2018 JOINT ONU STUDENT RESEARCH COLLOQUIUM
AND
NWOH UNDERGRADUATE SYMPOSIUM FOR RESEARCH AND SCHOLARSHIP

Friday, April 27, 2018
9 a.m.-3 p.m.
McIntosh Center at Ohio Northern University

Poster sessions and paper presentations
Undergraduate and graduate student presenters
Welcome to the Joint 2018 Ohio Northern University Student Research Colloquium and Northwest Ohio Undergraduate Symposium for Research and Scholarship!

The 2018 Joint ONU Student Research Colloquium and NWOH Undergraduate Symposium for Research and Scholarship is a true showcase for university research, with students from five schools of higher education in northwest Ohio scheduled to present 192 projects this year. For those who participate, research bridges the gap between knowledge and experience and provides for career exploration and development. Presenters at this year’s joint event will share the results of their research with the larger academic community, enliven the intellectual climate in northwest Ohio, and stimulate discussions and collaborations within and across disciplines, all while developing skills important to their long-term personal and professional success.

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Acknowledgments

★ Many thanks are extended to all who have helped to make the 2018 Joint ONU Student Research Colloquium and NWOH Undergraduate Symposium for Research and Scholarship such a success.
★ We extend warm thanks to Dr. Cordula Mora and the Center for Undergraduate Research and Scholarship at Bowling Green State University for their loan of 20 easels and white core boards to be used to display student posters at this event.
★ The staff members of the ONU Office of Communications and Marketing and Printing Services, especially Sheila Baumgartner and Joshua Crawford, deserve special mention for producing the materials that promoted the event across campus and throughout northwest Ohio.
★ The staff members of Physical Plant, Catering, and the McIntosh Center, especially David Dellifield, are invaluable in helping with all the behind-the-scenes details that bring our Colloquium to fruition each year. Their efforts this year in getting everything ready to host our Symposium guests are even more appreciated.
★ Sincere gratitude is offered to Provost Maria Cronley and the Office of Academic Affairs, as well as the Getty College of Arts and Sciences, Dean Holly Baumgartner; Dicke College of Business Administration, Dean John Navin; and Raabe College of Pharmacy, Dean Steve Martin, for generous funding of this event.
★ This celebration of student research could not run as smoothly as it does without the unstinting efforts of members of the Getty College of Arts and Sciences Student Advisory Board and student volunteers from across Ohio Northern University.
★ Additional thanks go to all the student presenters and their faculty mentors who ensure that scholarly research and deep learning are integral to higher education in northwest Ohio.
★ Finally, we thank all friends and family of and visitors to the Northern community and welcome your presence today.

The NWOH Undergraduate Symposium for Research and Scholarship Planning Committee

Deanna Barthlow-Potkanowicz, Bluffton University
Amy Berger, Heidelberg University
Jonathan Bossenbroek, University of Toledo
Mary Drzycimski-Finn, Ohio Northern University
Michael Edelbrock, University of Findlay
Bethany Henderson-Dean, University of Findlay
Cordula Mora, Bowling Green State University
Mary Ann Studer, Defiance College
**Schedule**

All 2018 Joint SRC & USRS activities take place in the ONU McIntosh Center.

