the brake drum led to the most rapid decrease in temperatures. CFD analyses confirmed that the system would increase the airflow to the brake drums and reduce the operating temperatures, resulting in fewer thermal incidents.

Emergency Cargo Delivery Sysytem

Oral Presentation

Undergraduate Student(s): Danielle Dill, Eamon Quinn, Obafemi Oladapo, Brian Watkins
Faculty Mentor(s): Richard Ruhala

As a senior design project, we have decided to engineer an improved emergency cargo delivery system. This delivery system will be specifically for locations that would be considered undeliverable by way of traditional methods, such as air drop by cargo plane or ground transportation. The method of delivery for our current design uses the air drop method, but for much smaller quantities such as 20 - 60 lb of cargo. The current design which is suitable for only arid terrains. The design goals along with other considerations were determined. Include a max weight of 60 lbs, a max height of 30 inches, ease of use, manufacturing cost under $100.00, and recyclable material. Improvements made included updates to the body's shape and height. Improved airfoil design so that each airfoil is tested using computer simulations in SOLIDWORKS to ensure the foil could withstand the forces during descend. A crush zone addition made from low density and high density polyethylene foam was added to the base to absorb the energy that occurs upon impact. This crush zone concept was generated from the automotive industry. It is the first layer of energy absorption and protects the cargo inside of the body. Cardboard was selected for the body walls and airfoils due to low cost, light weight, and reusability. In order to ensure the cardboard walls could withstand the impact forces, its mechanical properties were used during these simulations as well. The system is tested using the SolidWorks Simulation and Flow Simulation software. Using Flow Simulation, we simulated the effects of airflow during a controlled free fall of the assembly and produced analyses of velocity, pressure, forces, and energy flow during its airtime. Using Simulation, we customized the Drop Test Analysis to calculate and display the maximum force, material displacements, and related effects of impact upon landing. From the study data, we interpreted shortcomings in the initial design that have since been addressed to better meet our goals. Design iteration iterations are made to ensure it will meet all the design goals, a plastic body option is designed for the waterproof under under rain and wet terrain, as well as increased strength.

Universal Surgical Platform

Oral Presentation

Undergraduate Student(s): Luis Ruiz, Cameron Reese, Philip Hwang, Joseph Chevrier
Faculty Mentor(s): Laura Ruhala

Surgical procedures for small animals are diverse and common amongst veterinary clinics. A typical practicing small animal veterinarian will perform most of the recommended procedures for patients in-house, necessitating that even small practices stock and maintain general surgical supplies. In conjunction with the growing companion animal trend in American markets, veterinarian services and products are in constant demand, and will likely continue to increase for the foreseeable future. An evaluation of the surgical needs of small animal veterinarian practices was conducted to better ascertain some of the more pervasive encumbrances and concerns faced in the operating theater. Direct feedback from various small animal veterinarians via surveys and personal interviews showed that functional deficiencies were commonplace in the following areas: monitor systems management, patient restraint and orientation, and patient thermal regulation. On-site observations recorded by team members during a variety of procedures were also collected to accurately assess current systems already in place. Analysis of team observations confirmed clinician feedback. A Universal Surgical Platform was designed as a Mechanical Engineering capstone project. This Platform integrates the functionalities of several existing systems into a single, adaptable platform that provides veterinarians and technicians seamless utilization of any or all aspects a given procedure may require. Additionally, when features are not required, the Platform remains unobtrusive to the clinical procedure and workflow. In moments where clinical parameters change, however, these same features can be quickly employed without major reconfiguration of patient or equipment. The Universal Surgical Platform achieves these objectives through a thin, nearly-flat surface profile, a series of interlocking support ribs capable of "cradling" a patient if necessary, detachable tie-down and cord-management systems, and a scalable heating system, all contained within a single apparatus. To ensure the functionality, durability, safety, and market feasibility of the Universal Surgical Platform, multiple engineering and market analyses were conducted. Finite element, fatigue, thermal and safety factor analyses, for various weight and impact demands, were performed and used in overall and individual part design modifications. Production costs were obtained, based upon materials research and component assembly requirements at various production levels, to create projected supply relationships. Meanwhile, market trends in small animal veterinary practices were analyzed to derive an anticipated demand curve. A marginal profit relation was then utilized to forecast various market scenarios, and provide a range of production and marketing approaches that could be pursued to bring the Universal Surgical Platform successfully to market.

Waste Heat Recovery and Re-purposing for High Temperature Applications
Oral Presentation
Undergraduate Student(s): Jamey Ackley, Jonathan Atkinson, Erwin Garcia
Faculty Mentor(s): Laura Ruhala and Satish Gurupatham

Commercial heating, ventilation and air conditioning (HVAC) systems release large amounts of thermal energy into ambient outdoor spaces. This loss of energy is unnecessary when it can be re-purposed and used in other applications. The Desuperheating Water Heater is a heat pump system that captures the thermal waste heat from an existing HVAC system and re-

purposes the energy. As Mechanical Engineering senior capstone design project, a system was designed to capture this heat, and redirect it into a commercial dishwasher. More specifically, the objective was to raise the temperature of an existing water supply to comply with the FDA guidelines for equipment, utensil, and linen sterilization using waste heat from an existing HVAC system. These guidelines require water temperatures ranging from 110° F to 180° F. Additionally, the system will reduce overall power consumption, alleviate the need for chemical sterilizing agents, and improve the efficiency of the HVAC system. The purposed system operates by capturing waste heat from the existing HVAC refrigerant (R410a) line in a refrigerant-to-refrigerant heat exchanger using R600a. The vapor leaving the heat exchanger is then routed through a variable speed compressor, where both pressure and temperature are increased. Next the R600a at elevated temperature moves through a refrigerant-to-water heat exchanger, and releases the energy to the established water supply. Finally, the refrigerant travels through an electronic expansion valve (EEV) before returning to the initial heat exchanger. The compressor is driven by an inverter control system, and is paired with an EEV control board. Together the two controllers provide dynamic flow conditions based on the thermal load required by the water. Results show that the Desuperheating Water Heater provides adequate volumetric flow rates and temperatures to maintain the constant use of a commercial dishwashing system at 180° F by using waste heat from an existing 10-ton commercial HVAC system. The power consumption needed to reach the necessary temperatures and flow rates is reduced by approximately 70% when compared to that needed for an electric booster heater, commonly used for commercial dishwashers. The need for chemical sterilizing agents is also eliminated. Results are obtained using an environmentally friendly hydrocarbon refrigerant with an Ozone Depletion Potential (ODP) of 0 and a Global Warming Potential (GWP) of 3.

A Rectilinear Vibration Plant Design for the Mechanical Engineering Department's Dynamics Laboratory
Oral Presentation
Undergraduate Student(s): Freddy Boyd, Patrick Colombo, Yulian Vieta, Gregory Williams
Faculty Mentor(s): Laura Ruhala, Ayse Tekes, and Richard Ruhala

A Rectilinear Vibration Plant is used in the Mechanical Engineering (ME) program to teach students the fundamental principles of mechanical vibration. The Vibration & Controls Lab curriculum provides students with a comprehensive understanding of vibration and control theory by conducting laboratory experiments using mass-spring-damping systems. The current Rectilinear Vibration Plant being used in Kennesaw State University's Dynamics Laboratory is both limited in its capabilities and expensive. The design team is tasked with creating a new apparatus, which will support the ME Department's needs, with Drs. Ayse Tekes and Richard Ruhala representing the Department and the Dynamics Laboratory. Excessive mechanical vibration in a design can cause a system to fail when a resonant frequency is maintained. Resonance is caused by increases in the amplitude of oscillation of a mechanical system when the periodic forces applied are not dampened properly. The current

experimental apparatus for this task, the Rectilinear Vibration Plant, can only support a system of up to three carts (three degrees-of-freedom), with one spring between each cart. The springs and weights are very tedious to interchange. The new apparatus will be able to support three degrees-of-freedom similar to the current system, except that the new system will also support springs both in series and parallel, hold more weights than the current system, and allow the weights to be interchanged quickly. The new apparatus will also include slots to attach rectangular samples of test material between the carts to study the vibrational properties of the material. Similar to the current system, the new system will be able to work with existing computer programs such as Matlab, LabView, and NI Signal Express. The design team conducted multiple analyses, including vibrations, shock, hazard, fatigue, and stress. These analyses confirmed the accuracy of the data collected from every experiment, and the safety of the operator at all times. The stress analyses indicated that the cart and rail system have a strength of 0.58 MPA before deformation occurs. The factor of safety is 4.4 for the design, well in excess of the required 2.0 for the design. The new apparatus will also be cost-effective and easy to manufacture. Existing systems on the market, currently used by the Dynamics Laboratory, cost between $15,000 to $20,000. The new apparatus created by this design team will cost only $972 to manufacture. It is expected that the ME Department will implement this new apparatus design.

Molecular and Cellular Biology

Establishment of Primary Cell Cultures from Species Oreochromis Niloticus
Poster Presentation
Undergraduate Student(s): Kristina Howard
Faculty Mentor(s): Jennifer Louten

Primary culture is the first step in deriving cell lines used in scientific research. A primary culture results when cells grow from an explant taken from a tissue or organ. From there, the cells that have grown are characterized and cloned into a cell line. For this project, explant culture and dissociation culture were used to create primary cultures. Explant culture uses small pieces of tissue taken from an organ and submerges them in nutrient-rich medium. When using this technique, cells grow out from the tissue pieces onto the substrate. Dissociation culture obtains single cells from the tissue by either manual disaggregation or enzymatic disaggregation and places them in nutrient-rich medium to allow them to replicate. Two attempts were made at obtaining cells from Oreochromis niloticus, a species of farm-raised tilapia. Tilapia was chosen in order to create cell lines that could be used to study the recently discovered tilapia lake virus, an orthomyxo-like virus that has caused massive loss of farmed tilapia in certain fish farms. During our first primary culture attempt, pieces of kidney, brain, gill, heart, gonad, and liver were placed under several conditions to determine optimal growing conditions. Kidney, brain, gill, heart, and gonad were subject to primary explant culture, and cells from liver were isolated using dissociation. The tissues were initially

sterilized with antibiotics at two different temperatures, room temperature and on ice, and then placed in a 5% CO2 incubator at either 37 degrees Celsius or 26 degrees Celsius. After 9 days of incubation, cell growth was seen from brain and gill tissue in 26 degrees Celsius but not 37 degrees Celsius conditions. There was no significant difference in the sterilization technique used on the organs, although the cultures were discontinued due to eventual contamination. The second attempt used the most effective sterilization and temperature conditions on the explants that showed cell egress in the first experiment. The second explant culture attempt placed the kidney, brain, gill, heart, and gonad under the conditions that resulted in the most success in the first set of cultures. Even though this process demonstrates the difficulty in primary culture, it is an important step in progressing research. It will help further the knowledge on conditions to grow cells of this species and expand the inventory of cells to be used for research.

Techniques for the Characterization of Newly Derived Cell Cultures
Poster Presentation
Undergraduate Student(s): Kirsten Marick
Faculty Mentor(s): Jennifer Louten

Cell Culture is the process of growing cells outside of their natural environment under controlled conditions in a laboratory. Cell Culture can be used to help further understand viruses, microorganisms, cancer and many others effects on animals and humans. Cells can be derived from organs or tissues of humans or animals and subjected to further testing to verify the exact identity of the cells. In this project, cells were obtained from Oreochromis niloticus (tilapia) spleen and exposed to a conditioned medium from L929 cells. This media was chosen because the mouse fibroblasts L929 cells release macrophage colony stimulating factor (CSF-1). CSF-1 differentiates mouse hematopoietic precursors into macrophages, so an experiment was performed to determine whether mouse CSF-1 could differentiate tilapia hematopoietic precursors from the spleen into macrophages. Large attachment cells with macrophage-like characteristics appeared after day 7 of culture. Although the L929-conditioned medium was centrifuged to remove cross-contaminating cells, there was still a question if the macrophages present could be L929 cells due to the similarity in appearance. This problem brought forth the opportunity to test several assays to characterize the identity and properties of the cells. Fluorescent in situ hybridization flow cytometry (Flow-FISH) was performed to distinguish the length of each of the cell type's telomeres, while karyotyping, growth assays and cytology were used to look for any differences between the Tilapia cells and L929 cells. By performing these methods of cell characterization, our results highlighted the importance of why characterizing newly derived cell lines is important.

Conditions for Isolation and Differentiation of Tilapia Cells
Poster Presentation
Undergraduate Student(s): Aaron Aghai, Abby Kabo
Faculty Mentor(s): Jennifer Louten

Cells are able to respond to a multitude of different external signals due to receptors on the cell surface. These signals can cause the cell to perform a wide variety of actions such as dividing, dying, or even differentiating into a different cell type. Receptors induce these changes when they bind to their ligand. For example, colony stimulating factor 1 causes the differentiation of hematopoietic stem cells into macrophages. Given enough homology, it is possible for a ligand from a completely different species to bind to a cell's receptor and induce the desired effect. In this project, mouse L929 cells, which produce murine CSF-1, and Chinese hamster ovary (CHO) cells (used as a control) were separately cultured in order to obtain conditioned media (CM). The murine CSF-1 produced by the L929 cells was tested to see if it would differentiate hematopoietic cells from the tilapia spleen. The CSF-1 produced by the L929s could potentially bind to receptors expressed on the surface of tilapia cells in order to cause them to differentiate into macrophages. The mouse, tilapia, and human genomes were compared to see how similar they were to determine the likelihood that murine CSF-1 could differentiate tilapia hematopoietic cells, and the results were that the genomes were not very similar. A sandwich ELISA confirmed the presence of murine CSF-1 in the L929 CM and the absence of CSF-1 in the CHO CM. Varying amounts of CM from both cell lines were used individually to test whether or not the L929 CSF-1 could induce differentiation of the tilapia splenic leukocytes into macrophages. Recombinant murine CSF-1 had no effect on the differentiation of the tilapia precursor cells. In addition, explants taken from tilapia muscle, skin, liver, and stomach were used in an attempt to create cell lines. Explant culture is the process of taking small pieces of tissues from an organism and putting them in cultured media to allow the egress of cells from the tissue. Taken together, this information advances our knowledge concerning optimal conditions for establishing tilapia cell cultures.

Do Neurogenin and NeuroD1 Function Redundantly in Neuronal Cell Fate Specification?
Poster Presentation
Undergraduate Student(s): Elyse Christensen
Graduate Student(s): Zachery Mielko
Faculty Mentor(s): Martin Hudson

Kallmann Syndrome is a genetic disorder characterized by loss of sense of smell and the inability to begin puberty and complete sexual maturation. Previous research has linked over twenty different genes to this disorder. While these genes may be involved in as many as 50% of cases, only 35% of individuals have mutations in any of these genes, suggesting other genes linked to Kallmann Syndrome have yet to be identified. One possibility is that mutations in regulatory genes that affect Kallmann Syndrome gene expression may also cause this disorder. To investigate this, we are studying transcription factors that may regulate kal-1, a known Kallmann Syndrome gene, using a C. elegans nematode model of this neurodevelopmental disorder. One transcription factor implicated in the regulation of kal-1 is cnd-1, which codes for basic helix-loop-helix protein involved in neuronal development. Previous imaging research in this lab has suggested that cnd-1 may affect kal-1 expression during

embryogenesis. In C. elegans, cnd-1 has a paralog gene, ngn-1, which is also involved in neuronal development. In addition, ngn-1 has been shown to regulate cnd-1 in other species such as mice, frogs, and humans. We are working to identify the relationship between these two genes and the possibility of their involvement in the regulation of kal-1. We have created C. elegans knock-out mutant strains for both ngn-1 and cnd-1 bearing a transgenic kal-1-GFP reporter gene. This will allow us to identify which kal-1-positive cells are under the control of these highly conserved transcriptional regulators. In addition, we have created a cnd-1; ngn-1 double knockout strain, and are in the process of analyzing these animals for kal-1-GFP expression, along with additional novel phenotypes.

Is eor-1 a Transcriptional Regulator of kal-1/anosmin?
Poster Presentation
Undergraduate Student(s): Lauren Leitner
Graduate Student(s): Zachery Mielko
Faculty Mentor(s): Martin Hudson

Mutations in the human KAL1 gene causes X-linked Kallmann Syndrome (KS), a genetic disorder characterized by failure to undergo spontaneous puberty and loss of sense of smell. These symptoms occur due to failure of the olfactory neurons to connect to the olfactory cortex, coupled with defects in anterior pituitary gland function and gonadotropin-releasing hormone (GnRH) release. No rodent models are available for this genetic disorder, although orthologs of this gene exist in other organisms, including the nematode C. elegans. As such, we are using "the worm" as a model organism to study the transcriptional regulation of kal-1, which is the C. elegans ortholog of the human KAL1 gene. C. elegans is an ideal system for genetic analysis because of its brief life cycle, transparency, and ease of genetic manipulation. Importantly, its genome shares 40% homology to the human genome. We used publically available Chromatin Immunoprecipitation-Sequencing (ChIP-Seq) data, along with a basic Helix-Loop-Helix (bHLH) interactome database, to identify candidate genes that could be potential regulators of kal-1 gene expression. One of the genes we identified is eor-1, an ortholog of the human BTB/zinc-finger transcription factor PLZF (Promyelocytic Leukaemia Zinc Finger Protein), which is important in cell cycle control. Initial data suggests that eor-1 loss-of-function mutants have defects in kal-1::GFP reporter gene expression in the ventral nerve cord, when compared to wildtype controls. This suggests that eor-1 is a potential transcriptional regulator of kal-1 in motorneuron development. To further investigate the relationship between these two genes, we plan to identify eor-1 binding sites in the kal-1 promoter via a deletion analysis approach. In addition, we will cross a ventral nerve cord-specific red fluorescent protein (RFP) marker into eor-1 mutants to determine whether the differences we noticed were due to a loss of kal-1 gene expression, or due to a failure in ventral neuron fate specification. Confirmation of eor-1 as a kal-1 transcriptional controller suggests that the human ortholog, PLZF, may be a novel KS gene.

Do the Transcription Factors sea-1 and ztf-29 Control kal-1 Gene Expression?
Poster Presentation
Undergraduate Student(s): Kaylee Bronson, Victoria Owens
Graduate Student(s): Wendy Aquino Nunez
Faculty Mentor(s): Martin Hudson

Caenorhabditis elegans is a free-living, non-parasitic nematode found across the globe. C. elegans are an extremely useful model that can be used to effectively study human health and disease. For instance, 60-80% of human genes have an ortholog in the genome of C. elegans, including 40% of genes associated with human diseases. An example is Kallmann Syndrome, a human disease that results in the delay or failure to undergo puberty along with an impaired or loss of sense of smell. X-linked Kallmann syndrome is caused by mutations in the human KAL1/anosmin gene. The KAL1 ortholog in C. elegans is kal-1 and mutations in this gene also cause Kallmann syndrome-like defects in worm embryonic development. Specifically, kal-1 has been found to promote ventral neuroblast migration prior to epidermal enclosure, and is required for epithelial morphogenesis and axon branching. In relation, the human gene NEUROD has been discovered to encode basic helix-loop-helix (bHLH) transcription factors that interact with other bHLH to form heterodimers and function as transcription factors for genes with a specific DNA sequence known as the E-box and regulators of gene expression. The ortholog of NEUROD in the C. elegans genome is cnd-1. This gene is predicted to also function as a transcriptional regulator during development with activity required for several phases of motor neuron fate specification. Our preliminary data suggests that cnd-1 may control kal-1 gene transcription. However, it is not known if cnd-1 directly regulates transcription of terminal fate genes such as kal-1, or indirectly, via one or more additional transcription factors. We recently generated a comparative transcriptome of wild-type and cnd-1 mutant embryos. We found that the transcription factors sea-1 and ztf-29 are both down-regulated in cnd-1 mutants, suggesting that these genes may be responsible, in part, for some apparent cnd-1 dependent phenotypes. sea-1 is gene dosage-dependent and functions by positively regulating the transcription of the main sex gene in C. elegans, xol-1. ztf-29 is a part of the zinc finger transcription factor family. The human ortholog of ztf-29 is Fezf2, which is a transcription factor important for brain development and cell identity, and has been associated with autoimmune diseases, cancers, and autism. We are in the process of crossing kal-1-GFP reporter genes into both sea-1 and ztf-29 mutant backgrounds to examine their effect on kal-1 gene transcription.

Cell Lineaging as a Tool to Identify Novel kal-1 Transcriptional Regulators
Poster Presentation
Undergraduate Student(s): Dalton Carriker
Graduate Student(s): Zachery Mielko
Faculty Mentor(s): Martin Hudson

The objective of my research is to determine which transcription factors regulate kal-1 gene expression. This gene is of great interest because mutations within its locus have been documented in patients with Kallmann Syndrome (KS), a rare genetic condition that alters olfactory sensation and also hypothalamic neuron migration, which ultimately inhibits reproductive development. Over 20 KS genes have been identified to date, although only 35% of KS patients have identifiable mutations in those genes. This suggests that additional KS-related loci remain undiscovered. We hypothesize that transcription factors required for the expression of known KS genes may be KS loci in their own right. The kal-1 gene is strongly conserved between vertebrates and invertebrates, but is curiously not found in rodents. As such, we are we are using a C. elegans nematode model of KS to facilitate our research. Previous studies in the Hudson lab indicated that cnd-1, the worm ortholog of human NeuroD1, can potentially regulate kal-1 expression in a sub-set of embryonic cells. To confirm this, we developed a C. elegans strain bearing markers for both cnd-1 and kal-1. A population of anterior embryonic cells clearly co-label with both markers, suggesting that cnd-1 could indeed be a transcriptional regulator of kal-1 gene expression. This assay led us to construct a cell lineaging strain of kal-1 bearing a cnd-1 deletion allele. We hypothesize that cnd-1-dependent control of kal-1 will lead to abnormal marker gene expression. We can also use the cell lineaging process to illustrate the fate and terminal identity of these cells later in neural development. These analyses will allow us to validate the preliminary screen and will direct our efforts regarding the identification of additional factors involved in kal-1 transcriptional regulation.

Ephrin Signaling in C. elegans Interneuron Development
Poster Presentation
Undergraduate Student(s): Christopher Benton
Graduate Student(s): Tyler Hill
Faculty Mentor(s): Martin Hudson

The Eph receptor tyrosine kinases and their cognate ephrin ligands have multiple roles in nervous system development including axon guidance, cell migration, and synaptic plasticity. Vertebrates have multiple Eph receptors (EphRs) and ephrin ligands, making it difficult to study this pathway in detail. In contrast, the nematode C. elegans has only a single Eph receptor and four ephrin ligands, making it a powerful system to study EphR/ephrin function at the molecular, cellular and developmental level. In addition, loss-of-function mutations are available in all of these genes, many of which display distinct phenotypes. We recently showed that defects in EphR/ ephrin function lead to dramatic changes in development of the AIYL and R interneuron pair. These interneurons are responsible for many functions, including processing of sensory cues to the command motor system. Loss-of-function mutations in the ephrin gene efn-1 causes defects in the ventral contact between the AIYL and R neurons. However, we do not know whether efn-1 functions cell-autonomously within the AIY interneurons, or non-cell autonomously, in the surrounding tissue. We will address this question by using tissue and cell-specific transgenic rescue approaches.

Why the Worm Turned: Eph Receptor Function in C. elegans Locomotion
Poster Presentation
Undergraduate Student(s): Ashtyn B. Johnston
Graduate Student(s): Tyler Hill
Faculty Mentor(s): Martin Hudson

In order to survive, an organism must be able to receive, integrate, and respond to sensory stimuli. However, the neural basis of sensory perception and response is difficult to study in highly complex animals, such as humans, and is therefore poorly understood. The nematode Caenorhabditis elegans is a relatively simple organism yet displays distinct many distinct behaviors. It has a transparent body, invariant cell lineage, and only 302 neurons comprise its nervous system; together these make it a useful system to study survival behavior at the cellular level. We are focusing our studies on the structure of interneurons in the sensory pathway that affect food-seeking behavior in C. elegans. Much of the thermosensory and chemosensory information that the nematode receives from its sensory neurons is sent to a pair of interneurons call AIYL and AIYR. The Eph receptor tyrosine kinase pathway is required for many aspects of nervous system development and studies previously performed in the Hudson lab showed that EphR and ephrin mutations could greatly affect the shape of AIY interneurons. We hypothesize that C. elegans with defective interneurons will exhibit defects in food-seeking behavior. Wild type animals find food using a combination of long straight "runs," coupled with sharp changes of direction (omega turns), in addition to a biased movement towards a target called "weather vaning." We found that nematodes with loss-of-function mutations in the Eph receptor gene vab-1 have a behavioral phenotype in which they continuously move in a circle, with and without a food stimulus. We are using a high-resolution camera system and tracking software to investigate whether this circling phenotype is dependent on proper AIY development. We will also examine mutations in genes coding for ephrins, the canonical ligands of the Eph receptor, to see how they affect AIY morphology and nematode behavior.

Abnormal Cardiac Patterning and Development in Akirin Embryos
Poster Presentation
Undergraduate Student(s): Madison Hupp *[University Honors Scholar]*
Faculty Mentor(s): Scott Nowak

Akirin is a highly conserved nuclear transcription co-activator that is essential for proper Twist-regulated gene expression during the embryonic myogenesis program. While Akirin has previously been shown to co-regulate the patterning of the skeletal musculature, recent studies have implicated Akirin as a crucial regulator of the tinman locus during specification and patterning of the cardiomyoblasts, the muscle cells that will form the dorsal vessel or heart. akirin mutants display a highly disorganized dorsal vessel, marked by missing cardiomyoblasts, and highly aberrant morphology. We are currently employing fixed embryo

and live-imaging techniques to image heart formation in akirin mutant embryos, as well as dorsal vessel contraction in akirin mutants. Our results indicate that akirin mutant hearts are patterned abnormally from the onset of cardiac specification, and that the migration of cardiomyoblasts appears to be negatively affected as a result of a loss of Akirin. Given that Akirin is a highly conserved protein among metazoans, it is likely that these results provide a novel mechanism for cardiac specification and patterning that is similarly conserved from insects to mammals.

Interaction of Akirin with Muscles Wasted During Myogenesis
Poster Presentation
Undergraduate Student(s): Courtney Willett
Faculty Mentor(s): Scott Nowak

We have recently identified the highly conserved nuclear co-factor Akirin as an essential partner during the process of Twist-mediate gene activation during embryonic myogenesis. akirin mutants display multiple defects in muscle patterning, with missing, misattached, and/or duplicated muscles. Live imaging data indicates that the muscles that do form are morphologically thinner and weaker than those observed in wild-type sibling embryos, and that these muscles rapidly deteriorate prior to hatching. These akirin mutant phenotypes were reminiscent of muscles wasted (mute) mutants; the specification, positioning, and patterning of mute mutant muscles initially form, but rapidly degenerate as the embryo nears hatching. Despite these phenotypic similarities, a connection between the two had yet to be described. Using a combination of confocal-based live imaging of developing embryos, as well as analyzing whole-mount fixed embryos, we have confirmed a genetic link between these loci. akirin/mute double heterozygous mutant embryos display a profound disorganization of the embryonic muscle pattern, with severely degenerated muscles, large numbers of unfused myoblasts, and abnormal patterning and formation of muscle groups in pre-hatching embryos. While a direct interaction between these two gene products is currently under investigation, these data strongly indicate a potential interaction during the myogenic process.