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>8:30 a.m.-1:30 p.m.</td>
<td>Check-in</td>
<td>Activities Room 1st floor</td>
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<tr>
<td>9-10 a.m.</td>
<td>Opening Events</td>
<td>Activities Room 1st floor</td>
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<tr>
<td>9-10 a.m.</td>
<td>WELCOME</td>
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<tr>
<td></td>
<td>Ms. Mary Drzycimski-Finn, NWOH USRS Planning Committee Member, Ohio Northern University</td>
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<td>Dr. Maria Cronley, Provost, Ohio Northern University</td>
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<tr>
<td></td>
<td>Dr. Holly Baumgartner, Dean, Getty College of Arts and Sciences, Ohio Northern University</td>
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<td></td>
<td><strong>KEYNOTE ADDRESS</strong></td>
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<tr>
<td></td>
<td>“Your Gains for Growth”</td>
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<td></td>
<td>Dr. Inara Brubaker, Industrial Research Chemist, Retired</td>
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<tr>
<td>10-11:45 a.m.</td>
<td>Papers</td>
<td>Deans’ Heritage Room 1st floor</td>
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<tr>
<td>12-1:45 p.m.</td>
<td>Philosophy, Politics and Economics</td>
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<tr>
<td>10-11:45 a.m.</td>
<td>Papers</td>
<td>Wishing Well 1st floor</td>
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<tr>
<td>12-1:45 p.m.</td>
<td>History, Political Science and Law</td>
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<tr>
<td>10-11:45 a.m.</td>
<td>Papers</td>
<td>Bear Cave 1st floor</td>
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<tr>
<td>12-1:45 p.m.</td>
<td>Sociology, Psychology, Neuroscience, Public Health, Pharmacy, Pharmaceutical and Healthcare Business</td>
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<tr>
<td>10-11 a.m.</td>
<td>Papers</td>
<td>Room 202 2nd floor</td>
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<tr>
<td>11:10 a.m.-1:10 p.m.</td>
<td>Advertising Design and Graphic Design</td>
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<tr>
<td>12:20-1:20 p.m.</td>
<td>Advertising Design and Graphic Design</td>
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<tr>
<td>1:30-2:30 p.m.</td>
<td>Advertising Design and Graphic Design</td>
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<tr>
<td>10-11:45 a.m.</td>
<td>Papers</td>
<td>Ballroom 2nd floor</td>
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<tr>
<td>12-1:45 p.m.</td>
<td>Criminal Justice and Sociology</td>
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<tr>
<td>10-11 a.m.</td>
<td>Posters</td>
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<tr>
<td>11:15 a.m.-12:15 p.m.</td>
<td>Athletics, Geography, Business, Technology, Engineering, Physics, Astronomy, Mathematics, Political Science, Theatre, Music and Education</td>
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<tr>
<td>12:30-1:30 p.m.</td>
<td>Biology and Nursing</td>
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<td>Chemistry, Pharmacy and Psychology</td>
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We encourage our presenters, research mentors, and other guests to attend the various poster and paper presentations on the schedule above. In the spirit of celebrating student achievement, we also invite campus visitors to check out our student art exhibitions in the Elzay and Stambaugh Galleries. For lunch, participants may choose to patronize one of the Ohio Northern or Village of Ada dining establishments. A list of restaurants is available on page 46 of this program.

**Selection Process for Publication in Aurora**

The 2018 Joint SRC and USRS Conference Proceedings

Thank you for your interest in the publication of your work in Aurora: The Research Journal of Ohio Northern University. Those who wished to be considered for publication indicated their preference on the online registration form submitted earlier this spring. The Aurora editorial staff will review abstracts over the summer and contact you in the fall.

If you have any questions, please contact the Editor-in-Chief, Holly Dyer, at h-dyer@onu.edu, or Dr. Jonathan Pitts, Faculty Advisor, at j-pitts@onu.edu.
All 2018 Joint SRC & USRS activities take place in the ONU McIntosh Center.
### Paper Presentations

#### Advertising Design, Graphic Design 1  
10-11 a.m.  
Bear Cave  
Prof. William Britton Rowe, Moderator

1. “The Fame: A Look at the Modern-day Celebrity”  
   Alexander Michael Capeneka
2. “Presidential Political Campaigns and Their Associated Branding”  
   Bryan Zane Kelly
   Rachel Lynn Rusnak
4. “The Impact of Restaurant Colors on Customers”  
   Savannah Carter
5. “Recyclable K-Cup Design”  
   Crystal Amberlyn

#### Advertising Design, Graphic Design 2  
11:10 a.m.-12:10 p.m.  
Bear Cave  
Prof. William Britton Rowe, Moderator

1. “Can Design Lower Rates of Suicide at Ohio Northern University?”  
   Alexandra Gesler
2. “The Effects of Packaging Design on Consumer Purchases”  
   Emily Fergus
3. “How Do Colors Psychologically Affect Customers in Fast Food Restaurants?”  
   Shiori Kasuga
4. “Farm-to-table Awareness of Chef's Customers”  
   Catherine Jenks
5. “PowerPoint Design in Business College Classrooms”  
   Tetsuharu Hashimoto

#### Philosophy, Politics and Economics  
10-11:40 a.m.  
Deans’ Heritage Room  
Dr. Patrick Croskery, Moderator

1. “A Community-based Land Ethic”  
   Tanner M. Holke
2. “College Education vs. Choosing Life”  
   Morgan Couchman
3. “Shareholder Theory versus Stakeholder Theory”  
   Marshall Kuieck
4. “Minimum Wage and Its Relation to American Politics”  
   Gabe D. Rastatter