Comparison of Aflatoxin and Non Aflatoxin Producing Aspergillus SPP. in Contaminated Peanuts
Poster Presentation
Undergraduate Student(s): Paul Branham, Sina Fleke
Faculty Mentor: Premila Achar

Peanut contamination by Aspergillus flavus, the most common aflatoxin B1 (AFB1) producing fungus in peanuts, continues to be a serious problem in Georgia and other peanut growing states. There is no direct action to control fungi that produce aflatoxin in peanuts, and the industry suffers serious economic losses due to aflatoxin outbreaks year after year. Aflatoxin is a very potent carcinogen produced by different species of Aspergillus. The goal of this study was to categorize Aspergillus flavus strains by cultural as well as PCR methods to detect and

selectively distinguish toxin and non-toxin forms of A. flavus in contaminated peanuts. In addition, sequencing was carried out to establish molecular relatedness among the strains based on geographical distribution. In the present study, multiplex PCR was used for the detection of genes located at different loci coding enzymes in the aflatoxin biosynthetic pathway of A. flavus. Peanuts were collected from four peanut growing states, which are Georgia, Virginia, North Carolina, and New Mexico. DNA for all samples were extracted using MOBIO kit (Fischer Scientific). Ribosomal DNA (rDNA) was amplified using PCR with universal primers, internal transcribed spacer (ITS) 1, and (ITS) 4 using standard protocol for non-toxigenic form. Nor and Ver are genes associated with aflatoxin biosynthesis and Nor-1 & Nor-2, and Ver-1 & Ver-2 were used to detect the toxin forms. The Sanger sequencing method was used to sequence the ITS and NOR regions. PCR amplification of all samples tested with ITS primers ranged from 550-600 bp for non-toxin forms of both A. flavus and A. parasiticus. The presence of both Nor and Ver genes were detected only in the aflatoxinogenic isolated from both of the species at 400 bp. It is concluded that genes involved in the aflatoxin biosynthetic pathway may form the basis for an accurate, sensitive, and specific detection system, using PCR, for aflatoxigenic strains in edible peanuts. The sequencing results showed very little variation among A. flavus strains isolated from peanuts collected from different states. One possible explanation for the low genetic variation among A. flavus strains might be random mutation or single nucleotide polymorphism. Our research will further focus on screening and detection of A. flavus in contaminated peanuts from other geographical areas. The extent of contamination and quality of peanut products varies with geographic location, agriculture, and agronomic practice. We might be able to establish significant molecular relatedness based on geographic distribution.

Lateral Abdominal Muscles as a Model for Studying Muscle Atrophy in Drosophila
Poster Presentation
Undergraduate Student(s): Natasya Tamba
Faculty Mentor(s): Anton Bryantsev

Drosophila has been notoriously instrumental in the uncovering of genetic mechanisms of muscle development, however it is generally considered less attractive for studying post-developmental plasticity of muscles. This is because the most studied muscles, flight and jump muscles, remain unchanged in size and morphology throughout the life of adult flies. We recently found that Lateral Abdominal Muscles (LAMs), small muscles underlying the abdominal wall, can undergo atrophic changes in response to aging and experimentally-induced cancer cachexia. The relative ease of abdominal preparations, as well as the multitude of LAMs per fly, makes this model suitable for quantitative analysis. Using a genetic approach, we demonstrate that the experimental up-regulation of muscle structural gene expression can ameliorate LAM atrophy in aging flies. Our study indicates that LAMs can be a useful model for studying genetic components of muscle atrophy.

Finding the Key Causative Genes Involved in Muscle Wasting
Poster Presentation
Graduate Student(s): Matthew Giedd
Faculty Mentor(s): Anton Bryantsev

Systemic wasting of body mass is a hallmark of cancer. Muscle degeneration particularly presents significant complications in cancer treatments, as it precludes administration of chemotherapy and/or surgical interventions. In many cases, progressive muscle weakness can become a primary cause of mortality in cancer patients. Most commonly seen in sufferers of gastric and pancreatic cancers, tissue degeneration proceeds regardless of increased nutritional uptake. The exact mechanisms behind this wasting are not yet understood, but if discovered, may inform the process of clinical treatment development. We have reproduced muscle wasting in the model organism, the fruit fly Drosophila melanogaster. When tumors are experimentally induced in the gut, the flies exhibit targeted degeneration of flight muscles, while other muscle types remain relatively intact. To determine molecular factors that mediate such specific muscle degradation, we have analyzed the changes of gene expression in cancer-responsive muscles before and shortly after the onset of tumor. Based on our analysis, we have selected candidate genes whose activity significantly changes in the presence of experimental tumors. These genes belong to various regulatory networks controlling transcription, hormonal signaling, mitochondrial respiration, and proteolytic degradation. Using the advantage of the Drosophila model, we then modulate expression of our candidate genes in an on-or-off manner to recapitulate muscle degradation and death. Because of significant evolutionarily conservation of the candidate genes, our study is aimed at revealing novel genetic components in muscle wasting across species.

Screening for Genetic Factors that Determine Muscle Specialization
Poster Presentation
Graduate Student(s): Ashley McDougal
Faculty Mentor(s): Anton Bryantsev

Here we study a very basic question of how similar tissues come to express different genes, which can be seen in muscles destined to perform different functions. In our model organism, the fruit fly (Drosophila melanogaster), the large flight muscles in the thorax contract very frequently and can work for hours without fatigue. In contrast, small muscles in the abdomen sparingly contract, and do not support extensive physical load. These two muscle types demonstrate significant differences at the morphological as well as molecular levels. Specifically, flight and abdominal muscles express distinct muscle genes that are important for the same function, muscle contraction. We have characterized a reporter system made on the basis of differentially expressed muscle genes, Act57B and Act88F. This system will be used in genetic screening to identify and potentially unravel important genetic factors controlling the selectivity of gene expression in muscle specialization. We hypothesize that members of

chromatin remodeling complexes can be involved in controlling selective gene expression in different muscle types.

Complex Effects of Cadmium Toxicity Revealed with the Fruit Fly Model
Poster Presentation
Undergraduate Student(s): Hannah Mary Stratton
Faculty Mentor(s): Anton Bryantsev

Cadmium (Cd) is a toxic heavy metal found as a trace element in soils and bodies of water. A certain amount of Cd is expected to be encountered in the human diet, however the amount of Cd being ingested through food and use of smoking tobacco has been increasing. Despite its increasing presence, the potential hazards of Cd accumulation have not been investigated. In our study, we used fruit flies (Drosophila melanogaster) as a model for the different effects of Cd toxicity. In chronic studies, we observed muscles losing more integrity than normal flies unexposed to the Cd treatments. In our acute studies, we observed visible changes in the epithelium of the Cd exposed flies. With these two observations, we decided to focus on the fly muscles and gut epithelia as our target organs for cadmium toxicity. We found exposure to 1mM of Cd was lethal and effectively shortened fly lifespan from 5 weeks to around 2 weeks. We associate this effect of Cd with the damage and death of cells in the gut epithelium responsible for nutrient absorption. In contrast, low doses of 0.1mM Cd, administered chronically, did not significantly alter the survivorship of flies, but there were increases in muscle fiber loss in aging flies and increased instances of muscle degeneration. Our results suggest chronic exposure to non-lethal doses of Cd can exacerbate the process of aging, evident by the increased muscle fiber loss in flies aged with Cd, and that acute exposure has detrimental effects on the gut epithelia shown by decreased cell integrity. In the future, we intend to use this model to identify potential genetic targets that may increase tolerance to acute and chronic toxicity of cadmium and other toxic heavy metals.

HV1 Proton Channels in Dinoflagellates: Not Just for Bioluminescence
Oral Presentation
Undergraduate Student(s): Gabriel Kigundu
Faculty Mentor(s): Susan M. E. Smith

HV1 proton channels have been confirmed to be essential to bioluminescence in dinoflagellates. Non-bioluminescent dinoflagellate species have also been shown to contain bona fide HV1 raising the question of their function in those species. Database searches of publicly available dinoflagellate transcriptomes using HV1's signature profile yielded hits that contained the sequence features diagnostic to all HV1 so far confirmed. Sampled species as well as species in which HV1 was not detected are widely distributed in the accepted dinoflagellate phylogeny. Phylogenetic reconstruction using HV1 sequence displayed relationships among dinoflagellate species similar to the accepted phylogeny. Generated trees

and sequence analysis revealed two major sequence groups with differences in several sequence regions. HV1 sequence group does not correlate with presence of theca, autotrophy, geographic location, or bioluminescence; nor does presence or absence of HV1 in a species. We conclude that HV1 has an ancestral function in dinoflagellates that has been co-opted by bioluminescence.

Changes in pH Dependence Caused by Histidine Mutants of LBP
Poster Presentation
Undergraduate Student(s): Beryl Khakina
Faculty Mentor(s): Susan M. E. Smith

The biological production of bioluminescence in species of dinoflagellates serves as an ideal tool to study the control of protein activity by pH. The dinoflagellate species Lingulodinium polyedrum has three components that generate bioluminescence: the enzyme luciferase (LCF), the substrate luciferin (LH2) and luciferin binding protein (LBP). At high pH, LBP binds LH2 and LCF is inactive, while at low pH LBP releases LH2 and LCF is active. Specific conserved histidines in LCF have been shown to perform the pH sensing that controls LCF activity; here. we examine the role of histidines in pH control of LBP binding to LH2. We performed site directed mutagenesis to change selected LBP histidines to alanine and confirmed mutants with commercial DNA sequencing. Wild type and mutant LBPs expressed and purified from E. coli LBP were "charged" by incubation with LH2 on ice at pH8 followed by size exclusion chromatography to remove free LH2. Mutation of any histidine in LBP involved in pH sensing will result in lack of "charging" and inability to supply the LH2 substrate to LCF in an assay that measures bioluminescence catalyzed by LCF. We present the pH sensing results of specific histidine mutants of LBP assayed to date.

Heat Map Modeling of Cancer Mutations in the Electron Transport Chain - Complex III
Poster Presentation
Undergraduate Student(s): Ben Crews
Faculty Mentor(s): Estella Chen Quin

Cancerous tumors commonly have defects in their mitochondria and the electron transport system (ETS). Defects in the ETS are also the primary source of reactive oxygen species, which can lead to mutations in other (cancer) genes and stabilize the mutagenic factor HIF-1α. Previous analysis of ETS mutations showed that the CytB gene of Complex III was biased towards cancer mutations in highly conserved positions (Stafford and Chen-Quin, 2010). In order to visualize these mutations in a protein context, and get an idea of potential crucial mutation positions within the mitochondria, heat maps of Complex III on the electron transport chain (ETS) were made. A heat map is a representation of data where the individual values are color-coded according to a certain standard. Heat maps were made for both the control data and cancer data. The control data comes from the 1000 Genomes Project, in which the European, African American, Mexican American, and Han Chinese, Beijing populations

were used. The cancer data comes from The Cancer Genome Atlas Project (cervical cancer) via cBioPortal for Cancer Genomics. The heat maps were created by first collecting the nonsynonymous mutations in each data set. These nonsynonymous mutations were analyzed to generate a Polymorphism Phenotyping v2 (PolyPhen-2) score, which predicts the possible impact of an amino acid substitution on the structure and function of a human protein. Next, the nonsynonymous mutations were color coded according to their PolyPhen-2 score. Homology modeling with a bovine Complex III structure was performed to make the structure represent the human Complex III. Finally, Pymol was used to hang the now color-coded nonsynonymous mutations on the Complex III homology model. The heat maps will be compared to each other for similarities and differences. Statistical analysis will be performed by a collaborator at the CDC to determine the statistical relevance of high PolyPhen-2 scores relative to protein topology.

Voltage-Gated Sodium Channel Auxiliary Subunits
Undergraduate Student(s): Kimberly Meyberg
Faculty Mentor(s): Tsai-Tien Tseng

Voltage-gated sodium channels are well known for their role of initiating action potentials in electrically excitable cells. These cells rely on the ability of voltage-gated ion channels and associated auxiliary subunits to coordinate electrical activities for communication among other cells. Auxiliary subunits provide diversity in functional roles of the principal subunit, such as transport kinetics and biogenesis. One family of sodium channel auxiliary subunits is described here: beta1 (SCN1B) and beta3 (SCN3B). Beta1 and beta3 auxiliary subunits have been shown to have a role in modulating the gating kinetics of voltage-gated sodium channels. We are interested in the path of evolution for these auxiliary subunits. Previous findings were expanded after BLAST searches to reveal new homologues of beta1 and beta3 subunits, giving a total of 594 sequences, an expansion from eight sequences. Hydropathy plots demonstrated similarities in topology between beta1 and beta3, indicating that both subunits contain one transmembrane helix. Sequence similarity was demonstrated by a multiple sequence alignment. A phylogenetic tree was derived from the multiple sequence alignment to infer evolutionary relationships among these potential homologues. Partial alignment revealed several cysteine residues conserved throughout the sequences to form disulfide bonds. Mutations that cause disruptions in these disulfide bonds may result in epilepsy syndrome. Disulfide bonds between cysteine residue number 21 and number 96 have important implications for interaction with the pore-forming alpha subunit. Disulfide bonds between cysteine residue number 2 and number 24 are responsible for the stabilization of the hydrophobic core of the immunoglobulin domain on the N-termini of the beta subunits. In addition to sequence-level conservations, our results will show an expanded view on the phylogenetic relationships among members of this family.

Voltage-Gated Calcium Channel Auxiliary Subunits
Poster Presentation

Undergraduate Student(s): Reagan Foster, Danielle Varljen
Graduate Student(s): Kevin Bennett
Faculty Mentor(s): Tsai-Tien Tseng

Voltage-gated ion channels have unique characteristics that have intrigued many scientists alike because of their ability to conduct an electric impulse to transmit a signal in excitable tissues. These channels have been found to have associated auxiliary subunits for specific functions. There are two aspects that make auxiliary subunits of interest: 1) modulate transport kinetics and 2) promote biogenesis towards the pore forming principal subunit. Our interest is in the potential evolutionary paths and origins of these auxiliary subunits for voltage-gated calcium channels. Members of Alpha2Delta, Beta, and Gamma families were retrieved from databases via BLAST and found with many more subunits than previously discovered allowing for a better understanding of the subunits. Using methods like multiple alignment, structural analysis with hydropathy plots, redundant sequence elimination, and phylogenetic trees, we were able to utilize different methods for examining the auxiliary subunits. Previously, only a few species were found within each auxiliary subunit family. Today, Alpha2Delta was found to have 74 total sequences, Beta with 338 sequences. One Gamma family was found to have 99 sequences and another Gamma family with 141 sequences. We expanded the Beta family by adding members from organisms such as parasitic roundworm, pea aphid, and nine banded armadillos. We found mostly vertebrate sequences in the Gamma families. These sequences were then put into a phylogenetic tree to analyze the evolutionary origins of each subunit in comparison with their individual clusters. We will discuss the new data for each subunit, present phylogenetic analyses, and discuss potential path of evolution for these calcium channel auxiliary subunits.

Optimization of Bioinformatic Pipelines for Foodborne Pathogen Detection with Next-Generation Sequencing
Poster Presentation
Undergraduate Student(s): Danielle Varljen
Faculty Mentor(s): Tsai-Tien Tseng

Culture-based protocols have been ingrained into the determination of food safety in a production environment. With the advent of next-generation sequencing (NGS), the genomic content of a complex microbial community can be detected without the reliance on culture-based protocols. Certain challenges in NGS arose from assignment of shared DNA regions to specific reference genomes. And others will require de novo assembly of many novel genomes, as a result of lacking reference genomes for certain species. To completely reduce dependency on culture-based protocols, reliable analytical pipelines will need to be devised for accurate identification and quantitation of individual species. Here we present a comprehensive evaluation of various software packages and complementary technologies associated with NGS to establish a potential automated pipeline for detection of foodborne pathogens. To simulate contamination by foodborne pathogens, data sets from experiments conducted by the

Food and Drug Administration (FDA) and deposited in NCBI Sequence Read Archive (SRA), under accession number SRP062607, were selected for our analysis. Our goal is to select the best software tools to complement NGS detection of foodborne pathogens by an evaluation of processing time and the number of discovered operational taxonomic units (OTU). Specifically, we selected the following software packages for our analysis: MOCAT2, Pavian, MetaQUAST, and SLIMM. The above were selected for their shared characteristics of being pipelines rather than single stand-alone software tools. Here we report on preliminary data to demonstrate deficiencies in the default database for the software, Kraken, and provide a custom built database and indexes for Bowtie mappers from genomic sequences of phage and bacteria. Furthermore, we adapted a protocol to generate a library for the draft of spinach sequences, available to public, as a way to eliminate host genomic sequences from the record of SRP062607. As many tools were not designed for foodborne pathogen detections, our preliminary results intend to provide new design insights towards improved accuracy and applicability.

Effects of Amphetamines on Conditioned Place Preference Behavior
Poster Presentation
Graduate Student(s): Brad Serpa
Faculty Mentor(s): Lisa Ganser and Adrienne King

Since the 1960's, the use of zebrafish for research has become increasingly popular, especially in the field of neuroscience. The addiction phenotype has gained considerable attention within the past decade. Addiction can be defined as the uncontrolled compulsion towards a stimulus in spite of the negative effects on normal brain function. The research proposed will utilize the controlled substance amphetamine. Amphetamine is a dopamine reuptake inhibitor, commonly administered for the treatment of ADHD; however, it is also a common drug of abuse among college students. In order to address the question of whether the zebrafish are addicted to substance of abuse, a conditioned place preference paradigm is used. Conditioned place preference is a common alternative to drug self-administration to evaluate the rewarding effects of psychoactive compounds. In general, this procedure is governed by basic Pavlovian principles, in that the incentive salience of the treatment serves as the unconditioned stimulus (UCS). When paired with neutral environmental stimuli, the UCS acquires secondary motivational properties that induce approach behavior in the absence of the UCS, serving as conditioned stimuli (CS). The UCS can be virtually any substance that is experienced as rewarding by the animal, such as drugs or natural appetitive stimuli, and tactile, olfactory, spatial, and visual contextual cues can be used as CS (Echevarria 2014).

Effects of Amphetamine on Zebrafish Behavior
Poster Presentation
Undergraduate Student(s): Miriam (Mik) Chari *[University Honors Scholar]*
Faculty Mentor(s): Lisa Ganser

This research project is designed to give further insight into whether or not there are changes in the behaviors of zebrafish (Danio rerio) after they have been fed a diet containing amphetamines. A distinction between the behaviors, prior- and post- amphetamine ingestion, such as preferences in visual environment (tank divided into a clear glass half versus black dot-patterned half), depth at which swimming is normally occurring (top, middle, bottom of tank), and signs of swim pattern or frequency changes may lead to a better understanding of the impact of amphetamines. A sample size of twenty zebrafish was tested over three trials for changes in the above parameters to determine Conditioned Place Preference (CPP). The size of the tank was altered in the CPP trials. In trial one, we used a two gallon tank, and trials two and three used a two and a half gallon tank. Furthermore, in the first and second trails the fish were observed on the first day in the CPP tanks, whereas the fish in trial three were given a seven day adjustment period prior to data collection. The zebrafish received a forty microgram (40 ï¬g) dosage of amphetamines one time per day in their food, which was composed of agar, zebrafish food and algae flavor boost. The zebrafish were given amphetamine for four days in a row and then observed on the fifth day (Nikovic et al., 2005). The zebrafish were recorded and analyzed prior to receiving amphetamine, then these prior behaviors were compared to those behaviors exhibited post-drug ingestion. The results of this research may set part of the foundation for further study into the addictive capacity and behavioral influence of amphetamines on humans as well.

Correlates of Amphetamine Addiction in the Zebrafish Model
Poster Presentation
Undergraduate Student(s): Paul Hwang-Bo, Luke Dickson, Douglas Grandberry
Faculty Mentor(s): Lisa Ganser and Adrienne King

Though some behavioral and anatomical phenotypes of amphetamine have been studied in humans, the potential for other vertebrate animals to model correlates of addiction is necessary for scientists to parse specific effects on brain anatomy and behavior in simpler systems. The zebrafish, (Danio rerio) serves as an ideal model for defining the correlates of addiction, especially those effects on the nervous system, because the zebrafish brain gives a simpler, yet translatable model of the human brain, and the survival and locomotive behaviors and the neural circuits that govern them have been specifically identified. A distinction between the behaviors, prior- and post- amphetamine ingestion, as well as changes in connectivity of neural circuits and the presence of permissive signaling proteins mirror changes noted in mammalian and human mammalian brains following amphetamine exposure. A sample size of twenty zebrafish was tested over three trials for changes in the above behavioral parameters to determine Conditioned Place Preference (CPP), a measure of anxiety. The zebrafish received a forty microgram (40 ï¬g) dosage of amphetamines one time per day in their food, which was composed of agar, zebrafish food and algae flavor boost. The zebrafish were given amphetamine for four days in a row and then observed on the fifth day (Nikovic et al., 2005). The zebrafish were recorded and analyzed prior to receiving amphetamine, then these prior behaviors were compared to those behaviors exhibited post-

drug ingestion. Following CPP testing, the zebrafish brains were removed and processed for anatomical assays through confocal image analysis. The results of this research may set part of the foundation for further study into the addictive capacity and behavioral influence of amphetamines on humans as well.

Detection of Putative Virulence Factors using Multiplex Polymerase Chain Reaction and Nematode Challenge Assay
Poster Presentation
Undergraduate Student(s): Victoria Foltz, Brian D. Sattelmeier, Rahiq R. Rahman
Research Assistant: Pyeongsug Kim
Faculty Mentor(s): Donald J. McGarey

Aeromonads are Gram-negative bacteria widely distributed in aquatic environments. Once thought to cause diseases only in marine vertebrates, many *Aeromona*s species are known to cause human disease including gastroenteritis, wound infections, septicemia, necrotizing fasciitis and myonecrosis. However, the degree of virulence is highly variable within the *Aeromonas* group likely due to the virulence factors possessed by a particular strain. Several known and putative virulence factors have been described including pilin and non-pilin adhesins, lateral flagella, exoenzymes, siderophores, hemolysins, enterotoxins, cytotoxins, endotoxin, capsule and S-layer. Uniplex and multiplex polymerase chain reaction (PCR) have been used successfully to detect virulence factors individually and in combinations, respectively, in *Aeromonas* spp. isolated from clinical, food, and environmental sources. In this study, multiplex PCR was developed, optimized and tested to detect the presence of genes encoding nine different virulence factors including cytotoxic enterotoxin (*act*), aerolysin (*aerA*), elastase (*ahyB*), enolase (*eno*), serine protease (*ser*), S-layer protein (*ahsA*), Type IV *Aeromonas* pilus (*tapA*), lipase (*lip*), and hemolysin (*ahh1*). Several isolates of *A. hydrophila* (n = 22), *A. salmonicida* (n=1), *A. bestiarum* (n= 5) and *A. aquariorum* (n = 2) were screened for the presence of the listed virulence genes and for expression of factors encoded by these genes. The strains were placed into pathovar (pathogen variety) groups according to the presence/absence combination of these genes/expressed factors per each isolate. Two strains in each pathovar group were selected and tested by nematode (*Caenorhabditis elegans*) challenge assay, to assess how the occurrence of multiple virulence genes is associated to the pathogenicity.

Microbial Source Tracking of Fecal Indicator Bacteria in Three Cobb County Creeks
Poster Presentation
Undergraduate Student(s): Brandi Byler
Faculty Mentor(s): Michael Beach

Numerous Cobb County creeks have been repeatedly identified by Georgia EPD's 303(d) list as "impaired waterways." The local waterways in this study (Sope, Bishop, and Nickajack Creeks) were specifically identified as being impaired by the presence of fecal coliform bacteria. While detection of fecal indicator bacteria from waterways is relatively simple, the

standard microbiological methods to enumerate their numbers do little to identify their source. To this end, microbial source tracking (MST) attempts to differentiate between human and non-human sources of fecal coliforms. Host-specific molecular markers are commonly used as a way to specifically indicate human-derived fecal contamination. An ideal molecular marker for use in MST would be 1) human specific, 2) always present when fecal contamination is present, and 3) have a limit of detection that allows for its use in detecting contaminated environmental samples. We are attempting to implement our own MST system that identifies DNA sequences from human-specific Bacteroides prevalent in feces. Since there is no one molecular target that fits all of these criteria, we have tested multiple Bacteroides DNA markers on raw sewage in attempt to identify those that best satisfy the aforementioned criteria. Our experiments have indeed confirmed the presence of fecal coliforms in the three Cobb County creeks. Additionally, our results have identified a subset of PCR primer pairs that are effective at detecting the presence of human-specific Bacteroides DNA markers. All of our targeted molecular markers have been detected in the creeks examined in this study. By using multiple Bacteroides markers together, we have developed a reliable MST system that is both highly sensitive and highly specific in differentiating between human and non-human sources of fecal pollution in local waterways.

Fin-folds and Autopods Share a Conserved Shh-Gremlin-Fgf Regulatory Network
Poster Presentation
Undergraduate Student(s): Elishka Holmquist
Faculty Mentor(s): Marcus Davis and Amanda Cass

The morphological transition from fins to limbs involved key changes in appendage anatomy, including the loss of the fin-fold (dermal rays) andexpansion/remodeling of the distal endoskeleton to form an autopod (hands/feet) with digits. Fin-folds and autopods have long been considered non-homologous, each thought to be patterned by different developmental mechanisms, despite their similar distal positions within the appendage. However, this view has been recently challenged by our observation of an autopodial-like pattern of HoxD expression in paddlefish fin-folds and functional studies in zebrafish demonstrating a role for 5 HoxA/D genes in dermal ray formation. These insights led us to ask if other components of autopod regulatory networks are also involved in fin-fold development. The gene regulatory networks that integrate limb bud outgrowth and patterning have been partially characterized in tetrapods, revealing molecular interactions between the posterior limb bud mesenchyme (i.e., the zone of polarizing activity, ZPA) and the distal limb bud ectoderm (the apical ectodermal ridge, AER). In this network, ZPA-derived Sonic Hedgehog (Shh) acts through LIM-homeodomain transcription factors (LHXs) to induce the BMP antagonist Gremlin. Gremlin, in turn prevents BMP inhibition of AER derived Fgfs, which maintain ZPA-Shh, resulting in a positive regulatory loop that persists within the autopod-forming field and is required for proper patterning of the digits. According to Thorogood's influential "clock" model, delay in conversion of the AER to a fin-fold prolongs the signaling influence of the AER on the endoskeletal mesenchyme, resulting in expansion of fin radials and a reduction of

the dermoskeleton. Limbs, which lack a dermoskeleton, reflect the extreme of this hypothesis in that the AER (and its proliferative cues) persist through autopod formation. Herein, we test this hypothesis in the American paddlefish, *Polyodon spathula* through a survey of expression of Shh-Gremlin-Fgf transcriptional network components.

Music

The Hero of Hyrule: Musical Topics in the Legend of Zelda
Oral Presentation
Undergraduate Student(s): Nicole Hamel
Faculty Mentor(s): Jeffrey Yunek and Benjamin Wadsworth

Video game music is often derided as being disorganized because it changes according to the personal choices of each player. This belief derives from the fact that traditional music analysis typically applies to fixed scores and thus struggles with analyzing indeterminate music (Medina-Gray 2016). Video game music, however, is not entirely random, but structured around the inevitable progression of events in each video game's story. The life of Link from The Legend of Zelda tells of a hero born in the wilderness who has to overcome trials to attain victory, which closely corresponds to Campbell's hero's journey (1949). The music's correspondence with each element of the hero's journey is explained by an area of music theory called topic theory. In this presentation, I explain how Link's journey from orphan to warrior to savior is communicated through the progression of pastoral, hunt, and military topics. Topic theory is an ideal system for correlating musical excerpts with extramusical events because it ascribes meaning to common musical styles. I extend traditional topic theory to The Legend of Zelda by correlating its music to canonical 18th-century examples. The pastoral topic is used to represent Link's humble origins as an orphan. The hunt and military topics represent his training to become a knight. Link's triumph in becoming the hero destined to save the princess is illustrated through a ceremonial variant of the military topic. This research cultivates a better understanding of the workings of topic theory in video game music by applying topic theory to The Legend of Zelda, thereby increasing our understanding of Link's journey as a hero. This theory holds promise for analyzing other video games that follow the story line of a hero's journey.

Romantic Transcendence in the Second Movement of Beethoven's Fifth Piano Concerto, Op. 73
Oral Presentation
Undergraduate Student(s): Roger Ibrahim
Faculty Mentor(s): Benjamin Wadsworth

Beethoven's acclaimed Piano Concerto in E-flat Major, op. 73 (composed 1809, premiered 1811), is his fifth and last piano concerto, and widely known as "The Emperor." This nickname

was probably related to the heroic style of the work, which was informed by various styles of military music (Plantinga 1998, 256) and by political and social turmoil resulting from Napoleon's empire expanding in Europe. The second movement seems to reject this heroic style through meditative musical behaviors, such as a slow, hymn-like texture and static, sustained textures. It also rejects heroism through a suggestion of Romantic transcendence, that is, the elevation of an individual (here, Beethoven) above their immediate circumstances (the bombardment of Vienna in 1809). In the second movement, transcendence is suggested using higher registers in the solo piano, sometimes associated with chromaticism and trills, and by the blurring of classical sonata form. This presentation will analyze the formal and motivic aspects of the work to describe its transcendental character in depth. I conclude that the piano represents the concept of Beethoven's subjectivity, and that it tries to transcend the objectivity as represented by the orchestra.

Nursing

The Effect of Diabetes Education Versus Usual Care on Clinical Outcomes of Hemoglobin A1C and Weight
Oral Presentation
Graduate Student(s): Kimberly Roberts
Faculty Mentor(s): Janeen Amason and Patricia Hart

Purpose: To determine the effect of formal diabetes education versus usual care on hemoglobin A1C values and weight. Design: A retrospective medical record review of patients included in a Diabetes Registry of a large medical system in the southeast. The researcher compared two groups with a recent diagnosis of type 2 diabetes, one group receiving diabetes education, and the other group receiving usual care in the physician office. Methods: To evaluate the impact of education, pre and post laboratory values for hemoglobin A1C and weight were collected 3 months post education or 3 months post diagnosis for the usual care group. Results: The percent decrease in body weight after 10 hours of formal education group (12.5%) was statistically significant ($p = 0.05$) as compared to the usual care group (1.14%) at 3 months post diagnosis. The percent decrease in A1C for the education group (24.04%) was not statistically significant as compared to the usual care group (28.61%) at 3 months post diagnosis. Discussion: There was a significant difference in the percent weight change between education and the usual care groups. These results suggest that participation in formal DSME and support may improve weight loss for those newly diagnosed with type 2 diabetes. Potential Clinical Relevance: Based on this retrospective chart review patients with newly diagnosed type 2 diabetes who received 10 hours of formal DSME had improved clinical outcomes of decreased weight.

Characteristics of Substance Addicted Mothers and Fathers that Predict Graduation from a Family Treatment Court: A Pilot Study

Poster Presentation
Graduate Student(s): Katherine Barnett
Faculty Mentor(s): Genie Dornan and Janeen Amason

In order to combat the ever-growing problem of substance addiction, some county court systems have developed a Family Treatment Court (FTC). Parents, with minor children, who have pending criminal or delinquency charges may voluntarily enter into the FTC program instead of spending time in jail. The FTC program is a non-adversarial, court program which includes a combination of judicial supervision, frequent drug testing, and participation in a substance addiction treatment program. The purpose of this descriptive, non-experimental, pilot study was to identify characteristics of substance addicted mothers and fathers that may predict graduation from the FTC program. De-identified data was collected from a FTC program in the Southeast. This study examined the following characteristics as predictors for graduation from the FTC program: age, sex, race, marital status, employment status, place of residence, education level, drug of choice, prior criminal history, mental health diagnosis, LSI-R score, participation in CBI, whether the minor children were living in foster care or with family, the total number of days the participant was enrolled in the program and whether or not the participant graduated from the program. Descriptive statistics were analyzed and Chi-Square was run to examine the relationship between the variables and graduation from the FTC program. Four variables were significant as predictors of graduation from the FTC program. Males were more likely to graduate from the FTC program than females. Those participants who used methamphetamines were more likely to graduate from the program than those participants using other drugs or a combination of drugs. The placement of the minor children was also predictive of graduation. Participants whose children were placed with family members or remained with the participant were more likely to reach graduation from the FTC program. Participants whose children were placed in foster care or participants whose children spent time with both family and foster care were less likely to reach graduation. Participants who were negative for a mental health diagnosis were more likely to graduate from the FTC program than those who were diagnosed as having a mental health diagnosis. The results of this study may be utilized by employees of the FTC program in creating interventions and adapting the program to maximize the participant's success to reach graduation. Additionally, this study will guide scholars in designing and conducting further research examining predictors of success in the FTC program.

President's Emerging Global Scholars (PEGS) Program

A Geographic Information System Solution to Addressing the Food Shortage in Nigeria
Poster Presentation
Undergraduate Student(s): Cindi Simmons, Masood Al Ansar Abdul Salam, Janna Pruiett
Faculty Mentor(s): Tim Blumentritt

Research Question: How can collecting and organizing environmental data from GIS help the food shortage and malnutrition in Nigeria? Malnutrition, the lack of sufficient amounts of nutrients, is an issue that affects various countries worldwide. There are many factors that contribute to malnutrition such as a shortage in food supply or inadequate health resources. The country of Nigeria in West Africa greatly suffers from malnutrition, and their population is experiencing an acute food shortage. According to United Nation's Food and Agriculture Organization, the condition is expected to get even worse in the near future due to the lean food and farming season. Extracted data illustrates that about 120,000 people face potential famine while 2 million people are expected to be in a state of emergency. As a result, Nigeria is inhibited from becoming more economically developed. Sustainable development is defined as development that promotes prosperity and economic opportunity, greater social well-being, and protection of the environment. Countries across the world have come to an agreement that sustainable development offers the best path for improving the lives of people everywhere. Geographic Information System, GIS, is a system designed to capture, store, manipulate, analyze, and present spatial or geographic data. Collecting and organizing environmental data from Geographic Information Systems can aid the food shortage and malnutrition in Nigeria because it can be used to obtain many forms of geographical data of a particular region. GIS allows us to view, understand, question, interpret, and visualize our world in ways that reveal relationships and patterns. It also allows people to answer questions and solve problems by analyzing the data in a meaningful format that can be quickly understood and distributed. The goal of this research paper is to further research GIS and analyze ways in which GIS can aid in finding a solution to Nigeria's growing issue of food shortage and malnutrition.

Political Science

The Power of a Movement: How Third-Wave Feminism has Shaped Sexual Violence in the United States
Poster Presentation
Undergraduate Student(s): Natalie Phillips
Faculty Mentor(s): April Johnson

A movement spanning from the early 1990s to the present day, third-wave feminism focuses on a myriad of issues affecting modern women; one of which is sexual assault. As an issue predominantly (but not solely) affecting women, sexual assault is considered a form of gender violence. Third-wave feminism seeks to bring about the end of such gender violence, and by extension, the end of sexual assault. This idea is reinforced in modern feminist literature, in lectures by feminist scholars, and at feminist rallies/protests, like the Women's March of January 2017. The purpose of this project is to explore the impact of third-wave feminist efforts, and to determine whether the goal of reducing the annual number of sexual assaults in the United States has been realized.

Modern Day Corruption in Various Regimes
Poster Presentation
Undergraduate Student(s): Victoria Pancheva, Armena Brown, Sydney Palmer, Kenneth Carmon
Faculty Mentor(s): Esther Jordan

This study will examine the relationship between regime type and the level of corruption in a state. It will conduct a comparative analysis of two democratic countries, Poland and Ghana, and two nondemocratic countries, Russia and Singapore. It will seek to answer the research question: does democracy decrease the likelihood of corruption in a state?

The Refugee Crisis and the Determinants of Responsibility to Protect
Poster Presentation
Undergraduate Student(s): Katherine McNamara, Seychelle Steele, Mary Payton Blackmon
Faculty Mentor(s): Esther Jordan

Responsibility to Protect is a globally enforced norm which all member states of the United Nations signed onto in 2005. However, on a bilateral basis, member states often choose which tenants to adhere to, and which to loosely uphold. This inductive study seeks to address the puzzle of how states decide these factors by attempting to answer the research question: what determines the extent to which an individual state adheres to Responsibility to Protect? Our research will conduct a comparative analysis of Turkey, Germany, and the United States to generate a hypothesis in response to this question. These three cases have been selected on the premise that they have given varying degrees of aid to refugees from different states. Our research will focus on comparing statistical data, as well as each of the three countries' history of refugee acceptance and adherence to the Responsibility to Protect.

Leadership and ROTC: Methods and Optimization of Cadet Leadership
Poster Presentation
Undergraduate Student(s): Barrett Tallant
Faculty Mentor(s): James Summersell and Kami Anderson

Leadership, that abstract quality that most dismiss as a natural talent. When we see a good leader we see them as gifted with leadership, and a bad leaders emerges they must be lacking in that talent. The reality is, leadership is a multifaceted skill that must be constantly refined until one can become a truly great leader. Good leaders and bad leaders may are not separated by how much leadership ability they had at birth. Rather, they are distinguished from one another by how much time and practice they put into the skill of leadership. The United States Army has recognized this and created the ROTC program to take young college students and transform them into great leaders through a multi-tiered approach. Strengthening them physically, mentally, and emotionally in order to prepare them to lead young men and women.

Psychology

The Intergroup Sensitivity Effect Among Racial Groups
Oral Presentation
Undergraduate Student(s): J. Caleb Lang, Chloe McLaughlin
Faculty Mentor: Katherine White

The Intergroup Sensitivity Effect (ISE) is the tendency for people to respond more negatively when their group is criticized by an outgroup versus an ingroup member. The ISE has been demonstrated for nationality and profession, but not race. The present study examined how the ISE applies to racial groups. We expected White individuals to react more negatively to criticism stated by African-Americans versus other Whites. Similarly, we expected African Americans to react more negatively to criticism when stated by White Americans. Forty-six participants completed an online survey where positive or negative statements about the participants' ingroup were spoken by either an ingroup or an outgroup member. Participants then rated the statements' legitimacy, fairness, agreement, constructiveness, and negative as well as their overall feelings toward the person who made the comments. Due to the small sample size, analyses were limited to White participants (N = 29). Hypotheses were partially supported. Criticisms were rated as significantly less fair and agreement was lower when delivered by an outgroup individual. There were no significant differences on any other DV or for praise. Nonsignificance or even opposite patterns were observed for variables that required more personal evaluations of the speaker, perhaps reflecting social desirability.

Factors Related to Blame Taking among Friends: Closeness, Beliefs About Reporting Wrongdoing, and Identity
Poster Presentation
Undergraduate Student(s): Carly Burger, Mikayla Dittman, Cooper Jannuzzo
Faculty Mentor(s): Jennifer Willard

People sometimes falsely confess because of a desire to protect a perpetrator (Gudjonsson et al., 2007). These individuals typically have a preexisting relationship with the perpetrator (Willard et al., 2015). Among friends, it is likely that closeness influences people's likelihood of falsely taking the blame. Additionally, individual differences, such as people's attitudes about reporting wrongdoing and identity constructs, could factor into people's false blame-taking behavior. In general, people with anti-snitching mentalities are more inclined to protect people than those without (Morris, 2010). Thus, we would predict that people with more negative attitudes about reporting wrongdoing would be more likely to falsely take the blame. In regards to identity, we focused on three general measures of identity (i.e., independent, interdependent, and relational self-construal) and one specific measure (i.e., oneness). We sought to examine how these constructs related to people's willingness to take the blame for

either a close or causal friend's wrongdoing. Participants (N = 170) were randomly assigned to think of a specific casual or close friend while reading a hypothetical scenario in which the friend engages in negligent driving. Participants reported their willingness to take the blame for the friend's offense and measures of individual differences. All three self-construal measures were unrelated to willingness to take the blame; thus, excluded from subsequent analyses. We conducted a step-wise hierarchical regression analysis in which willingness was the dependent variable. In the first step, sex and friendship closeness served as predictors. In the second step, oneness and attitudes about reporting wrongdoing served as predictors. Sex was a significant predictor of willingness -- male participants were more likely to take the blame than female participants (b = -.45). Oneness was positively related to blame taking (b = .13). More positive attitudes about reporting wrongdoing were related to lower willingness to take the blame (b = -.58). Although friendship closeness was a significant predictor in the first step (b = .41), it did not uniquely predict willingness in the second step (b = .18). Next, we explored the possibility that oneness mediated the association between friendship closeness and willingness to take the blame. The direct effect of closeness on participants' willingness was not significant. However, closeness did have an indirect effect on willingness through oneness (b = 0.24, 95% CI [0.05, 0.50]) -- a pattern consistent with mediation. These results may help inform law enforcement under what conditions people provide false confession.

Gender and Willingness to Take the Blame Among Close Friends
Poster Presentation
Undergraduate Student(s): Mikayla Dittman, Dara Latimer, Noel Byers Carter
Faculty Mentor(s): Jennifer Willard

Desire to protect another person is often cited as a reason people falsely take the blame (Gudjonsson, 2003). Results within the literature on helping behavior suggest that the relationship between the provider and the recipient influences the provider's willingness to help. Existing literature indicates a gender difference in helping behavior, such that men are more likely to provide help in a risky situation and women are more likely to receive help (Eagly & Crowley, 1986). We predicted that sex (same-sex versus opposite-sex friendships), benevolent sexism, and dominance versus dependence in the relationship would influence people's willingness to falsely take the blame for a close friend's offense. Male and female participants thought of a specific male or female friend and read one of two scenarios describing an offense committed by the friend (i.e., driving negligence or mismanagement of funds). Participants' perceptions and gender-related constructs were assessed. Perceptions regarding the ease of blame taking and friend's responsibility consistently predicted willingness to falsely take the blame. Female participants were slightly more willing to falsely take the blame for female rather than male friends. Among female participants, benevolent sexism negatively predicted willingness to take the blame for female friends, but not for male friends.

Estrogen and Emotion Regulation: An Examination of Self-Report and Biological Data
Poster Presentation
Undergraduate Student(s): Jesse Edmond, Luana Scienza, Bethany Wyman, Jasmine Williams, Rebekah Fallin, Tiana Britton, Jamie Miller, Nhat Nguyen
Faculty Mentor(s): Ebony Glover, Sharon Pearcey, and V. Doreen Wagner

Women have higher prevalence rates of anxiety disorders compared to men. However, the biological basis of these sex disparities is not well understood. Estrogen has been identified as playing a critical role in women's emotional regulatory behaviors. The current project examines menstrual cycle phase and sex hormone effects on fear behaviors in women compared to men. Individuals with emotional dysregulation (ED) show a tendency for poor modulation of emotional responses. The Emotion Dysregulation Scale (EDS) is a self-report measure used to assess the ability to adaptively manage and regulate intense and dynamic emotional states. The fear-potentiated startle (FPS) paradigm is a behavioral model for characterizing physiological markers of emotion regulation. We used the FPS paradigm to compare self-reported ED, physiological correlates of emotion regulation, menstrual cycle status, and salivary estrogen. It was hypothesized that those who were in the follicular phase (low estrogen) of their menstrual cycle, and who had low salivary estrogen would score higher on the EDS while also exhibiting deficits in fear regulatory behaviors. This project is significant in that it may be harnessed to advance the search for better mental health treatments for women.

Using Fear-Potentiated Startle to Examine Sex-Related Factors in Test Anxiety
Oral Presentation
Undergraduate Student(s): Rebekah Fallin, Luana Scienza, Bethany Wyman, Nhat Nguyen, Jesse Edmond, Jasmine Williams, Tiana Britton, Jamie Miller
Faculty Mentor(s): Ebony Glover and Sharon Pearcey

Test anxiety is a set of physiological and behavioral responses that accompany fear and worry surrounding test situations, which has affected approximately 25-40% of individuals in the U.S. Though previous research has found that females have significantly higher test anxiety than males, there is very little understanding about the biological underpinnings of these sex differences, and no prevailing biological model to explain test anxiety. Several studies have shown that students with high test anxiety exhibit increased autonomic nervous system activity (i.e., skin conductance, heart rate variability, blood pressure) relative to students with low test anxiety. However, since diffuse and ill-defined neural networks regulate these activities, it is difficult to correlate test anxiety to specific brain centers. Our laboratory uses a fear-potentiated startle (FPS) paradigm to quantify the acoustic startle response (a motor reflex mediated by a short, well-defined neural pathway directly connected to the amygdala) in the presence versus the absence of aversive stimuli. This model is a well-established noninvasive tool that measures amygdala activity and characterizes biological correlates of emotion regulation. The purpose of this study is to use the FPS paradigm to examine sex-related factors

that may influence the relationship between test anxiety and emotion regulation. Participants completed the Westside Test Anxiety Scale, a Reproductive Cycle Survey and underwent fear conditioning. Whole saliva was collected before behavioral training and analyzed for levels of salivary 17β-estradiol. Based on previous findings, naturally cycling women with low estrogen are expected to show high test anxiety and deficits in emotion regulation compared to women with high estrogen, women on hormonal contraceptives, and men. Such findings will not only implicate the amygdala, but will have major clinical implications for the development of sex-specific treatments for test anxiety, which disproportionately burdens women.

The Relationship Between Childhood Trauma Exposure and Fear-potentiated Startle
Poster Presentation
Undergraduate Student(s): Cheyenne Ashley, Luana Scienza, Rebekah Fallin, Jesse Edmond, Jasmine Williams, Tiana Britton, Jamie Miller
Faculty Mentor(s): Ebony Glover

Exposure to childhood trauma has been associated with increased risk for developing adult anxiety disorders. Few studies have examined the relationship between childhood trauma and physiological markers of anxiety. Our laboratory uses a fear-potentiated startle (FPS) paradigm to characterize psychophysical correlates of fear and anxiety. In this model, a neutral conditioned stimulus (CS) is paired with an aversive unconditioned stimulus (US), and after a number of pairings, an association is formed such that the CS alone elicits a fear response (i.e., heighted startle reflex). A previous study used this model in a highly traumatized clinical sample, but failed to find a statistical relationship between childhood trauma and fear-potentiated startle. However, they found heighted baseline startle reactivity in people with histories of childhood physical and sexual abuse. The goal of the current study is to examine the relationships among childhood trauma, anxiety symptoms, and FPS in a healthy community sample. Participants (N=34) completed the Childhood Trauma Questionnaire (CTQ), the Depression, Anxiety, and Stress Scale (DASS), and underwent fear conditioning. We hypothesized that high levels of childhood trauma exposure would be associated with high anxiety symptoms and heightened fear-potentiated startle. This would suggest that childhood trauma might have lasting neurobiological effects.

A View of College Culture Through Psycho-Physiological Measures: What Influence Does Alcohol Consumption Have on the Emotional Regulation of College Students?
Poster Presentation
Undergraduate Student(s): Courtney Skeete, Luana Oh Scienza, Bethany Wyman, Jesse Edmond, Jasmine Williams, Rebekah Fallin, Tiana Britton, Jamie Miller, Nhat Nguyen
Faculty Mentor(s): Ebony Glover

The prevalence of alcohol abuse and dependence in college students is increasing at alarming rates. It has been theorized that a major motive for consuming alcohol is to reduce or avoid negative affective states, such as anxiety and depression. This suggests that individuals with

high anxiety and depressive states may have increased vulnerability to alcohol abuse. The goal of the current study is to examine the relationships among alcohol drinking behavior, fear and anxiety behaviors, and mood states in college students. Thirty-four participants completed the Alcohol Use Disorders Identification Test (AUDIT), a 10-item self-report measure that assesses current drinking frequency and hazardous and problematic drinking patterns. They also completed the Depression, Anxiety, and Stress Scale (DASS), a 21-item scale that measures the severity of core symptoms common to depression and anxiety. Then they underwent a fear conditioning task called fear-potentiated startle (FPS), which quantifies the acoustic startle response as an index of fear and anxiety behavior. It was predicted that problematic drinkers would score higher on DASS and exhibit greater startle potentiation relative to individuals with normal drinking behaviors. Understanding the relationship between startle reactivity and alcohol consumption could inform better treatment and prevention strategies for alcohol abuse and dependence.

Childhood Trauma and Emotion Regulation
Poster Presentation
Undergraduate Student(s): Chanel Lindstrom, Luana Scienza, Nhat Nguyen, Jamie Miller, Rebekah Fallin, Jasmine Williams, Bethany Wyman, Jesse Edmond, Tiana Britton
Faculty Mentor(s): Ebony Glover, Sharon Pearcey, and V. Doreen Wagner

Many forms of adult anxiety disorders have been linked to early childhood exposure to physical, emotional and/or sexual trauma. More research is needed to improve our understanding of how early childhood trauma serves as a risk factors for adult anxiety disorders. One psychophysiological hallmark of emotion regulation is the ability to discriminate between fear and safety cues. Deficits in emotion regulation have been associated with increased risks for anxiety and depression disorders. The current study used a fear discrimination task to probe for psychophysiological markers of emotion regulation. Participants (n=33) were presented with a neutral conditioned stimulus (CS+, danger condition) that was paired with an aversive unconditioned stimulus (US) and a second conditioned stimulus was never paired with a US (CS-, safety condition). The startle reflex was quantified during each condition. In order to corroborate psychophysiological responses with self-report measures of emotion dysregulation, participants completed the Emotion Dysregulation Scale (EDS), a self-report measure that is used to evaluate the ability to flexibly manage and monitor intense emotional states. They also completed the Childhood Trauma Questionnaire (CTQ), a 28-item self-report questionnaire that assesses histories of abuse and neglect. It is designed to measure five types of maltreatments -- emotional, physical, and sexual abuse, and emotion and physical neglect. We hypothesized that high levels of early childhood trauma exposure would be associated with both self-report and physiological emotion regulatory deficits. Understanding these relationships could lead to better treatment and prevention strategies for anxiety disorders.

Understanding Contributions of Estrogen Levels and Hormonal Contraceptives to Emotion Regulation in Women Compared to Men
Poster Presentation
Undergraduate Student(s): Olivia Lauzon, Luana Scienza, Nhat Nguyen, Bethany Wyman, Jesse Edmond, Jasmine Williams, Rebekah Fallin, Tiana Britton, Jamie Miller
Faculty Mentor(s): Ebony Glover, Sharon Pearcey, and V. Doreen Wagner

Women are diagnosed with anxiety disorders at a twofold greater rate than men. Understanding sex differences in emotion regulation could lead to more effective treatment approaches. The reproductive hormone, estrogen, has been identified as an important neuromodulator of emotion in women. Low estrogen has been associated with deficits in emotion regulation. Given the increasing usage of Combined Oral Contraceptives (COC), which contain estrogen, it is important to understand its effects on emotion processing. The current study is the first to use the fear-potentiated startle (FPS) paradigm to compare emotion regulation in naturally cycling women, women on oral contraceptives, and men. FPS measures startle in the presence of a conditioned stimulus (CS+) that is paired with a US, as well as during exposure to a non-reinforced conditioned stimulus (CS-) that is never paired with a US. The use of the non-reinforced CS-, which serves as a safety cue, will allow us to experimentally test differences in safety signal processing (our operational definition of emotion regulation) among experimental groups. Participants (n=33, 20 women and 13 men) were recruited from Kennesaw State University via an online research participation system. Based on self-report responses to a Reproductive Status Questionnaire, women were grouped as naturally cycling (n=8) or COC users (n=11). Saliva samples were collected for analysis of circulating levels of salivary 17β-estradiol. We predicted statistical differences in emotion regulation among naturally cycling women, women taking COC, and men. In addition, it was predicted that women with low circulating estrogen would show deficits in emotion regulation relative to women with high circulating estrogen. Understanding the influence of estrogen modulators, such as COC, on emotion regulation could lead to better treatment and prevention strategies for anxiety disorders in women.

Evaluating the Effect of Previous Knowledge of a Disorder on Attitudes
Poster Presentation
Undergraduate Student(s): Hannah Dollinger *[University Honors Scholar]*
Faculty Mentor(s): Sharon Pearcey

The purpose of the current study is to gauge college students' attitudes towards individuals with developmental disorders and how knowledge of the disorder impacts attitudes towards the affected individual. Participants (N = 224) were recruited through the university's SONA system and completed an online survey. After answering demographic questions, participants were asked to rate characters in a vignette based on the character's behavior on ten different characteristics on a ten-point Likert scale (i.e., well-raised, intelligent, aggressive). The participants read three vignettes that included a character with one of the following

developmental disorders: autism, Asperger's, or ADHD. Each participant was randomly assigned a vignette for each disorder that either contained information indicating that the character had the disorder or no information about the character. I hypothesize that particular characteristics will be linked to particular disorders. Additionally, I hypothesize that participants who do not receive information about the disorder before reading the vignette will judge the character more negatively. Lastly, I hypothesize that knowing the character has a disorder before reading the vignette will result in judging the character less negatively.

Sources of Sexual Knowledge, Sex Negativity, and Sexual Shame
Poster Presentation
Undergraduate Student(s): Tara Joyce *[University Honors Scholar]*
Faculty Mentor(s): Beth Kirsner and Dorothy Marsil

The purpose of this study was to examine relations between (a) the sources of people's education about sex, (b) their trust in information obtained from each source, (c) sex-negative attitudes and misinformation about sex (SNAM), and (d) sexual shame. Using an online questionnaire, 354 participants from a large, comprehensive university in Georgia indicated relative amount learned about sex from 11 sources, the degree of trust in each as a source of sexual information, agreement with the 45 items comprising the measure of SNAM, and the Kyle Inventory of Sexual Shame (Kyle, 2013). The more participants expressed sex-negative attitudes and endorsed misconceptions about sex (higher scores on the measure of SNAM), the more they indicate having learned about sex from church and other religious institutions and from school, and the less from sexual partners, the internet, and pornography. Higher SNAM scores also correlated with higher trust in church, parents, and school as sources of information about sex. Finally, higher SNAM scores correlated with more sexual shame. We will discuss the role of abstinence-only messages in generating sex-negative attitudes and sexual shame.

Gender Differences in Rape Definitions and Rape Myth Acceptance
Oral Presentation
Undergraduate Student(s): Kylie Kuglar *[University Honors Scholar]*
Faculty Mentor(s): Dorothy Marsil and Corinne McNamara

The purpose of the current study was to assess the accuracy of college students' evaluation of rape scenarios when randomly assigned a definition of rape; participants' gender and rape myth acceptance scores were compared. The survey consisted of participants' personal definition of rape, rape definition condition, rape scenarios, rape myth acceptance scale, and demographics. It was hypothesized that there would be gender differences in definition inclusiveness, accuracy, and rape myth acceptance. Independent samples *t*-tests were conducted to compare the inclusiveness of participants' definition, and to compare rape myth acceptance scores. As hypothesized, females had a more inclusive definition of rape than males, $t(370) = 2.15$, $p = .03$, and women had rejected rape myths more than men, $t(371) = 7.06$,

$p < 0.05$. A 2 (Gender) x 2 (Definition) ANOVA was conducted on participants' accuracy; there was no significant interaction between gender and accuracy, and no main effect of gender on accuracy. Results are significant because gender differences in rape myth acceptance pervade despite changes in legal definitions of rape. Additionally, women include more characteristics of rape in their definition, indicating a more inclusive definition. There was no difference in accuracy, as both men and women applied the given definition at the same rate.

Sexual Orientation Influences Rape Identification and Accuracy By Definition and Tactic
Poster Presentation
Undergraduate Student(s): Elizabeth Perry, Selden Collier, Kylie Kuglar, Jamie Nourzad, Rachael Bishop, Kaitlyn Hoover
Faculty Mentor(s): Dorothy Marsil

The prevalence of unwanted sexual experiences is a serious problem. Approximately, 20% of college students report being raped (Sinozich & Langton, 2014). Thus, understanding the factors that may play a role in how individuals view rape is very important. The purpose of this study was to explore the influence of sexual orientation on identifying rape and college students' accuracy based on the definition condition assigned. College students identifying as straight, gay/lesbian, or bisexual were randomly assigned to a rape definition condition: legacy (carnal knowledge of a female by a male using force/threat of force), revised (no force, any sex, any body part/object), or self-defined and they were asked to read and interpret sexual scenarios as rape based on their definition. The scenarios depicted unwanted sexual behaviors by heterosexual or same sex individuals and the type of tactic used (force/threat of force, inability to consent, or coerced consent). We analyzed rape identification scores and accuracy using a 3 (Sexual Orientation) x 3 (Definition) ANOVA on different types of tactics used. There were significant interactions for each of the three tactics, whereby bisexual individuals in the legacy condition had the lowest mean rape identification scores than either straight or gay/lesbian individuals. For coerced consent, there was a main effect of definition but not sexual orientation, such that those in the revised and self-definition conditions had significantly higher rape identification scores than those in the legacy condition, as expected. For the inability to consent and the force or threat of force tactics, there were significant main effects of definition, such that those in the revised and self-definition conditions had higher rape identification scores than those in the legacy condition. There were also significant main effects of sexual orientation on the inability to consent and the force or threat of force tactics as indicated by gay/lesbian individuals having higher rape identification scores than either straight or bisexual individuals. Regarding accuracy, there was a significant interaction whereby bisexual individuals had the highest accuracy, but only in the legacy condition. There was a main effect of definition; participants were significantly more accurate in the revised condition than in the legacy condition. Additionally, there was a main effect of sexual orientation, such that bisexual individuals were significantly more accurate than others at correctly identifying scenarios as rape, regardless of the tactic used. Implications and limitations will be discussed.