#### History, Political Science and Law  
12-1:45 p.m.  
Deans’ Carranza Ro, Moderator  
Deans’ Heritage Room

1. “Constitutional Assessment of Lustration, Case of Czech Republic and Albania”  
   Luz Balaj
2. “Making the Private Sphere Public: How Middle-class Female Reformers Influenced the Repeal of the Contagious Diseases Acts”  
   Abigail Greene
   Evan R. Lee
4. “The United States' Political Interference in the Islamic World”  
   Derek K. Price

#### Communication Studies  
12-1:45 p.m.  
Wishing Well  
Dr. Christine North, Moderator

1. “Relational Dialectics and Its Application to Empty Nest Syndrome of Different Interpersonal Relationships with College Students and Parents”  
   Sybil Anast
2. “Interacting with AI: A Rapidly Approaching Future in Communication”  
   Trevor Smith
3. “The Effects of Traveling”  
   Monica Foutty
4. “A Fundraising Journey with the Arts”  
   Lexie Kilgore
5. “Traditional Lecture and Active Engagement Teaching Methods for Theatre Education”  
   Eli A. Underwood

#### Criminal Justice and Sociology  
10-11:40 a.m.  
Room 202  
Dr. Robert Carrathers, Moderator

1. “Nonconsensual Pornography: An Examination of Community Awareness at Ohio Northern University”  
   Courtney L. Walland
   Bryce Richardson
3. “The Effects of Parental Incarceration on Young Children”  
   Ashley T. Green
   Isaiah Simerman
5. “Shooting Smack: An Analysis of the Heroin Epidemic and Social Factors”  
   Joseph A. Williams

#### Music, Literature and Education  
12-1:45 p.m.  
Room 202  
Dr. Douglas Dowland, Moderator

1. “The Connection of Music along the Silk Road”  
   Lydia D. Smith
2. “Are You A Man?: A Conflict of Gender in Macbeth”  
   Kelley Lewis
3. “Unwanted among the Wealthy: Why Lucy Audley Was Institutionalized”  
   Dominic Turnea
4. “Major Payne A Psychoanalytic Analysis of a Payneful Film”  
   Morgan D. Reich
5. “Benefits of Training Pre-service Teachers in Functional Behavior Assessment: A Literature Review”  
   Karrie E. Powers
### Advertising Design, Graphic Design 3  12:20-1:20 p.m.
**Prof. William Britton Rowe, Moderator**  **Bear Cave**

1. “One for One: The Effectiveness of TOMS Branding”  
   Soteria Mathewson  
2. “The Design of the Ohio Northern University Map for International Students”  
   Kenji Kosai  
3. “Arby’s Advertising Campaign”  
   Ethan Snider  
   Andrew L. Wiggins  
5. “White House Website Design”  
   Cheyenne Eldridge

### Advertising Design, Graphic Design 4  1:30-2:30 p.m.
**Prof. William Britton Rowe, Moderator**  **Bear Cave**

1. “Wayfinding on Bluffton University’s Campus”  
   Joshua P. Eilola  
2. “Design’s Influence on the Child Development Center”  
   JoAnne Houck  
3. “Wayfinding on Ohio Northern University’s Campus”  
   Allison Ditch  
   John McNutt  
5. “Advertising with Stop-motion Animation?”  
   Kevin Cook
Poster Presentations

Ballroom

Athletics, Geography, Business, Technology, Engineering, Physics, Astronomy, Mathematics, Political Science, Theatre, Music, Education

10:11 a.m.