Is Coerced Consent Rape? It Depends on How Rape is Defined
Poster Presentation
Undergraduate Student(s): Rachael Bishop, Jamie Nourzad, Kylie Kuglar
Faculty Mentor(s): Dorothy Marsil and Corinne McNamara

About one in four women have been raped during their lifetimes (Tjaden & Thoennes, 2006). Studies have used hypothetical rape scenarios to evaluate how participants identify rape (Rebeiz & Harb, 2010; Vandiver & Dupaolo, 2012), and more recently, included sexual coercion (Jeffery, 2016). The purpose of this study was to examine participants' identification of coerced consent scenarios as rape based on how rape was defined (legacy, current, self) and their accuracy. Coerced consent is not rape based on the legacy definition (carnal knowledge of a female by a male using force), but could be in the current definition (penetration, no matter how slight, of the vagina or anus with any body part or object, or oral penetration by a sex organ of another person, without the consent of the victim). Thus, we hypothesized that those in the current definition condition would be more likely to rate coerced consent scenarios as rape than those in the legacy condition and that those in the legacy condition would be more accurate. The self-defined condition was expected to be similar to the current definition condition. There were 376 undergraduates (62.5% females; 37.5% males; Mage = 20.16, S.D. = 4.06) from a large, southeastern university who completed an online survey consisting of consent, 25 sexual scenarios, including a 7-item subscale of coerced consent scenarios, and demographics. They were randomly assigned to 1 of 3 rape definition conditions: Legacy, Current, or Self-defined. The scenarios depicted sexual encounters between people of various sexual orientations using coercion to achieve sex by using intimidating manipulations instead of physical force. Participants were instructed to rate the scenarios based on their assigned definition. ANOVAs were performed to investigate the differences between definitions on the coerced consent total score and on accuracy. There was a significant difference between definition conditions. Current and Self-defined conditions were more likely to identify coerced consent as rape than those in the Legacy condition, as predicted. However, those in the Legacy condition were significantly more accurate in their ratings than those in the Current definition condition, confirming our hypotheses. Notably, all of the conditions were very inaccurate. This suggests that they believed that coerced consent should be considered rape, even though legally that may not be true depending on the state in which you live. Implications, limitations, and future directions will be discussed.

Understanding Rape Myth Acceptance as it Relates to Attitudes toward Sexual Immorality, Consensual Sexual Experiences, and Sources of Sexual Knowledge
Poster Presentation
Undergraduate Student(s): Jamie Nourzad, Kaitlyn Hoover, Tara Joyce
Faculty Mentor(s): Dorothy Marsil and Beth Kirsner

Unfortunately, rape myth acceptance continues to persist despite positive changes in recent years (Hayes & Abbott, 2016). Rape myths occur when individuals develop stereotypes based on false beliefs about causes of rape, rape victims, and perpetrators whereby rape is considered the victims' fault (Burt, 1980; Lonsway & Fitzgerald, 1994). Understanding the role of sexual attitudes and behaviors, along with influential sources of sexual knowledge is important in reducing rape myth acceptance. The purpose of this study was to examine the relationships between rape myth acceptance, attitudes toward sexual immorality, consensual sexual experiences, and sources of sexual knowledge. We hypothesized that rape myth acceptance would be positively correlated with attitudes toward immorality and negatively correlated with consensual sexual experiences. Additionally, we explored the relationship between rape myth acceptance and sources of sexual knowledge. We found that there was a medium, positive correlation between rape myth acceptance and attitudes toward immorality, $r = .47$, $n = 246$, $p < .001$, such that as endorsement of rape myths increased, conservative views of sexual behaviors (immorality) also increased. Rape myth acceptance was also significantly, negatively correlated with consensual sexual experiences, $r = -.13$, $n = 278$, $p = .03$. This negative correlation with rape myth acceptance was driven only by the Consensual Receiver subscale ($r = -.19$, $n = 278$, $p = .001$), that is items that depicted consensual acts where another person touched the participant sexually, but not the Consensual Actor subscale or when both were acting and receiving (i.e. intercourse). Finally, we found that rape myth acceptance was significantly correlated with only several sources of sexual knowledge. Implications and limitations will be discussed.

An Examination of the Relationship between Subject Variables, Stalking Myth Endorsement, and Stalking Perpetration
Oral Presentation
Undergraduate Student(s): Lacie Yauslin, Abrian Poole, Brenda Almaras, Amber Wallace
Faculty Mentor(s): Corinne McNamara and Dorothy Marsil

Although interpersonal violence, such as stalking, is prevalent among college students, researchers are still trying to understand factors that predict and contribute to a culture of campus violence. To that end, we examined the relationship among demographic variables, stalking myth acceptance (SMA), and stalking perpetration in a convenience sample of students. Participants answered a questionnaire that included 11 demographic items as well as 18 items concerning whether they had ever committed the described stalking behavior on a 3-point scale ranging from 1 (definitely not) to 3 (definitely). Participants were labeled as a perpetrator if they indicated having "definitely" committed at least two of the described acts, and non-perpetrators if they indicated committing one or none. Participants also responded to a 22-item stalking myth acceptance survey on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree), indicating their endorsement or opposition to each statement. Participants' numerically coded answers to these questions were summed, creating a SMA total score for each individual. Subsequently, the lowest possible sum would be 22, indicating opposition to every stalking myth item, while the highest possible sum would be 110,

indicating strong endorsement of all items. Preliminary analyses indicated that gender and sexual orientation were significant predictors of SMA ($p = .01$ and $p = .04$, respectively), such that total SMA scores increased 4.49 points for men and 3.77 points for heterosexual participants. Moreover, false beliefs about stalking significantly predicted stalking perpetration, with the results of a binary logistic regression ($b = 1.03$, $p = .03$) indicating this relationship. On the other hand, marginal Cox & Snell R2 and Nagelkerke R2 values (.02 and .03, respectively) indicate that, although statistically significant, SMA does not account for a large percentage of variability in perpetration. Preliminary analyses revealed that there were significant differences between researcher-identified perpetrators and non-perpetrators for only a few of the stalking myth items. Additional analyses will explore these differences in more detail and will include an examination of demographic variables as predictors of stalking perpetration. These findings are important because stalking is prevalent among college students, yet we still do not fully understand the predictive factors of stalking perpetration or SMA. Having a better understanding of these relationships will assist prevention and education efforts on campus targeted at changing social norms that currently accept and perpetuate violence against women.

The Role of Mindfulness as a Teaching Approach: Increasing Receptivity of Multicultural Course Content
Poster Presentation
Undergraduate Student(s): Brenda Almaras, Aubrey Spivey, Brittany Fishman, Michael E. Lester
Faculty Mentor(s): Tracie Stewart

Instructors teaching multicultural courses often encounter negative evaluations and criticism from students when attempting to facilitate discussion on sensitive topics such as majority-minority group interactions, racial prejudices, and specifically, white privilege. Past research has demonstrated correlative effects between mindfulness and multicultural awareness as well as a reduction in implicit age and race biases. Subsequently, within a theoretical framework, the present study attempts to relate the reduction of criticism from students to the role of mindfulness as a teaching approach through an examination of the relationship between the inclusion of a mindful approach to teaching and student receptivity of course content in a convenience sample of students. Participants were asked to read a fictional transcript of exchanges between an instructor and students on a "first day of class" in order to determine how the transcript content and teaching method may influence students' impressions of the class and instructor. Participants were randomly assigned to one of six transcript conditions: a multicultural psychology course in which the instructor discussed issues of prejudice and privilege extensively (multicultural-content rich), a multicultural course in which the instructor's comments dealt with less potentially sensitive course topics (multicultural-content neutral), or a cognitive science course control condition. For each transcript condition, there were two versions of the transcript, one in which the instructor interacted in a manner found in prior research to demonstrate a "mindful" orientation to teaching (e.g., contextualized in

present, open to multiple perspectives; Stewart, Berkvens, Engels, & Pass, 2003) and one in which the instructor displayed a "mindless" orientation to teaching (e.g., ridged with respect to the course, not open to other perspectives). Participants completed a questionnaire concerning their perceptions of the course instructor and content. Additional measures included the completion of a Social Dominance Orientation Scale (Pratto et al., 1994) and a Social Distance Scale (Bogardus, E.S., 1933). Data analyses yielded a main effect of the mindfulness condition, such that students responded more positively to mindful professors than to mindless professors regardless of course content. Additionally, results demonstrated an interaction effect indicative that a mindfulness orientation was particularly beneficial for instructors of multicultural courses, specifically those in the mindful, multicultural-content rich condition. These findings suggest a mindful approach to teaching may effectively aid in the enhancement of student receptivity of course material and facilitate the discussion of sensitive topics such as those of prejudice and privilege.

Exploring the Relationship Among Stress, Personality, and Working Memory
Poster Presentation
Undergraduate Student(s): Sharlene Strother, Hillary Groover, Melissa Ake
Faculty Mentor(s): Adrienne Williamson

Working memory accounts for the temporary storage and manipulation of limited information (Baddeley, 1992). Prior research has examined the relationships between personality and working memory (Smith, Persyn, & Butler, 2011), stress and working memory (Sorg & Whitney, 1992), and stress and personality (Ebstrup, Eplov, Pisinger, & Jorgensen, 2011), but the relationship among all three constructs has received less attention. Therefore, the goal of our study was to explore the relationship among personality, stress, and working memory. Participants completed the NEO FFI-3 (McCrae & Costa, 2010), which measures five personality traits: neuroticism, extraversion, openness, and conscientiousness. They also completed three measures of stress: the State scale of the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983), which measures their current level of anxiety; the Trait scale of the STAI, which measures anxiety as a personality trait; and the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983), which measures stress over the past month. Finally, participants completed the N-back Task (Jaeggi et al., 2010) as the measure of working memory. We are examining whether personality plays a mediating role in the relationship between stress and working memory.

Is the Struggle Real? Perceptions of Stress on Working Memory
Poster Presentation
Undergraduate Student(s): Karen Ake, Amneh Z. Minkara, Hillary P. Groover, Bethany A. Wyman, Connor L. Lewis, Jamie N. Miller
Faculty Mentor(s): Adrienne Williamson

A stressor can be described as either eustressful (positive or motivating) or distressful (negative or inhibiting) (Kupriyanov & Zhdanov, 2014; Lazarus, 1993). The effects of distress on cognition are well documented (e.g., Diestel, Cosmar, & Schmidt, 2013), but the effects of eustress on cognition have received less attention. The purpose of our study was to examine whether eustress and distress had different effects on working memory (WM) performance. We used a writing task as the stressor and compared the WM ability of four groups: eustress, distress, neutral, and control. Analyses indicated no difference among the four groups in WM performance. However, because people appraise stressors differently, we reassigned participants to groups based on their perception of the stressor they wrote about. Results showed no significant difference in WM among the four reassigned groups. Further study is needed to understand the possible interaction of eustress and distress as well as to determine effective methods for laboratory induction of eustress for the detection of any significant effects on WM.

Social Work and Human Services

The Role of an Abuser Log: Identifying the Connection between Domestic Violence and Animal Abuse
Poster Presentation
Undergraduate Student(s): Jordan Foster
Faculty Mentor(s): Darlene Xiomara Rodriguez

Georgia ranked 8th in the nation for its rate of men killing women and also had a recorded 121 domestic violence-related deaths in 2016 alone. Ahimsa House, a 501(c)(3) organization that aids victims of domestic violence and their pets, strives to help decrease and ultimately end domestic violence in Georgia. To help understand potential trends in abuse and to inform the public about the link between domestic violence and animal abuse, the Abuser Log was created. This particular log is updated on the 28th of every month, and tracks cases starting from January 2013 to the present. The cases involved are documented incidents from actual victims who have sought help from Ahimsa House. So far, over 500 cases of victims fleeing domestic violence with their pets have been included in the Abuser Log. The information is gathered from agency documents that have been filled out by the victim of abuse, which is then entered into the log. The Abuser Log has 16 sections and mostly pertains to the abuser's physical attributes, whether the abuser is a veteran or whether the abuser has committed animal abuse. This information can potentially show if there have been any serial abusers or if the abuser had history with animal abuse. The main goal of the Abuser Log is to eventually create a LISTSERV, which is an email software created to send mass emails to targeted groups, to gather and distribute stories that include both domestic violence and animal abuse throughout all of Georgia.

Volunteer Management: Creating a Coding System for Increased Efficiency
Poster Presentation
Undergraduate Student(s): Holley McGowan
Faculty Mentor(s): Darlene Xiomara Rodriguez

A coding system was developed to improve volunteer tracking and management on behalf of the American Red Cross' Metropolitan Atlanta Chapter. This was created because there were challenges in promptly recognizing a volunteer's status. Before this system, it took much longer to realize where a volunteer was along the volunteer process. The coding system was created using Microsoft Excel. A legend was developed to code the varying statuses of a volunteer along the volunteering continuum at the agency. This legend has allowed for prospective volunteers to go through the screening process in a more efficient way and reduce the placement time period.

Encrucijada: Transportation and Mobility of Latinos in Atlanta, Georgia
Poster Presentation
Undergraduate Student(s): Jennifer R. Klos
Faculty Mentor(s): Darlene Xiomara Rodriguez and Paul McDaniel

The Latino population in the United States has increased dramatically since the early 1990s. This is particularly true of Georgia, and the metropolitan Atlanta area specifically, which is part of what is now known as the "New Latino South." Despite this large and continued influx of Latinos, they continue to lack important services and opportunities to integrate further into their local communities. Through a community-university partnership with the A. L. Burruss Institute of Public Service and Research, the Maya Heritage Community Project, and the Latin American Association, a Latino community needs assessment for the Atlanta Metropolitan Statistical Area was conducted in 2015 to determine and address the needs of the region's growing Latino community. From 1,648 surveys and eight focus groups, five main areas of concern surfaced, one of which is transportation. This is an area of concern because study participants consistently identified four obstacles that hinder or prevent Latinos from obtaining meaningful employment, important health services, and education opportunities: inability to afford personal transportation, insufficient public transportation, few available walkways, and difficulty obtaining driver's licenses. This paper begins with a general overview of the Latino population in Georgia and a discussion of Atlanta's transportation history and how it has shaped the current public transportation system. After discussing previous research and explaining the obstacles to transportation that Latinos face, we examine the community needs assessment and its results. We then turn to the legal landscape, both nationally and in Georgia, regarding immigrants' ability to obtain driver's licenses. Next, we address previous and current efforts to improve the Metro Atlanta Rapid Transit Authority and pedestrian walkways, as well as long-range plans to improve transportation options in the Atlanta area. Finally, we assess the policy implications of the study's findings within the current political environment and suggest topics for future research.

The Importance of Volunteer Recognition in a Nonprofit Organization
Poster Presentation
Undergraduate Student(s): Sydney Scruggs
Faculty Mentor(s): Darlene Xiomara Rodriguez

According to the Independent Sector, the value of a volunteer's time in Georgia in 2015 was $23.80 per hour. It is recognized that volunteers are integral to nonprofit organizations, especially to the fulfillment of Make-A-Wish Georgia's mission to provide hope, strength, and joy to children. This organization flourishes with close to 500 active volunteers, yet it is important to find ways to recognize these individuals for the work, time, and commitment that is contributed. Currently, the Georgia chapter only has tools set in place to recruit and retain volunteers. This lead to the creation of a Volunteer Recognition Toolkit tailored specifically to the Make-A-Wish Georgia chapter. The toolkit is meant to be useful within the nonprofit sector in the state of Georgia to recognize volunteers. This specific toolkit was created on behalf of Make-A-Wish Georgia as the office and staff are seeking ways to recognize volunteers in order to expand volunteer recruitment throughout the state of Georgia. The projected outcomes for the implementation of the toolkit is that there will be a higher number of retention amongst the volunteers. Another projected outcome is that there will be a higher number of people applying to become volunteers.

Advocating for Refugee Resettlement on College Campuses
Poster Presentation
Undergraduate Student(s): Kristina Agbebiyi
Faculty Mentor(s): Darlene Xiomara Rodriguez

Largely left up to the discretion of the United State's President, refugee resettlement has experienced a large shift with the country's transition into the Trump administration. President Trump has lowered the maximum amount of refugees allowed into the United States, and also placed a 120 day hold on refugee resettlement. Therefore, refugee resettlement agencies are losing clients, revenue, and important funding needed to do their jobs. This has resulted in large amounts of layoffs and the termination of services that have been proven beneficial to refugees. Refugee resettlement agencies must now rely on advocacy more than ever to advance pro-refugee sentiment and policy within their communities. One avenue that refugee resettlement agencies can utilize to advocate for change is through local college students. This research focuses on the planning and execution of a pro-refugee resettlement presentation at Spelman College in Atlanta. The goal of this research is to provide a template for future pro-refugee events on college campuses. This research also analyzes the efficacy of pro-refugee events on college campuses, and how to improve these events in the future.

Improving Georgia Cares' System of Supporting Unconfirmed Cases of Trafficked Youth
Poster Presentation
Undergraduate Student(s): Kaylie L. Callahan
Faculty Mentor(s): Darlene Xiomara Rodriguez

Since its inception in 2009, more than 1,500 youth have been referred to Georgia Cares for sex trafficking. Georgia Cares is a 501(c)(3) nonprofit that coordinates services and treatment for victims of child sex trafficking across the entire state of Georgia. To determine a child's level of involvement in sex trafficking, the agency utilizes a research-based screening process that assesses provided evidence of exploitation in order to validate the child's referral to Georgia Cares. While 1,500 is a large number of referrals, not all of these youth are considered to be victims of trafficking, but they are still in need of social services beyond Georgia Cares' scope of expertise. Georgia Cares recognizes this problem and utilizes a community resource guide to offer these youth, and their families, referrals to more appropriate services. Developed by the staff in 2014, the 100-page resource guide contains contact information for numerous providers that offer an array of services, such as: afterschool care, developmental challenges, domestic violence, government benefits, homelessness, sexual assault, and teen pregnancy, among others. The majority of these providers are located in Cobb and Fulton counties, which places significant time and travel demands on clients residing in middle and south Georgia. The overall purpose of this project was to revise the existing resource guide and expand it to include more appropriate services and resources located in major cities throughout north, middle, and south Georgia. With this newly formatted guide, Georgia Cares' staff will be better equipped to serve those youth whose needs cannot be accommodated by the agency. The youth will now be able to obtain the proper assistance for their specific social need(s) closer to their residence via referral from Georgia Cares.

The Role of a Board Orientation Manual in a Startup Nonprofit
Poster Presentation
Undergraduate Student(s): Kaelyn Meade
Faculty Mentor(s): Darlene Xiomara Rodriguez

How a nonprofit organization is governed is primarily set by the board of directors (BOD). The BOD have an important role of connecting the nonprofit to the community and constituencies. The BOD is a key source of financial support. In charge of makes sure the nonprofit does not stray from the mission, and of the overall welfare of the nonprofit. However, when starting a nonprofit organization, a council of advisors is often used to help give structure to the mission and vision of the organization until one can recruit and vet new board of director members. Once a board of directors is in place new board members must get oriented to the organization and its cause. The purpose of this project was to create a board orientation manual to orient new board members to the newly established AmityCare Foundation. Since the Foundations was established in 2017, the first board manual is comprised of the following items: overview of all aspects of the Foundation, job descriptions

and expectations of the board, legal documents such as board member contract and conflict of interest form, and important documents for example bylaws and overview of Roberts Rule of Order. Additional documents will be added to the manual as Foundation continues to mature.

Atlanta's Immigrant Crossroads: Factors Making Immigrant Integration Difficult and How to Help
Poster Presentation
Undergraduate Student(s): Kayland Arrington
Faculty Mentor(s): Darlene Xiomara Rodriguez, Paul McDaniel

Immigration is a popular topic in America today. Immigrants make up 13 percent of the U.S. population, and that number is only expected to grow. Atlanta has the largest passenger airport in the world, which has served to increase its status as an emerging immigrant gateway. However, there are many barriers to immigrant integration including language, culture, citizenship status, and access to jobs and education. The purpose of the Atlanta Immigrant Crossroads project is to examine these barriers, identify ways to overcome them, and potentially help Atlanta earn its title as a "welcoming city." The research consists of focus groups with immigrant-serving nonprofit organizations and immigrant communities to uncover the barriers to immigrant integration. We have uncovered there are variations to immigrant settlement and integration based the above-named factors. This is compounded by the fact that politicians and laws in the state of Georgia have increasingly advanced an anti-immigrant stance, in spite of the City of Atlanta making efforts to be a more immigrant-friendly city. This geo-political dichotomy is what we have investigated and based on the qualitative findings can offer up best practices for other communities, especially those in the Old South.

Development or Damage? Pastors' Perspectives on Short-Term Mission Trips
Oral Presentation
Undergraduate Student(s): Ariel Walley *[University Honors Scholar]*
Faculty Mentor(s): Darlene Xiomara Rodriguez

Each year, religious short-term mission trips inspire millions of people and billions of dollars to travel to almost every continent on earth. However, this tremendous flow can unintentionally cause economic and social damage to the local communities. From popular novels to academic research, short-term mission trips have come under scrutiny to evaluate whether they provide more help or more harm. This presentation discusses the research about the benefits and criticisms of these trips. Additionally, it discusses results from original research about pastors' awareness of the benefits and criticisms of short-term missions, how influential this research is in the actual implementation of missions, and possible obstacles to reform.

Developing Advocacy Strategies: An Applied Research Project for The Brian Jordan Foundation
Poster Presentation
Undergraduate Student(s): Sydney Scruggs
Faculty Mentor(s): Jennifer Wade-Berg

Nonprofit advocacy is crucial to the governance process for a myriad of reasons, including: (1) helping the nonprofit meet its mission; (2) helping the organization's clients and community solve or avoid problems; (3) giving rise to the marginalized; (4) fostering the democratic process; and (4) creating opportunities issue education. The purpose of this applied research project was to develop an advocacy plan for the Brian Jordan Foundation (BJF). To inform this project, qualitative data generated from a content analysis of best practices, a review of the literature, and board meeting observation were utilized. The project deliverable addresses short and long term goals and effective advocacy strategies for the organization.

Sociology and Criminal Justice

The Border Wall with Mexico: An Analysis of Its Sociological, Economic, Political and Cultural Impact
Poster Presentation
Undergraduate Student(s): Joshua Ehrhardt, Wesley Hohensee, Courtney Poulson
Faculty Mentor(s): Darina Lepadatu

Based on existing data and statistics, this project will provide a policy analysis regarding the sociological, economic, political and cultural impact of the proposed border wall between the US and Mexico. The project will include policy recommendations from a sociological perspective.

The Impact of Undocumented Workers on the US Society
Poster Presentation
Undergraduate Student(s): Michelle Mendez, Luis Delgado-Zepeda
Faculty Mentor(s): Darina Lepadatu

Based on existing data and statistics, this project will provide an analysis of the impact of undocumented workers on various industries (agriculture, construction, home improvement, dining etc.), housing, as well as education and health care. The project will conclude with policy recommendations on the status of undocumented workers.

A Systematic Review of Juvenile Risk Assessments Predicitve Validity Studies
Poster Presentation
Undergraduate Student(s): Denver Harris
Faculty Mentor(s): James McCafferty

Juvenile justice officials (e.g., probation officers, judges) use actuarial risk assessment instruments to determine how likely juvenile delinquents are to recidivate. The likelihood of an offender to recidivate is predicted by risk assessment tools that measure factors such as peer groups, family history, drug use, and prior criminal behavior. The risk assessment instruments are used to inform officials about client supervision and treatment decisions. The purpose of this research is to present the results from a systematic review of juvenile risk assessment predictive validity studies. Using Geraghty and Woodhams (2015) quality assessment tool, we reviewed fifty-four juvenile risk assessment studies to assess the methodologies of this body of research. The results will provide information from each study, including sample size, base rate(s), effect size(s), as well as, the findings from our quality assessment review. There are four broader categories that measure the methodological quality of these studies. Selection bias measures participant selection and the target population. Measurement bias assesses the methodology of the study and the outcome variable. Attrition bias measures any dropout rates within the study. Lastly, reporting bias measures the analytic strategy of the study as well as any missing data that was reported.

Risk-Taking Behaviors Among College Students with Disabilities
Poster Presentation
Undergraduate Student(s): Kaitlyn Hoover
Faculty Mentor(s): Heidi Scherer

While there is a substantial amount of research on risk-taking behaviors such as drug and alcohol use among samples of college students, there are staggeringly few studies that have examined risk-taking behavior among samples of college students who have disabilities. In order to fill this research need, the current study's purpose is to analyze differences in behaviors risky to one's health in a sample of college students with and without mental and/or physical disabilities. Risk-taking behaviors examined in this study included: binge drinking, use of illicit drugs, misuse of prescription drugs, and tobacco use. Preliminary analyses indicate that there is a significant difference in risk-taking behavior among college students with a disability compared to college students without one. Using data from the Fall 2011 and Fall 2012 American College Health Association's National College Health Assessment survey and corresponding data of approximately 50,000 college students, we chose 11 survey questions pertaining to risk-taking behaviors, mental, and physical disabilities to conduct bivariate analyses. These analyses were conducted in STATA and yielded significant differences in risk-taking behaviors across students with and without disability; a finding that has implications in research on disability, health, and other measures of well-being.

Gender Differences in the Effect of Social Learning on Cyberbullying Perpetration and Victimization among College Students
Oral Presentation
Graduate Student(s): Nathanael Riepe
Faculty Mentor(s): Gang Lee

Cyberbullying is conducted through virtual formats that have only been present a few decades, and the opportunities to misuse these platforms are only growing. This study examines the use of the social media sites and other information technology platforms for cyberbullying purposes among college students in South Korea. The attitudes of peers, both online and face-to-face, towards cyberbullying activities should influence college students' perpetration or their abstinence from the perpetration of cyberbullying acts. Social learning theory (Akers, Lee, et al., 2004), proposes that behaviors are learned through operant conditioning and imitation through group interaction. Deviant acts reinforced through positive rewards and undermined by negative sanctions. Through these, he or she learns to define the actions as good or bad and continue those actions that are defined as good while stopping those considered negative. Differential association refers to when a person balances the perceived and anticipated consequences of an action. This study examines these effects of social learning theory on cyberbullying activities. The data is to be analyzed using SPSS to assess the gender differences in the effect of social learning on cyberbullying victimization and perpetration among South Korean college students. Utilizing a cluster sampling technique, 711 students from two South Korean Universities participated in a self-reported in-class survey conducted to investigate the occurrences of cyber-bully victimization and perpetration among the students and their peers. Cross-tables will be employed to analyze the gender differences in the effects of social learning on these cyberbullying activities. This study is limited in generalizability to other university students outside of South Korea, and more research is necessary to address the question of external validity. However, this study should expose a gender difference among both perpetration and victimization rates of cyberbullying.

Exploring Drug Use, Drug Policy, and "Burning Man" Communities
Poster Presentation
Undergraduate Student(s): Justin Maslanka
Faculty Mentor(s): Brian Starks

The long-term goal of this project is to survey and observe substance use in the landscape of Burning Man communities. The current initial study explores existing research and policy debates on drug use. A presentation was made to students, informing them on trends of marijuana, LSD, and club drug usage. Information about the social organization of drug using communities has been utilized as a basis for further exploration. Current data suggests that club drug use is a phenomenon of middle class young adults who identify with unconventional adaptations to societal structures. Future research will be conducted within the environment of a Burning Man themed festival. Such research will be utilized to

understand the socially constructed purposes of mind altering substances within the community of "burners."