1. “Study Factors on Academic Achievement”
   Brianna Gruber, Megan Joseph
2. “Ohio Northern University Division III In-season, Intercollegiate Athletes’ Perception of When Stress Levels Are Highest: In-season or Out-of-season”
   Melissa Fultz, Hannah Reich
3. “The Effectiveness of Static and Dynamic Stretching Programs on Hamstring Flexibility in Male and Female Intercollegiate Soccer Athletes”
   Casey D. Miller, Abbey Oswald
4. “Changes in SEBT in College Basketball Players Participating in a Preventative Ankle Program”
   Haley Potters, Jennifer Miller
5. “Athletes’ Perceptions of Travel on Their Performance on the Field and in the Classroom”
   Courtney A. Burson, Brett W. Gibbons
6. “An Examination of Division I Cross-country Runners’ Experiences and Why They Chose Their University”
   Angeline Seames, Brian Blake
7. “Suitability Analysis of a First Federal Bank of the Midwest Branch in Ada, Ohio”
   Konner Aldridge
8. “Police Department Locations as a Crime Deterrent”
   Ashlie Baumann
9. “Major League Baseball Popularity”
   Ian Brown
10. “Lacrosse Participation in the United States”
    Mack A. Callhoun
11. “Spatial Analysis of NBA Spending and Revenue”
    Don Chapman
12. “Ruff Times, A Dog Park in Ada, Ohio”
    Taylor Emery
13. “Ski Resort Industry in Ohio”
    Mitchell Frisby
14. “Distractions: The Viability of an Entertainment Center near Ada, Ohio”
    Austin Frentsos
15. “Golf and Advertising”
    Sean Goll
    Abigail Greene
17. “Shoe Brand Loyalty in the Cincinnati Area”
    Austin Jensen
18. “Breakfast at Riley’s”
    Riley Jones
19. “Outdoor Retailers in Franklin County, Ohio”
    Trenton Kramer
20. “Income and NFL Fandom in the Cleveland Area”
    Cameron Marcus
21. “Teenage Tobacco Use in Ohio”
    Austin Morehouse
22. “A New Pedagogical Landscape for Accounting”
    Benjamin Neville
23. “Fortune 500 Companies in Ohio”
    Brian Ruffini
24. “The Political Landscape in Cuyahoga County”
    Audrey Ryder
25. “Deer Dangers in Ohio”
    Brad Taton
26. “Site Suitability Analysis of a Bookstore in Hardin County, Ohio”
    Dominic Turnea
27. “Income and Leisure Spending”
    Jeffrey Urizar
28. “Understanding Consumers of Digital Templates”
    Hanna Pittman
29. “ATMAE Conference Robotics Competition Team”
    Timothy Hoersten, Charles Ranck, Tyler Simmons, Greg Phillips, Patrick Bryant
30. “VEX Robot”
    Conner W. Karg, Andrew Grose
31. “Ohio Northern University Robotic Work Cell”
    Joseph C. Warnecke, Walker Karg, Aaron Fashing, Nathan Dean McCallum, Cal N. Huffman, Evan Hickey, Zack Meronoff
32. “Using Intelligent Algorithms to Advance Mechanical Design Methods”
    Cyler Caldwell
33. “Investigation of Whole-limb Motion as a Primary Motor Goal during Golf”
    Brittany Sommers, Andrew Shelton
34. “Estimating the Social Cost and Benefits of Urban Agriculture”
    Brady Spitulski
35. “Variable Activation Functions in Neuroevolution”
    Derek Michael Smith
    Andy Berger, Minsup Sim, Sarah Schaefer
37. “Introduction to Multiagent Control and Open Problems Related to Consensus of Higher-order Integrator Agents”
    Bryan P. Peck
38. “Computational Investigation Deriving from Shor’s Algorithm”
    Bryan P. Peck
39. “Stellar and Gas Kinematics in the Lenticular Galaxy NGC 3489”
    Matthew Sibila
40. “Stellar and Gas Kinematics in the Elliptical Galaxy NGC 2434”
    Bradley Lockhart
41. “Passive Scalar Transport of Contaminants via Traveling Waves”
    Ian Simpson
42. “A Fibonacci-Lucas Experiment”
    Aaron Kemats
43. “Angels in America: An Actor’s Pursuit in Socio-cultural Exploration”
    Eli A. Underwood
44. “White Racial Identity as Envisionment Building”
    Penny Fiebiger, Brock Hays, Caitlin Silva, Emily Wilson
45. “Playing without Pain: An Interactive Web Resource to Treat Performance-based Injuries in Collegiate Music Students”
    Francesca Leo
46. “Is Trump the New Reagan?”
    Jocelyn McKaylee Reinhart
47. “How the Midwest Was Won”
    Troy Brinkman
    Ky’la Sims
49. “Global Embarrassment: The Tipping Point in Becoming the Leading State in the Paris Agreement”
    Auston Davenport
1. “Preliminary Survey of Invertebrate Bioindicators of Rock Creek”  
   Brianna Marie Casement, Austin Joseph Nainiger
2. “Comparative Source Distribution of Belizean Reef Sediments”  
   Melanie R. Cohn