Planning for an Aging Population: A Mixed Methods Research Project
Poster Presentation
Undergraduate Student(s): Robert Skinner, Henriette N'kodia, Geraldine N'kodia, Eun Sol Chang, Sabrina Anderson, Rosa King
Graduate Student(s): Brandon McCollum
Faculty Mentor(s): Evelina W. Sterling and Christina Scherrer

The United States is experiencing a dramatic increase in its older adult population; by 2030, one in five residents will be over the age of 60. Recognized as a leading senior service agency, Cobb County Senior Services (GA) provides an array of aging services including multipurpose centers, volunteer and advocacy opportunities, resource development, and innovative partnerships. Due to the many challenges presented by the growth of the older adult population, Cobb County Senior Services is currently assessing how to best meet the changing needs of older adults, particularly with regard to diversity and generational differences. However, in research as well as in practice, older adults are commonly excluded, marginalized or treated less than fully competent. The overall purpose of this mixed methods approach is to 1) Accurately determine the interests, concerns, and needs of the aging population currently utilizing Cobb County Senior Services and 2) Learn more about traditionally underserved populations of older adults. First, a comprehensive survey will be administered to 100 older adults focusing on knowledge, attitudes, and behaviors around seeking various senior services in Cobb County. Second, four focus groups (consisting of 8-12 participants each) of traditionally underserved and hard-to-reach populations (men; LGBTQ; Spanish-speakers; Korean speakers) will be conducted to identify specific interests, concerns, and needs regarding aging, especially compared to the general population of older adults. Both qualitative and qualitative data will be analyzed taking into account gender, sexuality, marital status, racial, ethnic, geographic, class, and age-related differences. Conclusions will include specific issues, connections, and trends regarding key categories such as housing, employment, civic engagement, health and well-being, preventative health, physical activity, nutrition, long-term care, caregiving, and quality of life will be assessed. These results will inform Cobb County's strategic plan as well as support policy and economic improvements.

Mis-Informed Decision-Making: The Marketing of Cancer Treatment Options
Poster Presentation
Undergraduate Student(s): Caroline Benefield
Faculty Mentor(s): Evelina W. Sterling

Background: Today, over 1.6 million Americans are diagnosed with cancer each year. As a result, cancer has become big business providing wide variety of knowledge claims and treatment options. In order to attract potential patients, many cancer treatment centers are

increasingly riddled with scientific ineptitude, bias, and outright deception. Thus, patients experience difficulty in making informed decision regarding what to do and where to go after being diagnosed with cancer. Methods: Through content analysis, we examined a variety of marketing materials used by cancer hospitals, clinics, and treatment centers including print, television/video, radio, and Internet advertisements focusing on available cancer treatments and success rates. Our sample consisted of 50 different cancer hospitals, clinics, and treatment centers throughout the United States that released specific marketing materials and advertisements. We analyzed these marketing materials and advertisements using a modified grounded theory approach to identify key themes and the relationships between these themes. Results: Overall, marketing materials and advertisements relied heavily on emotional appeals for cancer hospitals, clinics, and treatment centers, often featuring generalized messages of "hope." Benefits of treatments were highlighted, and risks or costs were rarely mentioned. Advertisements also promoted not only survival, but also likely cancer cures, even among traditionally aggressive cancers. Gender, racial and ethnic biases were evident with certain cancers and types of cancer patients highlighted. Conclusions: Marketing materials and advertisements for cancer hospitals, clinics, and treatment centers paint a clear, consistent and unilateral message of hope while disregarding risks, costs, and accurate scientific information. The lines are blurred between effective health education methods needed to encourage informed decision-making about treatment and creative marketing techniques used to convert new patients. Further studies are needed to assess how patients' understanding, expectations, and behaviors around cancer treatment are influenced by these tactics.

Software Engineering

Enhancing Requirements Elicitation Activities Using Virtual Reality
Poster Presentation
Graduate Student(s): Aman Bhimani
Undergraduate Student(s): Jared Gibson, Casey Brock
Faculty Mentor(s): Paola Spoletini

Requirements elicitation is the process of discovering requirements for a system by accessing available knowledge sources and communicating with stakeholders who have a direct or indirect influence on such requirements. Although requirements elicitation is by no means a new concept and many techniques are available for this activity (e.g., interviews, observations, focus groups, questionnaires), there is no silver bullet which guarantees collecting a set of complete and correct requirements. One of the main problems in requirements elicitation is tacit knowledge, i.e., system relevant information which is known by the customer but unknown by the analyst. Tacit knowledge is often difficult to explicitly transfer; it includes all actions, decisions, and preferences that are taken at subconscious level. Observations can help the analyst in finding this kind of knowledge, but they are either very long and with no guarantee in the case of observation in the field, or might be biased in case of controlled experiment given the low level of immersion. To overcome this limitation, we propose the use

of virtual environments as new technique to collect requirements. Being an immersive controlled environment, virtual environments present all the benefits of both observations on the field and controlled experiments. Moreover, they offer the possibility of collecting data autonomously from the environment, which results in a less expensive and more complete analysis. We are not claiming that virtual environments are the silver bullet, but that they can complement existing techniques and help find tacit knowledge in an efficient way. To prove the feasibility and the benefits of our idea, we will analyze different kinds of available virtual environments and evaluate the level of immersion they offer in relation to the cost and the number of needed devices. Moreover, we will provide a classification of requirement types that can be easily collected through virtual environments and provide concrete examples for each class. Finally, we will describe the research plan to be followed to completely develop and evaluate virtual environments as a requirements elicitation technique.

Using Biofeedback to Design and Deliver Online Courses for Computer and Software Majors
Poster Presentation
Graduate Student(s): Jennifer Cassan
Faculty Mentor(s): Paola Spoletini

The purpose of this research is to determine more efficient ways to deliver computer and software courses. We will have several groups and present the same class to each group in a different format; once the class is finished they will complete a quick knowledge test and a survey. We will also be using biofeedback to determine if certain formats are better for delivering topics of certain nature and complexity. The biofeedback will record what interested the student, when they were engaged, when they were confused or lost interest. We believe the most efficient format will be a combination lecture, digital pen, and interaction format; while we feel students will lean more toward a lecture and digital pen format given the reduced required effort on their part.

16-068: Tiresias: Discovering Unknown Requirements
Oral Presentation
Graduate Student(s): Albert Maine
Faculty Mentor(s): Paola Spoletini

Interviews for obtaining requirements through elicitation of stakeholder knowledge is one of the most effective ways to transfer domain knowledge between a requirements analyst and a customer. Ambiguity is a major obstacle that presents itself in the transfer of knowledge, as much of the interview can be misunderstood or interpreted incorrectly, resulting in incorrect needs and poorly defined requirements. To address this, previous work has focused on how ambiguity is perceived on the analyst side. Because customers are not generally trained in coping with ambiguity, analysts need to be equipped with tools and techniques to help identify the situations that could be probed further for clarity in the definition of project

requirements. To support analysts in this task, we are exploring the relationship between perceived ambiguity on the customer's side and changes in voice and biological parameters of the interviewed customer. We are studying changes against patterns in participant data that can be correlated to certain types of stress, confusion, and uncertainty that all ultimately lead to ambiguity in the deliverables of the requirements gathering process in the software development life cycle. The attempt to close the gap between those uncontrollable biological changes and voice feedback against the unknown or vague requirements, participants have undergone interviews while submitting their information by wearing wristbands and having their audio recorded by modern voice analyzer systems. It is the aim of this project to find the correlation between different types of ambiguity and the biological processes that occur when customers are attempting to convert their thoughts and knowledge into the quantitative and qualitative information that software engineers require to build the right application correctly.

Siegel Institute for Leadership, Ethics, and Character

Examining Burnout in Division I Collegiate Athletes: Identifying the Major Factors and Level of Importance in an Athlete's Life
Oral Presentation
Graduate Student(s): Angel Almodovar
Faculty Mentor(s): Linda Johnston

Burnout is a concept that has been studied within the past 35+ years becoming widely known and recognized around 1980 in various disciplines ranging from the professional workforce, to athletic coaches, to youth sports. The first burnout study conducted within a sport setting focused on coaching burnout, and since then, new developments have occurred concentrating on athletes. Burnout is a term defined as a withdrawal from a particular sport noted by a reduced sense of accomplishment, devaluation or resentment of the sport, with proponents of physical and psychological exhaustion. Thus, the focus of this study is to examine athletic burnout in Division I collegiate athletics. The purpose is to identify the major factors that lead to burnout and the level of importance, or in other words, the factors that have the biggest impact in an athlete's life. The literature identifies which factors lead and contribute to burnout in athletes including psychological and motivational factors, but fails to accurately point out what specific factors contribute the most to dropout, and more importantly, burnout in sport. Therefore, the study presented here intended to solve this issue by presenting what factors that contribute the most to burnout as identified by the data collected from the athletes. The research question presented is what are the major factors that lead to burnout and which of these factors have the biggest impact and level of importance as identified by the athletes? The participants in this study are all Division I student-athletes (males and females, graduates and undergraduates) at Kennesaw State University (KSU) present at the time that this study took place. The methodology will incorporate a Qualtrics online self-administered computer survey. The survey consists of twenty open-ended and closed-type of questions. The

hypothesis is that the KSU student-athletes will identify that 50% of their burnout is attributed to the following four factors: Scholarship implications, coaches' pressure, parents' pressure, and the prospect of a lucrative professional career; with scholarship implications contributing to over 70% of the burnout. The hopes of the findings in regard to this study to be able to ascertain which factor(s) or sources induce the largest level of stress and burnout overall for Division I college athletes, and how to mitigate the impact of these factors in the future. Future studies should expand this study to all divisions in collegiate athletics and across multiple universities.

Cosmetic Beauty: The Intrinsic and Extrinsic Motivators
Undergraduate Student(s): Laura Morrow
Faculty Mentor(s): Linda Johnston and Crystal Money

I used a correlational study for this experiment. I wanted to see if women perceived makeup as a type of value system that reflects upon their self-confidence. Previous research has had mixed results and I wanted to do a study with a bigger sample size. I used both qualitative and quantitative methods for data collection. I used a closed-ended survey that asked 23 Likert questions and used two personality scales at the end of the survey. In addition, I interviewed radio talk-show host Davi Crimmins from The Bert Show. I asked her 7 open-ended questions about her personal experience of going 30 days without wearing makeup. The survey was gender specific to women where 116 participants were recruited and only 94 completed the survey in its entirety. Through Davi Crimmin's personal experience and results from the survey, there has been show a positive correlation between self-confidence and makeup. The personality scales have shown the participants to have high self-confidence. Results show that women value makeup in social and professional settings, but do not care about makeup when it comes to running errands.

Perception vs. Representation: The Impact of Stereotypes and Eurocentric Standards on Black Women
Oral Presentation
Undergraduate Student(s): Michelle Edward
Faculty Mentor(s): Linda Johnston

Black women have been subjects of reoccurring criticism based on physical attributes/features, behaviors, etc. The strict scrutiny of this demographic's outward appearance has led to the years of stereotyping and bias that directly and indirectly limit these women's ability to progress within modern-day society. From Eurocentric standards ranging from straightened hair, lighter skin tones, and European facial features, black women are increasingly compelled to change their representation to suit what is perceived as "normal." Considering this, one can only ask, "What is normal and who decides what is normal, especially for black women?" There is no answer, but society and mainstream media dictates otherwise. It is up to black women to break the mold and accept ourselves for who we are, and thus the reason for my

study. In my research, I will be highlighting issues that affect the perception of black women in our society using historical and present day accounts. To analyze the representation and body image of black women, I will construct a survey that touches on aspects of modern-day stereotyping, primitive norms, and elements of racism and sexism. I wish to promote body positivity and boost self confidence amongst this demographic. By talking about issues that affect body image, I hope to help this demographic to make better choices about dealing with criticism and stereotypes, while touching on the benefits of not adhering to these stereotypes. I believe the first step to self-growth is accepting oneself "as is" and my research will encourage this amongst those who will read my research.

Addressing the Issue of Food Deserts in Georgia
Oral Presentation
Undergraduate Student(s): Madison Watson
Faculty Mentor(s): Linda Johnston

The purpose of this research is to see what has been done to address the issue of food deserts around the country, as nearly two million Georgia residents currently live in one. Many programs, plans, or policies that have been created have results that indicate a need for stronger programs. From studying what has been attempted in the past, and what their strengths, weaknesses, set backs, and concerns were, I hope to find the best solution possible for food deserts in Georgia. The research will include interviews with businesses, farmers, non-profit organizations, and human services agencies around the state of Georgia. Topics discussed will include, how they address the lack of fresh produce and whole foods available to people, knowledge of food deserts, and opportunities with Food Stamps. From this data my anticipated finding is an organization, policy, plan, or procedure that would be most effective in combating food deserts.

Social Acceptability of Factors Contributing to Psychological Abuse
Undergraduate Student(s): Bethany Wyman
Faculty Mentor(s): Linda Johnston

People know and understand very well what physical, sexual, and verbal abuse are, but do they understand what factors constitute psychological abuse? When does a behavior cross the line from being impolite at best, to abusive at worst? This is an important question because victims of psychological abuse are often unaware that they are victims (Why Does He Do That, Bancroft, 2002), even though they may be experiencing declining mental and physical health because of it. The federal government recognizes psychological abuse as a form of abuse (www.womenshealth.gov), however, many states' domestic violence law does not (www.womenslaw.org). Unfortunately, this includes Georgia and Tennessee, and this gross oversight leaves victims of psychological abuse without protection under the law and access to services that might be beneficial to them. Therefore, this study seeks to examine the understanding of factors that contribute to psychological abuse by administering an online

survey to the public based upon the Subtle and Overt Psychological Abuse Scale developed by Dr. Linda Marshall. My hypotheses are 1) psychologically abusive behaviors are invisible to people in general and 2) people consider psychologically abusive behaviors to be abuse only in the most extreme of circumstances. I suspect that the results of the survey will show these hypotheses to be true.

Perceived Taste of Color Food Packaging
Oral Presentation
Undergraduate Student(s): Crystal Jackson
Faculty Mentor(s): Crystal Money

The proposed research will explore the impact that different color food packaging will have the perceived taste of a food product. The researcher will set up different colored cups. There will be three trials. The first trial will be a red and a green cup labeled A and B respectively. The second trial will be a pale green cup and a vivid green cup labeled A and B respectively. The third trial will be a pale red cup and a vivid red cup labeled A and B respectively. All cups will be filled with the same drink product. The study will take volunteers and will ask the volunteers to compare cup A to cup B in a survey after the taste test. The research team anticipates finding that the food product in the color green packaging will be perceived as more healthy and the food product in the color red packaging will be perceived to have a stronger flavor.

The Information System's Role in Reducing Food Waste in Grocery Chains
Oral Presentation
Graduate Student(s): Zandro Zaragoza
Faculty Mentor(s): Linda Johnston and Crystal Money

The United States has an abundance of food supply delivered through the grocery industry. However, the country has a population that is devoid of adequate fresh and nutritious food, live in food desserts, and unable to pay for its daily groceries. Food wasted through the grocery industry can help alleviate some of these issues if effort was made to reduce the waste if food cannot get to consumers. There are several factors which may motivate grocery businesses from reducing food waste. Those factors can be regulatory, best practices, cost savings or profit margins, and information systems. This research will evaluate what role information systems can play to help reduce food waste in the grocery industry.

Sample Size and Biased Selection Explains Preterm Infant Growth Measure Selection Disparities
Poster Presentation
Undergraduate Student(s): Wendy Ballew, Jeffrey Chou
Faculty Mentor(s): Louise Lawson and Nicole Ferguson

Cole's (1997) article in the Annals of Human Biology found that the ponderal index is the most suitable measure for appropriate-for-gestational age infants' predicted weight and length, as compared to BMI, when used across all gestational ages. However, this was based on a small dataset of infants from a single hospital, where the Benn index was approximately 3, making the ponderal index the most logical choice for AGA infants. More recent studies have found a Benn index of 2, making BMI the most appropriate choice of predicted growth. This disparity may be due to the original study using data from an earlier time period, when larger infants were more likely to survive; creating a naturally biased selection. The current study investigates the possibility this bias, as well as the small sample size, created this disparity in selection of growth measures. To investigate this hypothesis, the current study took an intentionally biased sub-sample of infants who were large-for-gestational age (LGA) multiple times to determine a potential empirical sampling distribution weighted for LGA infants. These samples were from a larger dataset of infants in the NICU (aged 22 to 42 weeks) collected between 1998 and 2006 from 248 hospitals around the United States whereas the 1997 study used a single hospital's cross-sectional data. Small scale investigational data suggests that the sample size differences can explain the discrepancies between the distributions in these two studies.

A Comparison of Decision Tree and Logistic Regression Models for Prediction of Business Credit Risk
Poster Presentation
Graduate Student(s): Jessica M. Rudd
Faculty Mentor(s): Jennifer Priestley

The aim of this project is to predict the worth non-financial payment status (WSTNFPAY) using logistic regression and machine learning technique, decision tree, and compare the predictive results. The financial dataset used contains 305 categories of financial information from more than 11,787,287 unique businesses in 2014. While logistic regression is the traditional method for predicting risk, an effective decision tree model can provide an easily explained tool for business and consumer application.

An Analysis of the Complexity and Difficulty Level for the Game, Tumblestone
Poster Presentation
Undergraduate Student(s): David Richmond, Denise Hernandez
Faculty Mentor(s): Joe DeMaio

This research determines the difficulty level of various puzzles in the game Tumblestone. Tumblestone is a match 3 puzzle from publisher The Quantum Astrophysicists Guild released on July 12, 2016. Match 3 of the same color blocks and those three blocks are cleared from the board. The trick here is that you only have access to certain blocks. Blocks that you clear or don't clear in a current turn impact the blocks that are available for use on your next turn. And that is what can determine the difficulty level of the puzzle; how many steps you need to look ahead. Incorrect moves can lead to a dead end and a puzzle that cannot be solved. Puzzles in Tumblestone are hand-crafted and static rather than dynamically computer-generated on the fly. Thus, puzzles are the same for all players. Many reviews of the game compliment the design of the game but also note that the difficulty level of some puzzles can be daunting. An Xbox Enthusiast wrote, "The campaign is extensive and after 20+ hours of gameplay, I actually didn't finish the game. This is not to say that Tumblestone is mediocre, in fact, the game is great. The reason that I haven't completed the game is because the difficulty can be daunting at times. There are 330 levels in Tumblestone's campaign and some of these puzzles are relentless. They require a lot of thought, trial and error as well as patience. Some puzzles would be completed in 30-40 seconds while others took me 2 hours and 56 retries."

Reducing Traveling Times for the Cobb County Fire Department
Poster Presentation
Graduate Student(s): Bogdan Gadidov, Lili Zhang, Yiyun Zhou
Faculty Mentor(s): Joe DeMaio and Kurt Schulzke

The Cobb County Fire Department's (CCFD) 8-minute emergency response time doubles the National Fire Protection Association's (NFPA) 4-minute standard, measured at the 90th percentile of all emergencies. This project aims to reduce CCFD's response time by focusing on the travel times of their various emergency vehicles. Currently, there are 29 fire stations and 272 fire zones within Cobb County, with each fire station being responsible for a pre-defined set of fire zones. We investigate whether fire zones and stations can be realigned to reduce travel times by analyzing historical response time data from September 2015 to August 2016. CCFD historical data reveal which fire station actually responded to each incident, as well as the related travel time. Google Maps is then used to check the response times from neighboring fire stations to determine if a different fire station could have responded more quickly to the same incident. The comparison between historical and Google travel times reveals the location and frequency of disagreement between the historical and Google recommended fire stations. Fire zones can then be reassigned to different fire stations to reduce future traveling times. Additionally, in the event that a fire station is busy and has no vehicles to send to an incident in one of its zones, a list of backup fire stations for each fire

zone is created using the Google Maps simulation. Results vary for each fire station, but they show that there is room for improvement in the way that CCFD currently responds to emergencies. Python is used to connect to the Google Maps Distance Matrix API, and SAS is used for resulting analyses.

Prevalence and Incidence of Health Risk Factors Among Adolescent Girls
Oral Presentation
Undergraduate Student(s): Kylah Pollard, Sarai Bauguess
Faculty Mentor(s): Mohammed Chowdhury

Heart Disease has many different risk factors, including hypertension (high blood pressure) and high cholesterol. Research has shown that hypertension can be identified as early as adolescence, and preventative measures can be instilled in this age. However, the relationship between hypertension, high cholesterol, race, and income have not been studied in detail among adolescents. The present study analyzed the effects of different health factors on blood pressure and cholesterol levels in Caucasian and African-American girls ages 9-21 years old, the prime of adolescence. The dataset was part of a larger study completed by the National Heart, Blood, and Lung Institute and included 2,379 girls from the ages of 9-21 years. The data were analyzed using R- Statistical Software using logistic regression, t-tests for mean, multinomial regression, analysis of variance, and chi-square test of independence. There were significant differences between Caucasian and African-American girls for several different health factors. Caucasian girls were found to have lower systolic and diastolic blood pressures, but African-American girls were found to have higher high density lipoprotein (HDL) levels. Caucasian girls were found to have significantly higher triglyceride levels then African-American girls. Further, income, body mass index, systolic, and diastolic blood pressure were found to be highly related to race. Income and systolic blood pressure were also found to be highly related. As systolic blood pressure increased, the odds of being African-American increased. This was also found to be true in regards to body mass index.

Theater and Performance Studies

The New Lens of Normality: An Exploration of Queer Representation in Fairytales
Performance
Undergraduate Student(s): Dylan Carter
Faculty Mentor(s): Angela Farr Schiller

This project looks at how the fairy-tales we hear as children normalize certain identities in our society, and how they ostracize others. In this project, my purpose is to understand how incorporating queer narratives into fairy-tales normalizes queer identities alongside those that are already accepted. In recent years, fairy-tales have been returning in popularity within mainstream culture, but these stories continue to be presented within the traditional

framework of white, heteronormative, Christian, and gender conforming. However, not every child, or consumer of this material, can identify themselves within these narrow definitions of "traditional." Nevertheless, the importance of positive representation of identity has been researched heavily for years, and the need for this representation in the life of a child is important for the development of self-esteem. By seeing that all identities are valid instead of just one, children are able to feel normal and safe within the world, and can better understand and appreciate those who are different from them. This project takes traditional fairy-tales and performs queered versions of them. In queering fairy-tales this work allows room for others to feel safe, welcome, valid, and normal. The expected result for this project is that viewers will have a different outlook on what "normal" is, and the goal for this project is that the stories will be shared so that queer individuals who feel marginalized and outside of the norm will see representation of their identity. Ideally the stories that this research produces will be incorporated into the stories that we tell the future children so that they can live in a world with a new and more accepting idea of what is considered normal.

Go Ahead and Free Yourself: "The Escape; Or a Leap for Freedom", "The Shipment", and The Politics of Art as Emancipation
Oral Presentation
Undergraduate Student(s): DeShon Green
Faculty Mentor(s): Angela Farr Schiller

Psychological studies show that African Americans are still suffering from negative social structures, such as racism, built during the Antebellum slave period in the United States. From the recent Facebook live video of the police shooting of African American Philando Castile during a routine traffic stop in Minnesota, to the painful cellphone video of the police shooting of unarmed African American Alton Sterling, our contemporary moment is full of examples of the additional emotional weight that African Americans are asked to carry. This emotional stress equates to a type of psychological bondage which limits African Americans from experiencing a true sense of freedom, and a method of change is needed. Art is often used as vessel for igniting change, by allowing its audience to think critically on a subject or issue. Playwrights use their art to not simply entertain, but also comment on society and the world around them. William Wells Brown, a 19th century African American playwright, used his art to point to the issues experienced by those enslaved during the Antebellum Period in the United States. In his play "The Escape; or A Leap for Freedom", Brown uses the character Cato to shine light on the psychological restraints created and enforced by the system of slavery. Focusing on specific moments in the text, this project examines how the effects of slavery are perpetuated even within contemporary American society. Art holds some answers to addressing the stresses that come with being Black in America today. It is imperative that African Americans can recognize and reclaim a psychological sense of freedom for themselves. The journey for freedom is not only an issue of the past, but remains an issue today.

Decoding the X: Discovering the Black Experience
Oral Presentation
Undergraduate Student(s): Skylar Resna Jackson
Faculty Mentor(s): Angela Farr Schiller

In 2015, statistics showed that Black Americans are 5 times as likely to get shot and killed by the police than white Americans. With events, such as the killing of Michael Brown in Ferguson, Missouri, Freddie Gray in Baltimore, Maryland, and Walter Scott in North Charleston, South Carolina, questions about Black humanity have arisen to the forefront of mainstream conversation. Fueled by these events, this project examines the need for an expanded understanding of what it means to be Black in America beyond the stereotypes, those one-dimensional views that have continued to limit the opportunity for African Americans to be seen as fully human. Theatre reminds us that stories are fundamental in the creation of self and how we treat others. Most of the dramatic stories in the African American theatre canon are centered on racial oppression. However, Decoding the X: Discovering the Black Experience argues that in order for African Americans to be treated as fully human, the stories we tell about Black lives need to reflect this complexity. With millions of people flocking to the theatre every year, plays offer a unique and mainstream vehicle for examining complex issues. This project analyzes two plays, Tarrell Alvin McCraney's *In the Red and Brown Water* and Eisa Davis' *Bulrusher* looking at two different narratives of the Black experience outside of the stereotypical Black struggle that we see in the African American canon. Ultimately, this work calls for other stories about Black lives that show Black people as fully recognized human beings.

The Octoroon: The Black, The White and A Choice of Color
Oral Presentation
Undergraduate Student(s): Marcia Harvey
Faculty Mentor(s): Angela Farr Schiller

Dion Boucicault's play, The Octoroon demonstrates the absurd politics of miscegenation in mid 19th century America. Centering on the character of Zoe, a slave who is one-eighth black, this project analyzes the politics of a black woman passing as a white woman and what social circumstances might posses someone to make this decision. The Octoroon challenges how intersectionality and oppression ultimately controls one's entire life such as, the results of being denied the opportunity to achieve success or the ability to form true relationships because of the need to always hide one's true identity. This play speaks on the idea of perception, representation, and the lengths taken in order to overcome how the world views and acknowledges individuals. By exploring the effects of automatic assumption society is forced to view race in a different way, leaving us with the task of re-examming the characteristics associated with particular races. The Octoroon: The Black, The White, and A Choice of Color examines the world within the play, the concept of passing, and the battle for acceptance. The power of a play does no harm, it influences how we think and feel about our

own lives, and it brings unlikely people together. Art has the ability to resonate within ourselves allowing us to begin viewing the world as we wish it to be. Even in our contemporary moment, many individuals are subjected to society defining who they are based on what they look like. It is imperative not to define or assume something unfamiliar, because every individual deserves the right to proclaim his or her identity.

Washing Away Whitewashing in American Theatre
Oral Presentation
Undergraduate Student(s): Riley Schatz
Faculty Mentor(s): Angela Farr Schiller

The United States performing arts industry is one of the largest offenders when it comes to the casting practice known as whitewashing, which is the inappropriate casting of a white person in a role meant for a person of color. This essay discusses this very apparent lack of ethnic diversity found within the contemporary American theatre landscape and how discouraging that is to audience members and actors of color who, already at a disadvantage when it comes to casting, should be able to find accurate representations of their race, ethnicity, and culture on the stage. The Asian and Latino communities are both continuously jilted in this way. There is already a sufficient lack of material that incorporates these cultures, and many times in the productions of these shows, the casts are whitewashed. Fortunately, the professional theatrical world is starting to produce shows that are more culturally aware like *Hamilton* and *Allegiance*, opening up more opportunities for actors of color to perform. Unfortunately, these shows are often the victims of whitewashing when put on non-professionally throughout the country. There are two particular shows that will be discussed in detail that are continuously miscast: Schönberg and Boublil's highly acclaimed *Miss Saigon* and Lin-Manuel Miranda's *In the Heights*. *Miss Saigon* follows the story of a young Vietnamese woman. *In the Heights* focuses on a community that is mostly made up of Dominican and Puerto Rican people. This project attempts to prove the importance of casting actors of color in roles meant for actors of color by discussing the positive impact such casting choices would make in the theatrical world in regards to diversity, accuracy, and cultural respect.

A Gross Misunderstanding: Theatre as a Reflection of Societal Ignorance Surrounding Transgender and Nonconforming Identity
Performance
Undergraduate Student(s): Emily Musgrove, Tony Fox, Rebekah Mez, Gabriella Bueno, Gwydion Calder, James Strawder
Faculty Mentor(s): Angela Farr Schiller

Individuals that identify as transgender are under attack within contemporary American society and more specifically under attack in the American workplace. Workplace discrimination is crucial because it can have drastic effects on an individual's ability to maintain and keep a steady income. In fact, according to Melanie Brewster of Columbia

University, “Transgender individuals who experience any form of employment discrimination were almost five times as likely to experience physical violence because of their transgender status” (Brewster 159). Because there are few laws in place that protect transgender individuals in the workplace, it is important to highlight the effects of this discrimination in order to bring about change. In the U.S there are 26 right to work states which means that there are 26 states that can fire an individual without divulging a reason. This means that an individual could lose their job for any reason including gender bias. According to scholar Ashley Attia, “A recent survey revealed that [some] trans people have never been offered a job while living openly as a transgender person.” “On average, transgender workers have twice the unemployment rate of non-transgender workers.” (Attia 152). Theatre is a medium that can reach many different people and show the implications of being marginalized in a society. Oscar Wilde once said “I regard the theatre as the greatest of all art forms. The most immediate way in which a human can share with another the sense of what it is to be a human being.” In this case, we are using an adaptation of the play The Childrens Hour by Lilian Hellman to address the complex issues that transgendered communities face living in a heteronormative society. Ultimately, our goal is for people to understand the difficulties that transgendered people face in the workplace.

Murdering Femininity: A Discussion of Medea and the Place of Femininity in Partriarchy
Oral Presentation
Undergraduate Student(s): Samantha McBrayer
Faculty Mentor(s): Angela Farr Schiller

Our contemporary society is still based on a patriarchal system that creates very structured gender roles. These roles place men in leadership and women insubordination and thus disregard feminine traits as inherently weaker than masculine. In positions of power, traits traditionally considered masculine such as, strength, aggression, decisiveness, and violence, are systemically commended over those considered feminine such as empathy, consideration, and peacefulness. This paper examines the ways in which our patriarchal society continues to trap women in submission by enforcing the idea that feminine traits are too weak for leadership, but then demonizing a woman that chooses to, or naturally does, display traits considered masculine. Through the themes found in Euripides’ Medea, I analyze, by a close reading, the ways in which patriarchal society forces women to sever their own “feminine” traits in order to gain power, safety, and even sustenance. Euripides utilizes Medea to shed light on the ways a woman must “masculinize” herself in order to gain in a man’s world. This paper comes to the conclusion that these beliefs about femininity are designed to constrain women to a place of submission due to their inherent femininity and thus enforce a gender role of domesticity upon them.

Gender and Injustice in Euripides' Medea
Oral Presentation
Undergraduate Student(s): Jessica Rattray
Faculty Mentor(s): Angela Farr Schiller

Throughout history, women have fought to attain equal rights. Though the movement for gender equality has made significant progress, like achieving the right to vote in 1920, the crusade for equality is still a necessity for the modern American woman. The United States Constitution still fails to provide women with the same rights as men. Some of these rights include: affordable childcare, the ability to live free of all forms of violence against female bodies, equal pay, equal representation in government, and the end to discriminatory rape laws. Women do not have equal rights protected under the law and without the ratification of The Equal Rights Amendment women will continue to face injustice. A way to help solve this problem is through bringing awareness to the injustices women face. The plot of Medea consists of multiple occurrences of the protagonist being oppressed by men in positions of power. This project uses the 5th century dramatic text, written by Greek playwright Euripides, to illuminate women's struggle for equality within the confines of patriarchy. Medea's gender inhibits her from having a voice against her oppressors, leaving her with no legal means of seeking justice. Through the analysis and close reading of Medea this project highlights that the fight for women's rights is as prevalent today as it was in 5th century Greece.

The Court Room: A Close Analysis of the Play *Twelve Angry Men* and the Effects of Racial Biases in the Court Room
Oral Presentation
Undergraduate Student(s): Erica Holcomb
Faculty Mentor(s): Angela Farr Schiller

It is a known fact that jurors in the court system make their decisions based on their own personal feelings verses actual evidence or fact. Their emotions are based on discrimination in regards to the race of the defendant. According to James A. Forbes (American Clergyman), "When people rely on surface appearances and false racial stereotypes, rather than in-depth knowledge of others at the level of the heart, mind, and spirit, their ability to assess and understand people accurately is compromised." This project examines why jurors judge others based on identity. Innocent people are convicted of crimes because of the juror's vote. It's based on their own personal feelings instead of the facts presented in court cases. How does this affect our society? This paper analyzes the play *Twelve Angry Men* by Reginald Rose. I will discuss some of the reasons why jurors in the court room discriminate against defendants based on their race in court case verdicts. This play is an example to examine the juror's background and biased motives. This will demonstrate the reason jurors decide on a guilty verdict versus a not guilty verdict. *Twelve Angry Men* is based on a 1950's white jury verdict in a court room. Racial quotes such as, "I've lived among them all my life. You can't believe a word they say. You know that. I mean, they're born liars." These are examples of quotes,

which a white juror stated in regards to identity and race of the defendant. The verdict will be determined by the decision-making process of guilt or innocence. The decisions made in court can affect everyone and often times are life changing. I am revealing the truth about a racial court system that has not changed since the 1950's. This subject will continue to make you think about race and how the society constantly judges based on identities. Comparing and analyzing our role as a juror changes our thought process in the society. We will continue to think about identity and race in the court system.

Outside the Binary: Gender Identity and "The Children's Hour"
Oral Presentation
Undergraduate Student(s): Haley McFadden, Leydi Morales
Faculty Mentor(s): Angela Farr Schiller

Between 2015 and 2016, The Human Rights Campaign tracked at least 43 "transgender deaths due to fatal violence" in the United States. Our project examines discrimination against transgendered people and the pressure to belong that is exerted on them by the heteronormative society of contemporary America. This pressure can ultimately lead to repression of one's true identity, severe exclusion, acts of violence, and even death. According to the article, *Recognition of the Nonhuman: The Psychological Minefield of Transgender Inequality of the Law*, "The primary areas of discrimination against transgender people are employment, family law, healthcare, criminal justice, housing, and immigration. In the employment context, restroom issues, along with discriminatory hiring and firing practices, lead to many discrimination cases." Our study analyzes the play, "The Children's Hour" by Lillian Hellman, via a critical contemporary adaptation of Hellman's work in order to shed light on the perspective of a transgender identity in relationship to the contemporary heteronormative social structure that is present in America. Through our adaptation of "The Children's Hour," and extensive research to support our argument, we conclude that this heteronormative social structure has the power to deny someone fair treatment, equal opportunities, and even the right to life, based on their gender identity.

The Demographic Disconnect of Theatre: The Overwhelming Whiteness of the American Theatre
Oral Presentation
Undergraduate Student(s): Nathaniel Gesualdo
Faculty Mentor(s): Angela Farr Schiller

American theatre is withering on the vine; however, it is not necessarily the art form itself that is dying. In fact, many argue that American theatre as an art form has never been stronger. The problem is that for all the growing strength of the art form, audiences are not growing with the art. Most statistical research shows that theatre audiences overwhelmingly consist of white patrons over the age of fifty. While there is nothing wrong with that demographic, American theatre is failing to reach diverse demographics such as young people, people of color, and

people of lower income. This means that a large part of our society is not experiencing what theatre has to offer. Theatre has an incredible capability of influencing society. Through theatre we can talk about issues that are not commonly addressed, cultivate empathy and understanding in society, and bridge divides within communities like few other mediums can. This paper contends that if the discussions and healing that theatre artists work so carefully to craft are not even reaching most of society, then there is little point in its creation, no matter how poignant or important the conversations might be. By studying the efforts of multiple organizations to reach their missing demographics, this project examines the reasons for this growing disconnect and argues that until American theatre goes beyond simply diversifying the people seen on the stage it will continue to be disengaged from much of its potential audience members and therefore continue to undercut the value that it could hold in society.

Under the Helmet: Woyzeck, Ajax in Iraq, and the Politics of Seeking Help
Oral Presentation
Undergraduate Student(s): Jessica Rattray, Marcia Harvey
Faculty Mentor(s): Angela Farr Schiller

Thousands of veterans lose their lives because of negligence and mistreatment by medical professionals, leaving veterans untreated and professionals uncountable. Even more veterans live in poverty or without a home. In fact, according to Oklahoma Senator Dr. Coburn, "Too many men and women who bravely fought for our freedom are losing their lives, not at the hands of terrorists or enemy combatants, but from friendly fire in the form of medical malpractice and neglect by the Department of Veterans Affairs." With this is mind, Under the Helmet: Woyzeck, Ajax in Iraq, and the Politics of Seeking Help argues that the United States government is failing our veterans by neglecting to see each individual as fully human. A way to solve this problem is through promoting awareness of the unimaginable struggles war veterans face daily. This project uses Georg Buchner's 19th century dramatic text Woyzeck, and Ellen McLaughlin's Ajax in Iraq to illuminate those challenges. Buchner utilizes Woyzeck to address these issues explicitly through the adaptation the true story of a German veteran whose PTSD propels him to brutally murder his girlfriend. McLaughlins' Ajax in Iraq tells a compelling story utilizing personal narratives from contemporary veterans, and the story of a female soldier being abused by her officer, juxtaposed with Sophocles' 5th century tragedy Ajax. Together these texts demonstrate why the need for continual and creative advocacy has been important throughout time and across borders.

Equality over Patriarchy: A Close Analysis of the Plays *Machinal, Mulan Jr.*, and the Empowerment of the Female Voice in a Patriarchal World
Oral Presentation
Undergraduate Student(s): LaTausha Carter
Faculty Mentor(s): Angela Farr Schiller

Although women make up about 50 percent of the population in most countries, their voices are constantly drowned out by the structure of patriarchy which prevents true equality. A woman's voice is only heard when she breaks societal rules. Meryl Streep is quoted saying "We're viewed as equals -- but we're still not there yet. The challenge for our girls, I think, is dealing with that resistance. How can we lift and defuse it, how do we make it so our equality is not so threatening? Our girls are going to have to contend with that. I content with it right now in every realm I operate in." While much progress for the pursuit of happiness, liberty, and justice has been achieved women are still fighting to be heard. This project examines gender inequality by analyzing the works of Sophie Treadwell's *Machinal* and Disney's *Mulan Jr.*, a close adaptation of the 1998 Disney film Mulan. In the play *Machinal*, this project captures the character titled Young Woman to reveal the price she pays when she pushes against the pressing mechanics of patriarchy in order to free her voice. In the play *Mulan Jr.*, the self titled character Mulan illuminates the various risks and challenges for women that use the patriarchal system as a vehicle for their voice. In conclusion this talk will allow you to think of the extreme measures that women must consider and the punitive reactions from society. The responsibility of choosing to be heard may leave women with the weight of dealing with irreconcilable consequences and losing their identity.

Undergraduate Research Club

Campus Climate for LGBTIQ Students
Poster Presentation
Undergraduate Student(s): Tatiana Smithson, Emma Evans
Faculty Mentor(s): Amy Buddie

Past research has shown that LGBTIQ students often experience a hostile campus environment, including hearing disparaging remarks, being verbally harassed, and being physically assaulted (Kosciw, 2011). Furthermore, many LGBTIQ students feel as though they need to hide their identity from fellow students and teachers (Tetreault et al., 2013). The present study was designed to extend this past research by examining issues such as the coming out process, how LGBTIQ students label themselves, and their perceptions of the supportiveness of campus administrators, faculty, staff, and students. LGBTIQ students will be administered a survey on a range of issues related to their identity (e.g., "Who on the list below supports and comes to events such as LGBTIQ parades, events, meetings, etc.?" and "Do you feel your school has a support system for your sexual orientation?"). The results are expected to show differences in support from different constituencies (faculty vs. administrators vs. students). We also expect that being able to label one's sexual orientation or gender identity will help students feel included in the community. The results of this study can help us better understand the needs of our GLBTIQ students and how to make sure our campus practices inclusivity.

Health Behaviors in College Students
Poster Presentation
Undergraduate Student(s): Sharonjeet Kaur, Alyssa Venn, Hannah Bauguess, Eun Sol Chang, Hailey King, Juan C. Almanza
Faculty Mentor(s): Amy Buddie

College students often face health issues that can interfere with their academic success. Understanding these issues can support the development of programs that will prevent these issues from occurring, thus furthering student success. In this study, first year students at a large university in Southeastern United States will be given a health survey to screen for health issues in various areas of wellness, such as emotional, social, and physical wellness, based on a series of questions. They will also be asked for their demographics, such as gender, GPA, and ethnicity. The data will then be analyzed for trends and themes among demographics and student health. The data can further assist universities to develop specialized programs and resources that can prevent students from experiencing these health issues before they enter college.

Fundraising Strategies to Promote More Profitable Organizational Fundraisers
Poster Presentation
Undergraduate Student(s): Kylah Pollard, Sarai Bauguess
Faculty Mentor(s): Amy Buddie

Very little research exists about effective fundraising strategies for student organizations. With student organizations having to rely more heavily on fundraising, and less on university funds, it is important for groups to know of ways to raise money. They often use percent nights at restaurants, bake sales on campus, as well as selling merchandise on and off university property. The purpose of the study is to determine the most successful strategies for organization fundraisers. We will use hardcopy surveys to collect the data. The survey will consist of organization demographics including Organization Name, type, and the number of members. The survey then consists of a chart in which the President will fill in the item name, cost, price, and total sold. The survey then asks for the total amount of profit and percentages going to charity, if applicable. The survey then includes questions about the event itself, such as location (off-campus or on-campus) and advertising mediums. We anticipate discovering whether on-campus or off-campus events generate more profit, which locations are most profitable (on- and off-campus), and what items sell best. This project will give information to organizations at Kennesaw State and other colleges about the most effective fundraisers. The further implications will be discussed.

Sleep Deprivation and Stress Levels on Academic Performance
Poster Presentation
Undergraduate Student(s): Raiyan Rahman, Alec Curtis, Collin Avidano, Morgan Peavy, Jessica Melara, Sarai Bauguess

Faculty Mentor(s): Amy Buddie

Previous research has shown that there is a direct negative relationship between sleep deprivation and decreased academic performance. However, there are not many studies that assess the relationships among academic performance, sleep, and stress (Gomes, Tavares, & De Azevedo, 2011). The purpose of the present study is to determine the extent to which sleep deprivation and stress predicts the academic performance of undergraduate students. We are currently conducting an anonymous online survey of students that is assessing the correlations among amount of sleep, stress levels, and academic performance. In the survey, students are asked to quantify the time spent on academic, professional, and personal commitments throughout a typical week. To obtain more details about the quality of time spent on their commitments, we asked about their GPA, quality of sleep, and what time of day they feel most productive. We hypothesize that there will be correlations among academic performance, amount of sleep, and stress levels given a diverse set of college students (currently at N = 348).

Generation X versus Millennials: Technology and the Workplace
Poster Presentation
Undergraduate Student(s): Kylah Pollard, Zoe Cesar, David Escobar, Amilynne Graham, Torie Poole
Faculty Mentor(s): Amy Buddie

"The generation gap" is a common term in the media when discussing the differences between Generation X and Generation Y, also termed Millennials. Even though people are fascinated by the generation gap, little is known about the actual differences between the generations, especially in regards to technology and motivation. The purpose of this study is to compare Generation X and Millennials on topics such as technology usage and comprehension as well as workplace motivations. Millennials are defined as ages 18-35 and Generation X as ages 36-51 (Borges, Manuel, Elam, & Jones, 2010; Twenge, Campbell, Hoffman, & Lance, 2010). We used an online survey and a hardcopy survey consisting of demographics as well as questions about the number of hours spent on technology, age at which the participant first used technology, a list of social media sites to select, and Likert-type items on technology usage and workplace motivations. We anticipate that Millennials will be more likely to accept new technology than Generation X, and Generation X will be more dedicated and focused and have different goals than Millennials. The implications of the findings will be discussed.

Poster Session #1 Placement Assignment
2:30pm – 3:30pm

1: *An Analysis of the Complexity and Difficulty Level for the Game, Tumblestone*
Poster Presentation
Undergraduate Student(s): David Richmond, Denise Hernandez
Faculty Mentor(s): Joe DeMaio

2: *Mathematical Analysis of Tumor Growth Models Combining Chemotherapy and Immunotherapy*
Poster Presentation
Undergraduate Student(s): Patrick Schambach
Faculty Mentor(s): Ana-Maria Croicu

3: *Doubly-Chorded Pancyclic Graphs without P4 subgraphs*
Poster Presentation
Undergraduate Student(s): Edgar Reyes, Justin Mauer
Faculty Mentor(s): Victor Larsen

4: *Reducing Traveling Times for the Cobb County Fire Department*
Poster Presentation
Graduate Student(s): Bogdan Gadidov, Lili Zhang, Yiyun Zhou
Faculty Mentor(s): Joe DeMaio and Kurt Schulzke

5: *Health Behaviors in College Students*
Poster Presentation
Undergraduate Student(s): Sharonjeet Kaur, Alyssa Venn, Hannah Bauguess, Eun Sol Chang, Hailey King, Juan C. Almanza
Faculty Mentor(s): Amy Buddie

6: *10 Week Positive Behavior Change Program for Type II Diabetes Management and Prevention*
Poster Presentation
Undergraduate Student(s): Sharonjeet Kaur
Faculty Mentor(s): Glen Meades

7: *On the Outside Looking In: Student and Teacher Understanding of First Semester Organic Chemistry Reactions*
Poster Presentation
Undergraduate Student(s): Chidinma Candace Uba
Faculty Mentor(s): Kimberly Linenberger Cortes

8: *Synthesis of 1-Alkenyl Phosphonates using Organopalladium Reagents*
Poster Presentation
Graduate Student(s): Ronald Mensah
Faculty Mentor(s): Christopher W. Alexander

9: *Synthesis of 1-Aryl-1-alkenyl Phosphonates using a Organopalladium Reagents*
Poster Presentation
Graduate Student(s): Ronald Mensah
Undergraduate Student(s): Nicholas Zemel, Cody Falls, Cody Baum, Zane Bertoli, Matthew Pearson, Tanner Gerschick
Faculty Mentor(s): Christopher W. Alexander

10: *Reacting Organocuprate Reagents with 1-Phosphonovinyl Pseudohalides*
Poster Presentation
Undergraduate Student(s): Tanner Gerschick, Skyler Mize
Graduate Student(s): M. Tanner Dawson
Faculty Mentor(s): Christopher W. Alexander

11: *Design of Composite Materials Consisting of Cadmium Sulfide QDs and Nanoparticles: Photocatalytic Activity*
Poster Presentation
Undergraduate Student(s): Kristi Moncja
Faculty Mentor(s): Bharat Baruah

12: *Cotton Fabric Immobilized Composite Materials Containing ZnO and AuNPs: Photocatalytic Applications*
Poster Presentation
Undergraduate Student(s): David Agyeman
Faculty Mentor(s): Bharat Baruah

13: *Fabrication of Ternary Composite Materials Containing CdS, AuNPs and TiO_2 on Sand Substrate: Photocatalytic Application*
Poster Presentation

Graduate Student(s): William Alejandro Mendez Gil
Faculty Mentor(s): Bharat Baruah

14: *Design of Graphene Sand, Graphene Oxide Sand, and Reduced Graphene Oxide Sand Composites for Water Purification*
Poster Presentation
Undergraduate Student(s): Connie Wei
Graduate Student(s): Daniel A. Corella
Faculty Mentor(s): Bharat Baruah

15: *Characterization of the Thermus Thermophilus Transcriptional Regulator PaaR by the Combinatorial Approach REPSA*
Poster Presentation
Undergraduate Student(s): James Shell Cox
Faculty Mentor(s): Michael Van Dyke

16: *A Comparison of Self-Reported and Measured Levels of Physical Activity in a Free-Living Environment for a Pregnant Population*
Poster Presentation
Undergraduate Student(s): AnnaMagee Morris, Eleanor Stevenback
Faculty Mentor(s): Katherine Ingram

17: *Gestational Weight Gain in Relation to Infant Birthweight*
Poster Presentation
Undergraduate Student(s): Kidan Kidane, Katherine Gauthier
Faculty Mentor(s): Katherine Ingram and Janeen Amason

18: *The Association Between Fat Distribution and Insulin Resistance in Pregnancy*
Poster Presentation
Undergraduate Student(s): Kareem Pierre, Danielle Logan, Kidan Kidane
Faculty Mentor(s): Katherine Ingram and Janeen Amason

19: *Characteristics of Substance Addicted Mothers and Fathers that Predict Graduation from a Family Treatment Court: A Pilot Study*
Poster Presentation
Graduate Student(s): Katherine Barnett
Faculty Mentor(s): Genie Dornan and Janeen Amason

20: *Determining Contributing Factors of PGA Tour Professionals' Long Drives*
Poster Presentation
Undergraduate Student(s): Robert Jenkins
Faculty Mentor(s): Gerald Mangine

21: *Self-Reported Performance Measures of Males are Predictive of Overall Performance in the Crossfit Open*
Poster Presentation
Undergraduate Student(s): Oladeji Olowojesiku, Paul Serafini
Faculty Mentor(s): Gerald Mangine and Yuri Feito

22: *Interrater Reliability for Dual-Energy X-Ray Absorptiometry and Bioelectrical Impedance Analysis for Measuring Total and Regional Lean Mass*
Poster Presentation
Undergraduate Student(s): Taylor Boyett
Faculty Mentor(s): Gerald Mangine, Garrett Hester, and Trisha VanDusseldorp

23: *A View of College Culture Through Psycho-Physiological Measures: What Influence Does Alcohol Consumption Have on the Emotional Regulation of College Students?*
Poster Presentation
Undergraduate Student(s): Courtney Skeete, Luana Oh Scienza, Bethany Wyman, Jesse Edmond, Jasmine Williams, Rebekah Fallin, Tiana Britton, Jamie Miller, Nhat Nguyen
Faculty Mentor(s): Ebony Glover

24: *Estrogen and Emotion Regulation: An Examination of Self-Report and Biological Data*
Poster Presentation
Undergraduate Student(s): Jesse Edmond, Luana Scienza, Bethany Wyman, Jasmine Williams, Rebekah Fallin, Tiana Britton, Jamie Miller, Nhat Nguyen
Faculty Mentor(s): Ebony Glover, Sharon Pearcey, and V. Doreen Wagner

25: *The Relationship Between Childhood Trauma Exposure and Fear-potentiated Startle*
Poster Presentation
Undergraduate Student(s): Cheyenne Ashley, Luana Scienza, Rebekah Fallin, Jesse Edmond, Jasmine Williams, Tiana Britton, Jamie Miller
Faculty Mentor(s): Ebony Glover

26: *Childhood Trauma and Emotion Regulation*
Poster Presentation
Undergraduate Student(s): Chanel Lindstrom, Luana Scienza, Nhat Nguyen, Jamie Miller, Rebekah Fallin, Jasmine Williams, Bethany Wyman**,** Jesse Edmond**,** Tiana Britton
Faculty Mentor(s): Ebony Glover, Sharon Pearcey, and V. Doreen Wagner

27: *Understanding Contributions of Estrogen Levels and Hormonal Contraceptives to Emotion Regulation in Women Compared to Men*
Poster Presentation
Undergraduate Student(s): Olivia Lauzon, Luana Scienza, Nhat Nguyen, Bethany Wyman, Jesse Edmond, Jasmine Williams, Rebekah Fallin, Tiana Britton, Jamie Miller
Faculty Mentor(s): Ebony Glover, Sharon Pearcey, and V. Doreen Wagner

28: *Evaluating the Effect of Previous Knowledge of a Disorder on Attitudes*
Poster Presentation
Undergraduate Student(s): Hannah Dollinger *[University Honors Scholar]*
Faculty Mentor(s): Sharon Pearcey

29: *Estrogen and Emotion Regulation: An Examination of Self-Report and Biological Data*
Poster Presentation
Undergraduate Student(s): Jesse Edmond, Luana Scienza, Bethany Wyman, Jasmine Williams, Rebekah Fallin, Tiana Britton, Jamie Miller, Nhat Nguyen
Faculty Mentor(s): Ebony Glover, Sharon Pearcey, and V. Doreen Wagner

30: *The Relationship Between Childhood Trauma Exposure and Fear-potentiated Startle*
Poster Presentation
Undergraduate Student(s): Cheyenne Ashley, Luana Scienza, Rebekah Fallin, Jesse Edmond, Jasmine Williams, Tiana Britton, Jamie Miller
Faculty Mentor(s): Ebony Glover

31: *Childhood Trauma and Emotion Regulation*
Poster Presentation
Undergraduate Student(s): Chanel Lindstrom, Luana Scienza, Nhat Nguyen, Jamie Miller, Rebekah Fallin, Jasmine Williams, Bethany Wyman**,** Jesse Edmond**,** Tiana Britton
Faculty Mentor(s): Ebony Glover, Sharon Pearcey, and V. Doreen Wagner

32: *Voltage-Gated Sodium Channel Auxiliary Subunits*
Poster Presentation
Undergraduate Student(s): Kimberly Meyberg
Faculty Mentor(s): Tsai-Tien Tseng

33: *The Verbalization of Stress and Its Effect on the Workplace*
Poster Presentation
Undergraduate Student(s): Dustin Sergent
Faculty Mentor(s): Mari-Amanda Dyal

34: *Leadership and ROTC: Methods and Optimization of Cadet Leadership*
Poster Presentation
Undergraduate Student(s): Barrett Tallant
Faculty Mentor(s): James Summersell and Kami Anderson

35: *The Experimental Investigation of Temperature Influence on the Oscillations of Particles on Liquid Surfaces*
Poster Presentation
Undergraduate Student(s): Daniel Shah, Alhagie Taal
Faculty Mentor(s): Sathish Gurupatham

36: *The Role of Punctuation on the Social Media Platform Tumblr*
Poster Presentation
Undergraduate Student(s): Sara Omer
Faculty Mentor(s): Jeanne Bohannon

37: *What is a Meme?*
Poster Presentation
Undergraduate Student(s): Amira Menkara
Faculty Mentor(s): Jeanne Bohannon

38: *Mind of Matter*
Poster Presentation
Undergraduate Student(s): Nathan Blackwell
Faculty Mentor(s): Amy Gruss

39: *Literary Review of "I Contain Multitudes: The Microbes Within Us and a Grander View of Life"*
Poster Presentation
Undergraduate Student(s): Steve Waldron
Faculty Mentor(s): Amy Gruss

40: *Archeological Efforts to Locate Slave Dwellings at a Civil War Era Plantation Site in North Georgia*
Poster Presentation
Undergraduate Student(s): Ethan Williams
Faculty Mentor(s): Terry Powis

41: *Ceramic Analysis from the Middle Woodland Lower Dabbs Site in Cartersville, Georgia*
Poster Presentation
Undergraduate Student(s): Briana Johnston
Faculty Mentor(s): Terry Powis

42: *Contradictions: A Historical Archeological Analysis of the Life of Corra Harris*
Poster Presentation
Undergraduate Student(s): Jordan Lashaun Gentry *[University Honors Scholar]*
Faculty Mentor(s): Terry Powis

43: *Investigation of a 19th Century Cabin at Troup Factory: A Former Servant's Quarter to a Freeman's House*
Poster Presentation
Undergraduate Student(s): Cynthia Sun
Faculty Mentor(s): Terry Powis

44: *Investigating Usefulness of Canoe Travel on the Etowah River*
Poster Presentation
Undergraduate Student(s): Jordan Whiteman
Faculty Mentor(s): Terry Powis

45: *Understanding Archaic Livelihood in Southern Georgia*
Poster Presentation
Undergraduate Student(s): Gregory Smart
Faculty Mentor(s): Terry Powis

46: *Enhancing Requirements Elicitation Activities Using Virtual Reality*
Poster Presentation
Graduate Student(s): Aman Bhimani
Undergraduate Student(s): Jared Gibson, Casey Brock
Faculty Mentor(s): Paola Spoletini

47: *Using Biofeedback to Design and Deliver Online Courses for Computer and Software Majors*
Poster Presentation
Graduate Student(s): Jennifer Cassan
Faculty Mentor(s): Paola Spoletini

48: *Improving the Prediction Accuracy of Text Data and Attribute Data Mining with Preprocessing*
Poster Presentation
Graduate Student(s): Priyanga Chandrasekar
Faculty Mentor(s): Kai Qian

49: *The Plight and Determination of First-Generation Latino Students in the United States*
Poster Presentation
Undergraduate Student(s): Tania Benavidez
Faculty Mentor(s): Brandon D. Lundy

50: *Grocery Shopping for Your Fur Child: Humans Buying Food for Cats*
Poster Presentation
Undergraduate Student(s): Natasha Lee
Faculty Mentor(s): Brandon D. Lundy

51: *Gaggles of Gamers: Gamer Group Dynamics in a Virtual Reality Setting*
Poster Presentation
Undergraduate Student(s): Adam Cusick
Faculty Mentor(s): Brandon D. Lundy

52: *Friend Request: Identifying the Impact Social Media Networking has on a Non-Governmental Organization in Atlanta, GA*
Poster Presentation
Undergraduate Student(s): Ashely Nicole Dawson
Faculty Mentor(s): Brandon D. Lundy

53: *KSU's Initiatives toward Student Healthy Eating*
Poster Presentation
Undergraduate Student(s): Richonna Sanders
Faculty Mentor(s): Brandon D. Lundy

54: *Read All About It! Marketing Anthropology to Students at Kennesaw State University*
Poster Presentation
Undergraduate Student(s): Elizabeth Pomawski
Faculty Mentor(s): Brandon D. Lundy

55: *Yoga in Westernized Media: Perspectives and Expectations of the American Yogi*
Poster Presentation
Undergraduate Student(s): Kendra Thomas
Faculty Mentor(s): Brandon D. Lundy

56: *Swipe Right If You like Long Walks on the Beach: Online Dating and How Race, Gender, Education, and Sexuality Factor into Romantic Selection on Dating Sites*
Poster Presentation
Undergraduate Student(s): Zoe Heard
Faculty Mentor(s): Brandon D. Lundy

57: *Involvement of Women in Outdoor Recreational Activities*
Poster Presentation
Undergraduate Student(s): Samuel Sims
Faculty Mentor(s): Brandon D. Lundy

58: *How Do College Students Choose Their Presidential Candidate?*
Poster Presentation
Undergraduate Student(s): Evan Talmadge
Faculty Mentor(s): Brandon D. Lundy

59: *Lost Skills and Ancient Arts: Stone Tool Culture Preservation and Education*
Poster Presentation
Undergraduate Student(s): Ellie Stanley
Faculty Mentor(s): Brandon D. Lundy

60: *Why Do International Students Come to the United States to Study?*
Poster Presentation
Undergraduate Student(s): Yasmin Alamin
Faculty Mentor(s): Brandon D. Lundy

61: *Comparison of Aflatoxin and Non Aflatoxin Producing Aspergillus SPP. in Contaminated Peanuts*
Poster Presentation
Undergraduate Student(s): Paul Branham, Sina Fleke
Faculty Mentor: Premila Achar

62: *Brassica juncea Growth Under Nutrient Limitations*
Poster Presentation
Undergraduate Student(s): Michelle Jolly
Graduate Student(s): Andrew Thornhill
Faculty Mentor(s): Matthew Weand

63: *Influence of Chinese Privet on Patterns of Litter Fall in Riparian Zones*
Poster Presentation
Undergraduate Student(s): Ronnie Adams, Brian Greene, Nathan Kasmar, Taylor Nash
Faculty Mentor(s): Matthew Weand

64: *Fin-folds and Autopods Share a Conserved Shh-Gremlin-Fgf Regulatory Network*
Poster Presentation
Undergraduate Student(s): Elishka Holmquist
Faculty Mentor(s): Marcus Davis and Amanda Cass

65: *A Preliminary Molecular Assessment of Sediment Microbial Community Diversity and Composition Associated with Seagrass Beds and Unvegetated Areas in Shallow Coastal Waters Around Apalachicola Bay, Florida*
Poster Presentation
Undergraduate Student(s): Michelle Edward *[University Honors Scholar]*
Faculty Mentor(s): Thomas McElroy, Julia Morrissey

66: *Before and After: Wastewater Nitrogen Sources in a Local Watershed*
Poster Presentation
Undergraduate Student(s): Thereshana Tan
Faculty Mentor(s): Troy Mutchler

67: *Comparing Staining Techniques to Visualize Endomycorrhizal Fungal Colonization in Plant Roots*
Poster Presentation
Undergraduate Student(s): Joseph Almengor
Faculty Mentor(s): Paula Jackson

68: *Establishment of Primary Cell Cultures from Species Oreochromis Niloticus*
Poster Presentation
Undergraduate Student(s): Kristina Howard
Faculty Mentor(s): Jennifer Louten

69: *Techniques for the Characterization of Newly Derived Cell Cultures*
Poster Presentation
Undergraduate Student(s): Kirsten Marick
Faculty Mentor(s): Jennifer Louten

70: *Conditions for Isolation and Differentiation of Tilapia Cells*
Poster Presentation
Undergraduate Student(s): Aaron Aghai, Abby Kabo
Faculty Mentor(s): Jennifer Louten

71: *The Border Wall with Mexico: An Analysis of Its Sociological, Economic, Political and Cultural Impact*
Poster Presentation
Undergraduate Student(s): Joshua Ehrhardt, Wesley Hohensee, Courtney Poulson
Faculty Mentor(s): Darina Lepadatu

72: *The Impact of Undocumented Workers on the US Society*
Poster Presentation
Undergraduate Student(s): Michelle Mendez, Luis Delgado-Zepeda
Faculty Mentor(s): Darina Lepadatu

73: *Effects of Amphetamines on Conditioned Place Preference Behavior*
Poster Presentation
Graduate Student(s): Brad Serpa
Faculty Mentor(s): Lisa Ganser and Adrienne King

74: *Effects of Amphetamine on Zebrafish Behavior*
Poster Presentation
Undergraduate Student(s): Miriam (Mik) Chari *[University Honors Scholar]*
Faculty Mentor(s): Lisa Ganser

75: *Correlates of Amphetamine Addiction in the Zebrafish Model*
Poster Presentation
Undergraduate Student(s): Paul Hwang-Bo, Luke Dickson, Douglas Grandberry
Faculty Mentor(s): Lisa Ganser and Adrienne King

76: *Oligochaete Growth and Reproduction in Local Streams*
Poster Presentation
Undergraduate Student(s): Rebekah Wedermeyer, Brett Beatty
Faculty Mentor(s): Heather Sutton

77: *Voltage-Gated Calcium Channel Auxiliary Subunits*
Poster Presentation
Undergraduate Student(s): Reagan Foster, Danielle Varljen
Graduate Student(s): Kevin Bennett
Faculty Mentor(s): Tsai-Tien Tseng

78: *Optimization of Bioinformatic Pipelines for Foodborne Pathogen Detection with Next-Generation Sequencing*
Poster Presentation
Undergraduate Student(s): Danielle Varljen
Faculty Mentor(s): Tsai-Tien Tseng

79: *Changes in pH Dependence Caused by Histidine Mutants of LBP*
Poster Presentation
Undergraduate Student(s): Beryl Khakina
Faculty Mentor(s): Susan M. E. Smith

80: *Planning for an Aging Population: A Mixed Methods Research Project*
Poster Presentation
Undergraduate Student(s): Robert Skinner, Henriette N'kodia, Geraldine N'kodia, Eun Sol Chang, Sabrina Anderson, Rosa King
Graduate Student(s): Brandon McCollum
Faculty Mentor(s): Evelina W. Sterling and Christina Scherrer

81: *Mis-Informed Decision-Making: The Marketing of Cancer Treatment Options*
Poster Presentation
Undergraduate Student(s): Caroline Benefield
Faculty Mentor(s): Evelina W. Sterling

82: *The Power of a Movement: How Third-Wave Feminism has Shaped Sexual Violence in the United States*
Poster Presentation
Undergraduate Student(s): Natalie Phillips
Faculty Mentor(s): April Johnson

83: *Modern Day Corruption in Various Regimes*
Poster Presentation
Undergraduate Student(s): Victoria Pancheva, Armena Brown, Sydney Palmer, Kenneth Carmon
Faculty Mentor(s): Esther Jordan

84: *The Refugee Crisis and the Determinants of Responsibility to Protect*
Poster Presentation
Undergraduate Student(s): Katherine McNamara, Seychelle Steele, Mary Payton Blackmon
Faculty Mentor(s): Esther Jordan

85: *A Systematic Review of Juvenile Risk Assessments Predicitve Validity Studies*
Poster Presentation
Undergraduate Student(s): Denver Harris
Faculty Mentor(s): James McCafferty

86: *Risk-Taking Behaviors Among College Students with Disabilities*
Poster Presentation
Undergraduate Student(s): Kaitlyn Hoover
Faculty Mentor(s): Heidi Scherer

87: *Factors Related to Blame Taking among Friends: Closeness, Beliefs About Reporting Wrongdoing, and Identity*
Poster Presentation
Undergraduate Student(s): Carly Burger, Mikayla Dittman, Cooper Jannuzzo
Faculty Mentor(s): Jennifer Willard

88: *Gender and Willingness to Take the Blame Among Close Friends*
Poster Presentation
Undergraduate Student(s): Mikayla Dittman, Dara Latimer, Noel Byers Carter
Faculty Mentor(s): Jennifer Willard

89: *Exploring the Relationship Among Stress, Personality, and Working Memory*
Poster Presentation
Undergraduate Student(s): Sharlene Strother, Hillary Groover, Melissa Ake
Faculty Mentor(s): Adrienne Williamson

90: *Is the Struggle Real? Perceptions of Stress on Working Memory*
Poster Presentation
Undergraduate Student(s): Karen Ake, Amneh Z. Minkara, Hillary P. Groover, Bethany A. Wyman, Connor L. Lewis, Jamie N. Miller
Faculty Mentor(s): Adrienne Williamson

91: *Peer Education: The Answer to Prevention on College Campuses*
Poster Presentation
Undergraduate Student(s): Lindsay Montgomery, Jessica McDaniel
Faculty Mentor(s): Austin Brown and Teresa Johnston

92: *The Role of Mindfulness as a Teaching Approach: Increasing Receptivity of Multicultural Course Content*
Poster Presentation
Undergraduate Student(s): Brenda Almaras, Aubrey Spivey, Brittany Fishman, Michael E. Lester
Faculty Mentor(s): Tracie Stewart

93: *Sexual Orientation Influences Rape Identification and Accuracy By Definition and Tactic*
Poster Presentation
Undergraduate Student(s): Elizabeth Perry, Selden Collier, Kylie Kuglar, Jamie Nourzad, Rachael Bishop, Kaitlyn Hoover
Faculty Mentor(s): Dorothy Marsil

94: *Is Coerced Consent Rape? It Depends on How Rape is Defined*
Poster Presentation
Undergraduate Student(s): Rachael Bishop, Jamie Nourzad, Kylie Kuglar
Faculty Mentor(s): Dorothy Marsil and Corinne McNamara

95: *Understanding Rape Myth Acceptance as it Relates to Attitudes toward Sexual Immorality, Consensual Sexual Experiences, and Sources of Sexual Knowledge*
Poster Presentation
Undergraduate Student(s): Jamie Nourzad, Kaitlyn Hoover, Tara Joyce
Faculty Mentor(s): Dorothy Marsil and Beth Kirsner

96: *Sources of Sexual Knowledge, Sex Negativity, and Sexual Shame*
Poster Presentation
Undergraduate Student(s): Tara Joyce *[University Honors Scholar]*
Faculty Mentor(s): Beth Kirsner and Dorothy Marsil

97: *Modeling and Design of Modular Mechanical Linkage Mechanism*
Poster Presentation
Undergraduate Student(s): Skyler Bagley, Jacob Davis, Zachary Hyder, Megan McDowell
Faculty Mentor(s): Ayse Tekes and Richard Ruhala

98: *Comparison of High Bypass Turbofan Engine Cycle Analyses: A Case Study*
Poster Presentation
Undergraduate Student(s): Christopher Roper, Skyler Bagley
Faculty Mentor(s): Adeel Khalid

99: *The Danger of Unqualified Dance Instruction*
Oral Presentation
Undergraduate Student(s): Angelina Pellini *[University Honors Scholar]*
Faculty Mentor(s): Sarah Holmes

100: *Synthesis of N-Confused Tetraphenylporphyrin*
Poster Presentation
Undergraduate Student(s): Tamia Cuttray, Kennede' Wallace
Faculty Mentor(s): Janet Shaw

Poster Session #2 Placement Assignment
5:00pm – 6:00pm

1: *Our Community: Our School Climate*
Poster Presentation
Undergraduate Student(s): Micaela Bronte Hays
Faculty Mentor(s): David Glassmeyer and Brian Lawler

2: *Sample Size and Biased Selection Explains Preterm Infant Growth Measure Selection Disparities*
Poster Presentation
Undergraduate Student(s): Wendy Ballew, Jeffrey Chou
Faculty Mentor(s): Louise Lawson and Nicole Ferguson

3: *A Comparison of Decision Tree and Logistic Regression Models for Prediction of Business Credit Risk*
Poster Presentation
Graduate Student(s): Jessica M. Rudd
Faculty Mentor(s): Jennifer Priestley

4: *A Mathematical Model for the Effect of Domestic Animals on Human African Trypanosomiasis (Sleeping Sickness)*
Poster Presentation
Undergraduate Student(s): Sagi Shaier
Faculty Mentor(s): Meghan Burke

5: *How Can Neuromarketers Optimize Dating Websites to Attract Customers Based on Design?*
Poster Presentation
Undergraduate Student(s): Dustin Bearden, Shensen Gao
Faculty Mentor(s): Sandra Pierquet

6: *How Can the Layout of the Makeup Store Sephora Be Improved by Applying Neuromarketing Research to Positively Impact Purchasing Behavior?*
Poster Presentation
Undergraduate Student(s): Kinza Tariq, Bailey Thompson
Faculty Mentor(s): Sandra Pierquet

7: *How Do Evolutionary Factors Influence Intra-Sexual Competition in Males and Females in Their Personal Branding and Subsequent Purchase Decisions?*
Poster Presentation
Undergraduate Student(s): Kaci Giles, Sarah Rice
Faculty Mentor(s): Sandra Pierquet

8: *Sex Sells: Determining How Explicit Advertising Impacts Men and Women Differently Through the Application of Neuromarketing Theory*
Poster Presentation
Undergraduate Student(s): Robert Bernard, Kristen Grodd
Faculty Mentor(s): Sandra Pierquet

9: *Beauty, Brains, and Brand Loyalty*
Poster Presentation
Undergraduate Student(s): Maria Ford
Faculty Mentor(s): Sandra Pierquet

10: *How Health/Beauty Brands Can Use Cuteness to Affect Consumer Purchase Behavior*
Poster Presentation
Undergraduate Student(s): Rachael Eidson
Faculty Mentor(s): Sandra Pierquet

11: *How Can Marketers Effectively Identify and Target Consumers Using Self-Esteem as a Driver Through the Application of Neuromarketing Theory?*
Poster Presentation
Undergraduate Student(s): Tyler Hightower
Faculty Mentor(s): Sandra Pierquet

12: *Analysis of General Chemistry Lecture Discourse Regarding Gases and its Effect on Students' Perception of Chemical Representations at the Macroscopic, Submicroscopic, and Symbolic Levels*
Poster Presentation
Undergraduate Student(s): Amber Gallimore, Isaac Brozino, Joshua Sukumar, Kersten Forsberg
Faculty Mentor(s): Michelle L. Head

13: *A Comparison of Over the Counter Medicines Used to Treat Forms of Arthritis Using Gas Chromatography and UV Spectrometry*
Poster Presentation
Undergraduate Student(s): Megan Whitlow
Faculty Mentor(s): Huggins Z. Msimanga

14: *Comparing the Active Ingredients of Different Brands of Allergy Medication Using UV-Vis Spectroscopy*
Poster Presentation
Undergraduate Student(s): Devan Patel, Jillian Calderon
Faculty Mentor(s): Huggins Z. Msimanga

15: *A Quantitative Perspective on the Irritating Nature of Hot Pepper Sauces*
Poster Presentation
Undergraduate Student(s): Reagan Hooper, Francisca Small
Faculty Mentor(s): Huggins Z. Msimanga

16: *A Comparative Study of Drugstore Sunscreen Products Based on Their Sun Protection Factors and Ultra-Violet Spectrometry*
Poster Presentation
Undergraduate Student(s): Dalila Arroyave Gomez, Megan Renee Fulwood, Alyssa Katherine Selewski
Faculty Mentor(s): Huggins Z. Msimanga

17: *How Much Caffeine is in Your Cup of Decaf?*
Poster Presentation
Undergraduate Student(s): John James Malone, Brady Kevin Smith
Faculty Mentor(s): Huggins Z. Msimanga

18: *Improved Cocaine Analysis of US dollars by Using Solid Phase Extraction and Gas Chromatography/Mass Spectrometry*
Poster Presentation
Undergraduate Student(s): Tuan Do, Jeresa Watson
Faculty Mentor(s): Huggins Z. Msimanga

19: *Extraction and Analysis of Benzaldehyde from Food Products Using UV Spectroscopy and GC-Mass Spectroscopy*
Poster Presentation
Undergraduate Student(s): Jessica Lauren Harry, Andrew Blake Roberds
Faculty Mentor(s): Huggins Z. Msimanga

20: *Quantifying Caffeine Content in Various Thermogenics by UV Spectrometry and HPLC/PDA*
Poster Presentation
Undergraduate Student(s): Patrick B. Glenn, Andrea Green, Caleb Mathieu Veselica
Faculty Mentor(s): Huggins Z. Msimanga

21: *Analysis of Methoxycarbonyl N-Confused Tetraphenylporphyrin*
Poster Presentation
Undergraduate Student(s): Andrea Green, Katie Schoen
Faculty Mentor(s): Janet Shaw

22: *Fabrication of Composite Materials Using Silicon Substrate, ZnO Nanospheres and Polymer Stabilized Nanoparticles: Photocatalytic activity*
Poster Presentation
Undergraduate Student(s): Matthew Geiger, Christopher Kelley, Kelly. M. Jacobson
Faculty Mentor(s): Bharat Baruah and Gregory J. Gabriel

23: *Toward the Synthesis of a New Anionic N-heterocyclic Carbene and its Corresponding Metal Complexes*
Poster Presentation
Undergraduate Student(s): Michael A. Baker, Alexander Mason, Angelo Changas, Graeme Bettler
Graduate Student(s): Ashley Carter
Faculty Mentor(s): Daniela Tapu

24: *Nanosized Dianionic Janus-Type N-Heterocyclic Carbenes and their Zwitterionic Gold and Silver Metal Complexes*
Poster Presentation
Graduate Student(s): Ashley Carter
Undergraduate Student(s): Alexander Mason, Michael A. Baker, Graeme Bettler, Angelo Changas
Faculty Mentor(s): Daniela Tapu

25: *New Annulated N-heterocyclic Carbenes and Their Transition Metal Complexes*
Poster Presentation
Undergraduate Student(s): Graeme Bettler, Angelo Changas
Faculty Mentor(s): Daniela Tapu

26: *Novel Polycyclic Thiones: Synthesis and Complexation*
Poster Presentation
Undergraduate Student(s): Reagan Hooper, Alexander Mason, Orrion Kuykendall
Faculty Mentor(s): Daniela Tapu

27: *A Propeller-Shaped tris-N-heterocyclic Carbene*
Poster Presentation
Graduate Student(s): Richard Justice
Undergraduate Student(s): Andre Berry, Reagan Hooper, Alexander Mason, Pearl Jean
Faculty Mentor(s): Daniela Tapu

28: *Toward the Synthesis of a Novel tris-N-Heterocyclic Carbene*
Poster Presentation
Graduate Student(s): Richard Justice, Maleek Montgomery
Faculty Mentor(s): Daniela Tapu

29: *Novel Thione Based Ligands: Synthesis and Complexation*
Poster Presentation
Undergraduate Student(s): Alexander Mason, Pearl Jean
Faculty Mentor(s): Daniela Tapu

30: *Do Neurogenin and NeuroD1 Function Redundantly in Neuronal Cell Fate Specification?*
Poster Presentation
Undergraduate Student(s): Elyse Christensen
Graduate Student(s): Zachery Mielko
Faculty Mentor(s): Martin Hudson

31: *Is eor-1 a Transcriptional Regulator of kal-1/anosmin?*
Poster Presentation
Undergraduate Student(s): Lauren Leitner
Graduate Student(s): Zachery Mielko
Faculty Mentor(s): Martin Hudson

32: *Do the Transcription Factors sea-1 and ztf-29 Control kal-1 Gene Expression?*
Poster Presentation
Undergraduate Student(s): Kaylee Bronson, Victoria Owens
Graduate Student(s): Wendy Aquino Nunez
Faculty Mentor(s): Martin Hudson

33: *Cell Lineaging as a Tool to Identify Novel kal-1 Transcriptional Regulators*
Poster Presentation
Undergraduate Student(s): Dalton Carriker
Graduate Student(s): Zachery Mielko
Faculty Mentor(s): Martin Hudson

34: *Ephrin Signaling in C. elegans Interneuron Development*
Poster Presentation
Undergraduate Student(s): Christopher Benton
Graduate Student(s): Tyler Hill
Faculty Mentor(s): Martin Hudson

35: *Why the Worm Turned: Eph Receptor Function in C. elegans Locomotion*
Poster Presentation
Undergraduate Student(s): Ashtyn B. Johnston
Graduate Student(s): Tyler Hill
Faculty Mentor(s): Martin Hudson

36: *Abnormal Cardiac Patterning and Development in Akirin Embryos*
Poster Presentation
Undergraduate Student(s): Madison Hupp *[University Honors Scholar]*
Faculty Mentor(s): Scott Nowak

37: *Interaction of Akirin with Muscles Wasted During Myogenesis*
Poster Presentation
Undergraduate Student(s): Courtney Willett
Faculty Mentor(s): Scott Nowak

38: *Assessing Deer Abundance in Kennesaw Mountain National Battlefield Using Motion Detection Cameras*
Poster Presentation
Undergraduate Student(s): Victoria Mendiola, Melissa Martin
Faculty Mentor(s): William Ensign

39: *Employment of BioMark HPR Plus Handheld PIT Tag Reader for Monitoring the Movement of Fishes in a Small Stream*
Poster Presentation
Graduate Student(s): Andrea Davis
Undergraduate Student(s): William Commins
Faculty Mentor(s): William Ensign

40: *Age and Growth of Central Stonerollers (*Campostoma oligolepis*) Across a Range of Urbanization*
Poster Presentation
Undergraduate Student(s): Bijan Moshgelani, Thereshana Tan
Graduate Student(s): Hannah Grice
Faculty Mentor(s): William Ensign

41: *Impacts of Urbanization on the Composition of Gut Microbiota in Campostoma oligolepis*
Poster Presentation
Undergraduate Student(s): Joanna Ho
Graduate Student(s): Hannah Grice
Faculty Mentor(s): Thomas McElroy and William Ensign

42: *Detection of Putative Virulence Factors using Multiplex Polymerase Chain Reaction and Nematode Challenge Assay*
Poster Presentation
Undergraduate Student(s): Victoria Foltz, Brian D. Sattelmeier, Rahiq R. Rahman
Research Assistant: Pyeongsug Kim
Faculty Mentor(s): Donald J. McGarey

43: *Lateral Abdominal Muscles as a Model for Studying Muscle Atrophy in Drosophila*
Poster Presentation
Undergraduate Student(s): Natasya Tamba
Faculty Mentor(s): Anton Bryantsev

44: *Finding the Key Causative Genes Involved in Muscle Wasting*
Poster Presentation
Graduate Student(s): Matthew Giedd
Faculty Mentor(s): Anton Bryantsev

45: *Screening for Genetic Factors that Determine Muscle Specialization*

Poster Presentation
Graduate Student(s): Ashley McDougal
Faculty Mentor(s): Anton Bryantsev

46: *Complex Effects of Cadmium Toxicity Revealed with the Fruit Fly Model*
Poster Presentation
Undergraduate Student(s): Hannah Mary Stratton
Faculty Mentor(s): Anton Bryantsev

47: *Heat Map Modeling of Cancer Mutations in the Electron Transport Chain - Complex III*
Poster Presentation
Undergraduate Student(s): Ben Crews
Faculty Mentor(s): Estella Chen Quin

48: *The Role of an Abuser Log: Identifying the Connection between Domestic Violence and Animal Abuse*
Poster Presentation
Undergraduate Student(s): Jordan Foster
Faculty Mentor(s): Darlene Xiomara Rodriguez

49: *Volunteer Management: Creating a Coding System for Increased Efficiency*
Poster Presentation
Undergraduate Student(s): Holley McGowan
Faculty Mentor(s): Darlene Xiomara Rodriguez

50: *Encrucijada: Transportation and Mobility of Latinos in Atlanta, Georgia*
Poster Presentation
Undergraduate Student(s): Jennifer R. Klos
Faculty Mentor(s): Darlene Xiomara Rodriguez and Paul McDaniel

51: *Advocating for Refugee Resettlement on College Campuses*
Poster Presentation
Undergraduate Student(s): Kristina Agbebiyi
Faculty Mentor(s): Darlene Xiomara Rodriguez

52: *The Importance of Volunteer Recognition in a Nonprofit Organization*
Poster Presentation
Undergraduate Student(s): Sydney Scruggs
Faculty Mentor(s): Darlene Xiomara Rodriguez

53: *Developing Advocacy Strategies: An Applied Research Project for The Brian Jordan Foundation*
Poster Presentation
Undergraduate Student(s): Sydney Scruggs
Faculty Mentor(s): Jennifer Wade-Berg

54: *Improving Georgia Cares' System of Supporting Unconfirmed Cases of Trafficked Youth*
Poster Presentation
Undergraduate Student(s): Kaylie L. Callahan
Faculty Mentor(s): Darlene Xiomara Rodriguez

55: *The Role of a Board Orientation Manual in a Startup Nonprofit*
Poster Presentation
Undergraduate Student(s): Kaelyn Meade
Faculty Mentor(s): Darlene Xiomara Rodriguez

56: *Atlanta's Immigrant Crossroads: Factors Making Immigrant Integration Difficult and How to Help*
Poster Presentation
Undergraduate Student(s): Kayland Arrington
Faculty Mentor(s): Darlene Xiomara Rodriguez and Paul McDaniel

57: *Challenges and Opportunities for Integration in an Emerging Gateway: A Spatial Analysis of Atlanta's Immigrant Population*
Poster Presentation
Undergraduate Student(s): Christopher Sipes
Faculty Mentor(s): Paul McDaniel and Darlene Xiomara Rodriguez

58: *Human Powered Submarine*
Poster Presentation
Graduate Student(s): Kevin Katz
Undergraduate Student(s): Stephan Shelton, David Bullington
Faculty Mentor(s): Mir Atiqullah

59: *Newspaper Folding Machine*
Poster Presentation
Undergraduate Student(s): Robert Miller, Joshua Noll, Thien Nguyen, Marquis Hicks
Faculty Mentor(s): Mir Atiqullah

60: *Railroad Spike Remover*
Poster Presentation
Undergraduate Student(s): Jonathan Hawkins, Alex Hood, Zachary Tonsmeire, Kyle Wise
Faculty Mentor(s): Mir Atiqullah

61: *Sapling Snatcher*
Poster Presentation
Undergraduate Student(s): Aneela Hameed**,** Nicholas Kinder, Brian McFall, Reid Allen
Faculty Mentor(s): Mir Atiqullah

62: *A Passive Duct System Solution to Remove Excessive Heat from Truck Trailer Wheels*
Poster Presentation
Undergraduate Student(s): Paul Hudson, William Johnson, Jerome Basden, Nicholas Allicock, Thomas Jordan
Faculty Mentor(s): Richard Ruhala

63: *Microbial Source Tracking of Fecal Indicator Bacteria in Three Cobb County Creeks*
Poster Presentation
Undergraduate Student(s): Brandi Byler
Faculty Mentor(s): Michael Beach

64: *Performance Analysis of a Hybrid Particle Swarm Optimization Algorithm for Maximum Power Point Tracking of Solar Photovoltaic Systems*
Poster Presentation
Undergraduate Student(s): Brian McCray, Nicholas Foster, Samuel McWhorter, Baker Nour
Faculty Mentor(s): Sandip Das

65: *Alpha Radiation Detector Development and Testing Under Various Conditions*
Poster Presentation
Undergraduate Student(s): Kurt Jacobson, Andrew Jones, Shawn Sinclair, Christina Kirby
Faculty Mentor(s): Eduardo Farfan and Sandip Das

66: *Motivational Factors that Influence Frequency of CrossFit Training*
Poster Presentation
Undergraduate Student(s): Angelina Micalizzi, Ashton Matson, Allyson Box
Faculty Mentor(s): Yuri Feito and Chris Brown

67: *The Relationship Between Motivational Factors and CrossFit Training Participation Across Different Age Groups*
Poster Presentation
Undergraduate Student(s): Ashton Matson, Allyson Box
Faculty Mentor(s): Yuri Feito and Chris Brown

68: *The Effect of Sport Specialization on Athletic Performance and the Risk of Injury in High School Swimmers*
Poster Presentation
Undergraduate Student(s): Samantha Gunn *[University Honors Scholar]*
Faculty Mentor(s): Gerald Mangine, Trisha VanDusseldorp, Garrett Hester

69: *Increased Resisted Sprinting Load Decreases Bilateral Asymmetry in Sprinting Kinetics*
Poster Presentation
Undergraduate Student(s): Jacob Alan McNabb
Faculty Mentor(s): Gerald Mangine, Trisha VanDusseldorp, Garrett Hester

70: *An Examination of the Reliability of the InBody 770 Bioelectrical Impedance Analyzer*
Poster Presentation
Graduate Student(s): Ellie Moore, Justin Knowles, Paul Bailey, Alex Dewitt
Faculty Mentor(s): Cherilyn McLester and John McLester

71: *Exploring Drug Use, Drug Policy, and "Burning Man" Communities*
Poster Presentation
Undergraduate Student(s): Justin Maslanka
Faculty Mentor(s): Brian Starks

72: *How One Skeleton Opens the Window into the Daily Lives of Romanized Cretans*
Poster Presentation
Undergraduate Student(s): Eden Ryan
Faculty Mentor(s): Susan Kirkpatrick Smith

73: *Blast Trauma Injuries to the Skull: Comparison Between Primary and Secondary Injuries*
Poster Presentation
Undergraduate Student(s): Desiree Smith-Plourde
Faculty Mentor(s): Susan Kirkpatrick Smith

74: *Periosteal Reaction and Signs of Stress Found in Skeletal Remains from Ierapetra, Crete*
Poster Presentation
Undergraduate Student(s): Logan Howard
Faculty Mentor(s): Susan Kirkpatrick Smith

75: *Linear Enamel Hypoplasia in Roman Ierapetra*
Poster Presentation
Undergraduate Student(s): Morgan McKenna
Faculty Mentor(s): Susan Kirkpatrick Smith

76: *The Decline of the Indus Valley Civilization: A Children's Book Perspective*
Poster Presentation
Undergraduate Student(s): Kelcey Bartkowiak
Faculty Mentor(s): Teresa Raczek

77: *The Root Causes of Difficult Aid Delivery in Afghanistan*
Poster Presentation
Graduate Student(s): Cyrel San Gabriel
Faculty Mentor(s): Brandon D. Lundy

78: *Breaking the Glass Ceiling: Experiences of Female Engineers in the United States*
Poster Presentation
Graduate Student(s): Yeju Choi
Faculty Mentor(s): Brandon D. Lundy

79: *Diversifying Our Assets? The Impact of Institutional Funding to Student Organizations on Student Perceptions at Kennesaw State University*
Poster Presentation
Graduate Student(s): Jonathan Taylor Downs
Faculty Mentor(s): Brandon D. Lundy

80: *A Geographic Information System Solution to Addressing the Food Shortage in Nigeria*
Poster Presentation
Undergraduate Student(s): Masood Al Ansar Abdul Salam, Cindi Simmons, Janna Pruiett
Faculty Mentor(s): Tim Blumentritt

81: *The Great War: Economic and Social Turning Points of World War I in United States History*
Poster Presentation
Undergraduate Student(s): Emily Rolader
Faculty Mentor(s): Katherine Perrotta

82: *Sweeping Change in America Via the New Deal's Glass-Steagall Act*
Poster Presentation
Undergraduate Student(s): Margaret Boggs
Faculty Mentor(s): Katherine Perrotta

83: *Chandigarh: A 21st Century Smart City?*
Poster Presentation
Undergraduate Student(s): Dhruvee Patel
Faculty Mentor(s): Ameen Farooq

84: *Emergency Cargo Delivery Sysytem*
Poster Presentation
Undergraduate Student(s): Danielle Dill, Eamon Quinn, Obafemi Oladapo, Brian Watkins
Faculty Mentor(s): Richard Ruhala

85: *The Super Illumination Wireless Induction Ratchet*
Poster Presentation
Undergraduate Student(s): Robert Patterson, Kristyn Patterson, Graham Harrison, Chris Peterson
Faculty Mentor(s): Richard Ruhala

86: *Formula SAE Electric Vehicle Pedal Box Design*
Poster Presentation
Undergraduate Student(s): Zachary Morgan, Joshua Lee, Hunter Myrick, Andrew Cochran
Faculty Mentor(s): Richard Ruhala

87: *Modular Vibration Control System*
Poster Presentation
Undergraduate Student(s): Lucas Gilleland, Dominic Kowalke, John Ware, Matthew Salter
Faculty Mentor(s): Ayse Tekes and Richard Ruhala

88: *Heat Dissipation in Heavy-Duty Truck Axles*
Poster Presentation
Undergraduate Student(s): Matt Roney, Adam Hanes, Chris Hill, Michael Douglass
Faculty Mentor(s): Laura Ruhala

89: *Trajectory Control of a Slider Crank with Eccentricity*
Poster Presentation
Undergraduate Student(s): Michael Douglass
Faculty Mentor(s): Ayse Tekes

90: *SCS-527 "Sea-Duck"*
Poster Presentation
Undergraduate Student(s): Austin Collett, Shawn Sinclair, Matthew Salter
Faculty Mentor(s): Adeel Khalid

91: *Campus Climate for LGBTIQ Students*
Poster Presentation
Undergraduate Student(s): Tatiana Smithson, Emma Evans
Faculty Mentor(s): Amy Buddie

92: *Fundraising Strategies to Promote More Profitable Organizational Fundraisers*
Poster Presentation
Undergraduate Student(s): Kylah Pollard, Sarai Bauguess
Faculty Mentor(s): Amy Buddie

93: *Sleep Deprivation and Stress Levels on Academic Performance*
Poster Presentation
Undergraduate Student(s): Raiyan Rahman, Alec Curtis, Collin Avidano, Morgan Peavy, Jessica Melara, Sarai Bauguess
Faculty Mentor(s): Amy Buddie

94: *Generation X versus Millennials: Technology and the Workplace*
Poster Presentation
Undergraduate Student(s): Kylah Pollard, Zoe Cesar, David Escobar, Amilynne Graham, Torie Poole
Faculty Mentor(s): Amy Buddie

95: *3D Macroporous Binary and Ternary Composite Materials Containing IO-TiO2, CdS QDs and AuNPs: Fabrication and Photocatalytic Applications*
Oral Presentation
Graduate Student(s): Daniel A. Corella
Faculty Mentor(s): Bharat Baruah

95: *Highly Luminescent Hexadentate Bis(amidines) through Deprotonation: Synthesis, Structures, and Hydrogen Bonding*
Poster Presentation
Undergraduate Student(s): Omar Ugarte Trejo
Graduate Student(s): Nimia Zoe Maya
Faculty Mentor(s): Michael Stollenz

96: *Bis(amidine) Ligands for Highly Luminescent Coinage Metal Assemblies: Synthesis, Structures, and Hydrogen Bonding Networks*
Poster Presentation
Undergraduate Student(s): Alvaro Calderon, Ofumere Omokhodion
Faculty Mentor(s): Michael Stollenz

Oral Presentation Schedule

Education Building, Room 127 (Siegel Institute & Communication)

6:15pm – 6:30pm
Examining Burnout in Division I Collegiate Athletes: Identifying the Major Factors and Level of Importance in an Athlete's Life
Graduate Student(s): Angel Almodovar
Faculty Mentor(s): Linda Johnston

6:30pm – 6:45pm
Cosmetic Beauty: The Intrinsic and Extrinsic Motivators
Undergraduate Student(s): Laura Morrow
Faculty Mentor(s): Linda Johnston and Crystal Money

6:45pm – 7:00pm
Perception vs. Representation: The Impact of Stereotypes and Eurocentric Standards on Black Women
Oral Presentation
Undergraduate Student(s): Michelle Edward
Faculty Mentor(s): Linda Johnston

7:00pm – 7:15pm
Addressing the Issue of Food Deserts in Georgia
Oral Presentation
Undergraduate Student(s): Madison Watson
Faculty Mentor(s): Linda Johnston

7:15pm – 7:30pm
Media Relations in a Changing Media Landscape: A Study of Interviews with Public Relations Practitioners
Oral Presentation
Undergraduate Student(s): Toni-Ann Hall *[University Honors Scholar]*
Faculty Mentor(s): Justin E. Pettigrew

7:30pm – 7:45pm
Perceived Taste of Color Food Packaging
Oral Presentation
Undergraduate Student(s): Crystal Jackson
Faculty Mentor(s): Crystal Money

7:45pm – 8:00pm
The Information System's Role in Reducing Food Waste in Grocery Chains
Oral Presentation
Graduate Student(s): Zandro Zaragoza
Faculty Mentor(s): Linda Johnston and Crystal Money

Education Building, Room 130 (College of the Arts)

6:15pm – 6:30pm
Caitlin Keogh: Feminine Feminism
Oral Presentation
Undergraduate Student(s): Madeline Beck
Faculty Mentor(s): Diana McClintock

6:30pm – 6:45pm
Metalworks of the Inca Empire and the Question of Authorship
Oral Presentation
Undergraduate Student(s): Hannah Pelfrey, Maria Shah
Faculty Mentor(s): Jessica Stephenson

6:45pm – 7:00pm
Spectacular Spaces of Consumption
Oral Presentation
Undergraduate Student(s): Ellen Grace Watkins
Faculty Mentor(s): Sarah Holmes and Meghan Quinlan

7:00pm – 7:15pm
Dance Education in Low Socioeconomic Environments
Oral Presentation
Undergraduate Student(s): Rebekah Sauls *[University Honors Scholar]*
Faculty Mentor(s): Meghan Quinlan

7:15pm – 7:30pm
Cheers!
Oral Presentation
Undergraduate Student(s): Tyler Cochran
Faculty Mentor(s): Kristine Hwang

Education Building, Room 131 (College of the Arts)

6:15pm – 6:30pm
The Octoroon: The Black, The White and A Choice of Color
Oral Presentation
Undergraduate Student(s): Marcia Harvey
Faculty Mentor(s): Angela Farr Schiller

6:30pm – 6:45pm
A Gross Misunderstanding: Theatre as a Reflection of Societal Ignorance Surrounding Transgender and Nonconforming Identity
Performance
Undergraduate Student(s): Emily Musgrove, Tony Fox, Rebekah Mez, Gabriella Bueno, Gwydion Calder, James Strawder
Faculty Mentor(s): Angela Farr Schiller

6:45pm – 7:00pm
Washing Away Whitewashing in American Theatre
Oral Presentation
Undergraduate Student(s): Riley Schatz
Faculty Mentor(s): Angela Farr Schiller

7:00pm – 7:15pm
Decoding the X: Discovering the Black Experience
Oral Presentation
Undergraduate Student(s): Skylar Resna Jackson
Faculty Mentor(s): Angela Farr Schiller

7:15pm – 7:30pm
Equality over Patriarchy: A Close Analysis of the Plays Machinal, Mulan Jr., and the Empowerment of the Female Voice in a Patriarchal World
Oral Presentation
Undergraduate Student(s): LaTausha Carter
Faculty Mentor(s): Angela Farr Schiller

7:30pm – 7:45pm
Gender and Injustice in Euripides' Medea
Oral Presentation
Undergraduate Student(s): Jessica Rattray
Faculty Mentor(s): Angela Farr Schiller

7:45pm – 8:00pm
The Court Room: A Close Analysis of the Play Twelve Angry Men and the Effects of Racial Biases in the Court Room
Oral Presentation
Undergraduate Student(s): Erica Holcomb
Faculty Mentor(s): Angela Farr Schiller

8:00pm – 8:15pm
Murdering Femininity: A Discussion of Medea and the Place of Femininity in Partriarchy
Oral Presentation
Undergraduate Student(s): Samantha McBrayer
Faculty Mentor(s): Angela Farr Schiller

Education Building, Room 132 (College of the Arts)

6:15pm – 6:30pm
The Demographic Disconnect of Theatre: The Overwhelming Whiteness of the American Theatre
Oral Presentation
Undergraduate Student(s): Nathaniel Gesualdo
Faculty Mentor(s): Angela Farr Schiller

6:30pm – 6:45pm
Romantic Transcendence in the Second Movement of Beethoven's Fifth Piano Concerto, Op. 73
Oral Presentation
Undergraduate Student(s): Roger Ibrahim
Faculty Mentor(s): Benjamin Wadsworth

6:45pm – 7:00pm
The Hero of Hyrule: Musical Topics in the Legend of Zelda
Oral Presentation
Undergraduate Student(s): Nicole Hamel
Faculty Mentor(s): Jeffrey Yunek and Benjamin Wadsworth

7:00pm – 7:15pm
Under the Helmet: Woyzeck, Ajax in Iraq, and the Politics of Seeking Help
Oral Presentation
Undergraduate Student(s): Jessica Rattray, Marcia Harvey
Faculty Mentor(s): Angela Farr Schiller

7:15pm – 7:30pm
Go Ahead and Free Yourself: "The Escape; Or a Leap for Freedom", "The Shipment", and The Politics of Art as Emancipation
Oral Presentation
Undergraduate Student(s): DeShon Green
Faculty Mentor(s): Angela Farr Schiller

7:30pm – 7:45pm
Outside the Binary: Gender Identity and "The Children's Hour"
Oral Presentation
Undergraduate Student(s): Haley McFadden, Leydi Morales
Faculty Mentor(s): Angela Farr Schiller

7:45pm – 8:00pm
The New Lens of Normality: An Exploration of Queer Representation in Fairytales
Performance
Undergraduate Student(s): Dylan Carter
Faculty Mentor(s): Angela Farr Schiller

Education Building, Room 219 (Engineering)

6:15pm – 6:30pm
16-068: Tiresias: Discovering Unknown Requirements
Oral Presentation
Graduate Student(s): Albert Maine
Faculty Mentor(s): Paola Spoletini

6:30pm – 6:45pm
Infantry Portable Electromagnetic Railgun Design
Oral Presentation
Undergraduate Student(s): Ethan McGowan, Nathan Wascher, Will Howel, Khiem Le
Faculty Mentor(s): Laura Ruhala and Hoseon Lee

6:45pm – 7:00pm
Universal Surgical Platform
Oral Presentation
Undergraduate Student(s): Luis Ruiz, Cameron Reese, Philip Hwang, Joseph Chevrier
Faculty Mentor(s): Laura Ruhala

7:00pm – 7:15pm
Design, Analysis and Control of Five Bar Mechanism
Oral Presentation
Undergraduate Student(s): Jacob Davis
Faculty Mentor(s): Ayse Tekes

7:15pm – 7:30pm
Aerodynamic Drag Reduction of Class 8 Trailer Trucks using External Attachments
Oral Presentation
Undergraduate Student(s): Emmanuel Nnamani
Faculty Mentor(s): Mir Atiqullah

7:30pm – 7:45pm
A Rectilinear Vibration Plant Design for the Mechanical Engineering Department's Dynamics Laboratory
Oral Presentation
Undergraduate Student(s): Freddy Boyd, Patrick Colombo, Yulian Vieta, Gregory Williams
Faculty Mentor(s): Laura Ruhala, Ayse Tekes, and Richard Ruhala

7:45pm – 8:00pm
Waste Heat Recovery and Re-purposing for High Temperature Applications
Oral Presentation
Undergraduate Student(s): Jamey Ackley, Jonathan Atkinson, Erwin Garcia
Faculty Mentor(s): Laura Ruhala and Satish Gurupatham

8:00pm – 8:15pm
Development and Implementation of Curriculum for Peer Health Education Program for High School Students
Oral Presentation
Undergraduate Student(s): Jaspreet Singh, Sharonjeet Kaur
Faculty Mentor(s): Glen Meades

Education Building, Room 221 (Chemistry & Biology)

6:15pm – 6:30pm
Tartronic Acid and Diethyl Mesoxalate: Inhibition and Substrate Promiscuity of Bicupin Oxalate Oxidase
Oral Presentation
Undergraduate Student(s): Joan Ndungu
Graduate Student(s): John Goodwin
Faculty Mentor(s): Ellen Moomaw

6:30pm – 6:45pm
Use of Biometrics to Determine Differences in How Users Read Metabolic Pathways
Oral Presentation
Graduate Student(s): Kim Kammerdiener
Faculty Mentor(s): Kimberly Linenberger Cortes and Adriane Randolph

6:45pm – 7:00pm
Design and Fabrication of FTMW Spectrometer
Oral Presentation
Undergraduate Student(s): Chris Black
Faculty Mentor(s): Lu Kang

7:00pm – 7:15pm
HV1 Proton Channels in Dinoflagellates: Not Just for Bioluminescence
Oral Presentation
Undergraduate Student(s): Gabriel Kigundu
Faculty Mentor(s): Susan M. E. Smith

Education Building, Room 223 (Psychology & Sociology)

6:15pm – 6:30pm
The Intergroup Sensitivity Effect Among Racial Groups
Oral Presentation
Undergraduate Student(s): J. Caleb Lang, Chloe McLaughlin
Faculty Mentor: Katherine White

6:30pm – 6:45pm
Gender Differences in the Effect of Social Learning on Cyberbullying Perpetration and Victimization among College Students
Oral Presentation
Graduate Student(s): Nathanael Riepe
Faculty Mentor(s): Gang Lee

6:45pm – 7:00pm
Gender Differences in Rape Definitions and Rape Myth Acceptance
Oral Presentation
Undergraduate Student(s): Kylie Kuglar *[University Honors Scholar]*
Faculty Mentor(s): Dorothy Marsil and Corinne McNamara

7:00pm – 7:15pm
An Examination of the Relationship between Subject Variables, Stalking Myth Endorsement, and Stalking Perpetration
Oral Presentation
Undergraduate Student(s): Lacie Yauslin, Abrian Poole, Brenda Almaras, Amber Wallace
Faculty Mentor(s): Corinne McNamara and Dorothy Marsil

7:15pm – 7:30pm
Prevalence and Incidence of Health Risk Factors Among Adolescent Girls
Oral Presentation
Undergraduate Student(s): Kylah Pollard, Sarai Bauguess
Faculty Mentor(s): Mohammed Chowdhury

7:30pm – 7:45pm
Using Fear-Potentiated Startle to Examine Sex-Related Factors in Test Anxiety
Oral Presentation
Undergraduate Student(s): Rebekah Fallin, Luana Scienza, Bethany Wyman, Nhat Nguyen, Jesse Edmond, Jasmine Williams, Tiana Britton, Jamie Miller
Faculty Mentor(s): Ebony Glover and Sharon Pearcey

Education Building, Room 224 (Education, Social Work, Digital Writing, Geography, & Anthropology)

6:15pm – 6:30pm
Implementing Peer Training as an Evidence Based Practice to Support Social Communication and Interactions in Young Children with Autism
Oral Presentation
Graduate Student(s): Jasmine Ennis
Faculty Mentor(s): Melissa Driver

6:30pm – 6:45pm
A Cross-Cultural Framework to Bridge the Cultural Clash between Teachers and Students
Oral Presentation
Graduate Student(s): Cleopatra Sorina Iliescu
Faculty Mentor(s): Melissa Driver

6:45pm – 7:00pm
Conversion of Labs for Geography 1112 and Geography 1113
Oral Presentation
Undergraduate Student(s): Justina Edwards
Faculty Mentor(s): Nancy Hoalst-Pullen and Mark Patterson

7:00pm – 7:15pm
Search Engine Optimization: The Art and Science of Online Visibility in a Sea of Billions
Oral Presentation
Undergraduate Student(s): Edward Kihara
Faculty Mentor(s): Laura Palmer

7:15pm – 7:30pm
Development or Damage? Pastors' Perspectives on Short-Term Mission Trips
Oral Presentation
Undergraduate Student(s): Ariel Walley *[University Honors Scholar]*
Faculty Mentor(s): Darlene Xiomara Rodriguez

7:30pm – 7:45pm
A Study of Homeopathic Methods and the Reasons Behind Their Use
Oral Presentation
Undergraduate Student(s): Taelor Moran
Faculty Mentor(s): Kenneth Williamson

Education Building, Room 233 (English & Nursing)

6:15pm – 6:30pm
The Effect of Diabetes Education Versus Usual Care on Clinical Outcomes of Hemoglobin A1C and Weight
Oral Presentation
Graduate Student(s): Kimberly Roberts
Faculty Mentor(s): Janeen Amason and Patricia Hart

6:30pm – 6:45pm
College Reflective Writing Practices: Writing Center Support for Students with Disabilities
Oral Presentation
Undergraduate Student(s): Emily Deibler
Faculty Mentor(s): Lara Smith-Sitton

6:45pm – 7:00pm
College Reflective Writing Practices: Writing Outside the Classroom for Healing
Oral Presentation
Undergraduate Student(s): Lindsey Walden
Faculty Mentor(s): Lara Smith-Sitton

7:00pm – 7:15pm
College Reflective Writing Practices: Pedagogies in Writing Courses
Oral Presentation
Undergraduate Student(s): Kailee Kivett
Faculty Mentor(s): Lara Smith-Sitton

Education Building, Room 238 (Exercise Science & Architecture)

6:15pm – 6:30pm
Response of Metabolic Biomarkers Following a Short and Long Bout of High-Intensity Functional Training
Oral Presentation
Graduate Student(s): Cassie Williamson, Emily Bechke, Paul Bailey
Faculty Mentor(s): Brian Kliszczewicz, Robert Buresh, and Yuri Feito

6:30pm – 6:45pm
Maximal Velocity Adaptations During Unilateral Resistance Training in Older Adults
Oral Presentation
Undergraduate Student(s): Alex Olmos
Faculty Mentor(s): Garrett Hester

6:45pm – 7:00pm
Autonomic Recovery Following a Short and Long Bout of High-Intensity Functional Training
Oral Presentation
Graduate Student(s): Emily Bechke, Wade Hoffstetter, Cassie Williamson
Undergraduate Student(s): Allyson Box, Paul Serafini
Faculty Mentor(s): Brian Kliszczewicz and Yuri Feito

7:00pm – 7:15pm
Motivational Factors that Affect CrossFit Training Based on Years of Participation
Oral Presentation
Undergraduate Student(s): Allyson Box
Faculty Mentor(s): Yuri Feito and Chris Brown

7:15pm – 7:30pm
Constructed Reality: A Study in Virtual Reality Through the Use of Perspective and Cinemetrics
Oral Presentation
Undergraduate Student(s): Jose Rodriguez
Faculty Mentor(s): Christopher Welty and Arief Setiawan

Education Building, Room 327 (English, History, and Geographic Information Systems)

6:15pm – 6:30pm
Literacy, Rhetoric, Language Barriers and Academia
Oral Presentation
Graduate Student(s): Estefany Palacio
Faculty Mentor(s): Sergio Figueiredo

6:30pm – 6:45pm
To Little 5 Points
Performance
Undergraduate Student(s): Edmund Tella
Faculty Mentor(s): Tony Grooms

6:45pm – 7:00pm
Valerie Smith, A Poetry Reading
Oral Presentation
Graduate Student(s): Valerie Smith
Faculty Mentor(s): Tony Grooms

7:00pm – 7:15pm
Thomas Paine: Abolitionist
Oral Presentation
Undergraduate Student(s): Savannah Beeson
Faculty Mentor(s): Jim Piecuch

7:15pm – 7:30pm
KSU's First Interactive Sustainability Maps
Oral Presentation
Undergraduate Student(s): Hannah Knab
Faculty Mentor(s): Tim Poe

7:30pm – 7:45pm
Harnessing Social Media for Social Movement: Intersectional Feminism and the Digital Publication Model
Oral Presentation
Graduate Student(s): Laurel Ann Lowe
Faculty Mentor(s): Letizia Guglielmo

Education Building, Room 334 (Three-Minute Theses starting at 7pm)

Acknowledgements

We would like to thank the following people and groups for their contributions to the 2017 Symposium of Student Scholars:

- **Undergraduate Research Club, a registered student organization on campus devoted to promoting student-faculty collaborative research and scholarship in all disciplines across campus. Officers include:**
  - Tatiana Smithson, President
  - Kylah Pollard, Vice President
  - Sarai Bauguess, Treasurer
  - Sharonjeet Kaur, Secretary

- **The Office of Research:**
  - Dr. Charles Amlaner, Vice President for Research
  - Ann Vancza, Director of Operations
  - Jennifer Harb, Administrative Associate

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  - Dr. Jeffrey Chastine, Interim Associate Dean of the Graduate College
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Kennesaw State University
Library Undergraduate Research Award

Established in 2015, the KSU Library System's Undergraduate Research Award is awarded annually to a student demonstrating successful navigation of library resources for undergraduate research. The $500 prize, sponsored by the Office of Undergraduate Research, is awarded to an undergraduate student whose essay regarding the use of library resources is selected through peer review. The winner is guaranteed publication within the *Kennesaw Journal of Undergraduate Research*, and all applicants' research is put through the peer review process for possible publication.

2017 Library Undergraduate Research Award Winners:

Kylah Pollard and **Sarai Bauguess**, Faculty Mentor: **Dr. Mohammed Chowdhury**

Article:
"Prevalence and Incidence of Health Risk Factors Among Adolescent Girls"

Abstract:
Heart Disease has many different risk factors, including hypertension (high blood pressure) and high cholesterol. Research has shown that hypertension can be identified as early as adolescence, and preventative measures can be instilled in this age. However, the relationship between hypertension, high cholesterol, race, and income have not been studied in detail among adolescents. The present study analyzed the effects of different health factors on blood pressure and cholesterol levels in Caucasian and African-American girls ages 9-21 years old, the prime of adolescence. The dataset was part of a larger study completed by the National Heart, Blood, and Lung Institute and included 2,379 girls from the ages of 9-21 years. The data were analyzed using R- Statistical Software using logistic regression, t-tests for mean, multinomial regression, analysis of variance, and chi-square test of independence. There were significant differences between Caucasian and African-American girls for several different health factors. Caucasian girls were found to have lower systolic and diastolic blood pressures, but African-American girls were found to have higher high density lipoprotein (HDL) levels. Caucasian girls were found to have significantly higher triglyceride levels then African-American girls. Further, income, body mass index, systolic, and diastolic blood pressure were found to be highly related to race. Income and systolic blood pressure were also found to be highly related. As systolic blood pressure increased, the odds of being African-American increased. This was also found to be true in regards to body mass index.

The *Kennesaw Journal of Undergraduate Research* is accessible here:
http://digitalcommons.kennesaw.edu/kjur/

Please see the Library Undergraduate Research Award website for more details about the award:
http://digitalcommons.kennesaw.edu/ura.html

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