3. “Soybean Phytoxins and Their Roles in Disease Resistance against Phytophthora sojae, a Root Rot Pathogen”  
   Renee Dollard
4. “Microbial Survey of a 100 m Deep Ice Core Section from the Newall Glacier, Antarctica”  
   Shannon Turner
5. “An Illustrative-descriptive Guide to the Cranial Morphology of Subfamily Paradoxurinae (Civet Cats)”  
   Sophia Mae Beery
6. “Ecological Niche Model for Tongue-sized Minnow (Exoglossum laurae) of the Upper Great Miami River”  
   Sophia Mae Beery
7. “Development of Genetic Loci to Assist Conservation of Tongue-sized Minnow (Exoglossum laurae) of Western Ohio”  
   Maddison O. Guthrie, Alexander M. Wood
8. “Environmental Influences on Microbial Community Composition of Blue Crabs (Callinectes sapidus)”  
   Julia R. Heenan, Dokota R. Swisher, Crystal L. Scales
   Olivia C. Keserich, Tyler Tanto
10. “Does Diet Influence Gut-associated Microbial Communities of Gorilla gorilla gorilla?”  
      Elizabeth Naugle, Alyssa Griffith
11. “Assessment of Cleaning Product Efficacy on Collegiate Wrestling Mats”  
      Holly R. Dyer
12. “Characterization of the CASK Protein in the Drosophila S2R+ Cell Line”  
      Elizabeth Olah, Holly R. Dyer
13. “CASK (Calcium/Calmodulin Serine/Threonine/Guanylate Kinase)”  
      Audrey Farthing
14. “Generation of UAS-CASK_RA-GFP and UAS-CASK_RB-GFP Transgenic Constructs”  
      Jordan E. Sanner
15. “Utilizing Virtual Reality Gaming as an Alternative to Mild Intensity Cardiovascular Exercise: Scared to Health by Being Scared to Death”  
      Charis D. Kasler, Aliya Hutman, Josh Mohn, Kiera L. Robinson, Stephanie M. Walton
16. “Comparison of the Stimulatory Effects of Rosemary and Caffeinein the Human Body”  
      Kristina Myers, Courtney Adleman, Cole Pelger, Luke Franks
17. “Inhibition of Tumor Cell Migration through Slit/Robo/TUBB3 Pathway”  
      Shirley Yee
18. “Centrosome Reduction Is Essential for Fertility and Normal Development in Drosophila Melanogaster”  
      Michaela Roberts
19. “MAPK Signaling in Ovarian Cancer Spheroid Growth and Invasion”  
      Sarah J. Harmych
20. “Evaluating Nursing Knowledge of the Central Line Maintenance Bundle”  
      Ashley N. Gephart
21. “Nursing Knowledge of Pressure Ulcer Treatment Algorithm Guidelines”  
      Elizabeth A. Yaeger
22. “Accurate Documentation of Intake and Output”  
      Rachel Green
23. “Concurrent Nurse Charting”  
      Chase O. Mueller
24. “Nurses’ Perceptions of Stress and Stress Reduction Techniques in the Clinical Setting”  
      Haley Lyle
25. “Intravenous (IV) Infiltration: Nurses’ Knowledge of Prevention and Treatment”  
      Claire Beadle
26. “Non-serum Specimen Collection and Labeling Errors”  
      Elizabeth Selhorst
27. “Proper Care of Peripherally Inserted Central Catheters (PICCs) in the Pediatric Population”  
      Michaela Rask
28. “Reducing Falls in Neurological Patients”  
      Abigail N. Hall
      Lynn Meredith Kelly
      Alyssa Bowen
31. “Night Shift Nurses’ Fatigue and Quality of Rest”  
      Dylan R. Galford
      Kenna Schmehl
      Elizabeth Low
34. “Reducing Falls in Patients with Comorbidities”  
      Paula K. Wells
35. “Accurate Intake and Output Documentation: A Quality Improvement Project on Nurses’ Attitudes and Perceptions of Intake and Output Documentation”  
      Megan McClain
36. “Nurse Knowledge of Policy for Appropriate Medication Administration Time Windows”  
      Luke Glischinski
37. “Nurses’ Knowledge of Appropriate Medication Administration Time Windows”  
      Luke Glischinski
38. “Inaccurate Weight Assessments”  
      Braden Kuhn
39. “Compliance of Pediatric Nursing Staff with Personal Protective Equipment Protocol”  
      Madeline Sweeney
40. “Skin Preparation of Electrocardiogram (EKG) Leads to Minimize Alarm Fatigue”  
      Patrick Sullivan
41. “Handoff Sheets at Shift Report”  
      Chelsey Dues
42. “Compliance with Personal Protective Equipment”  
      Kristina M. Flak
43. “Reducing Blood Culture Contamination in the Emergency Department”  
      Alex L. Infantino
44. “The Use of Disinfectant Intravenous Caps on a Cardiac Unit”  
      Kylie Kipker
45. “Nurses’ Perception of Neonatal Neurological Development in the Neonatal Intensive Care Unit”  
      Sydney Taylor White
46. “The Importance of Effective Medication Communication on Improving Patient Outcomes”  
      Alec Lunney
47. “Pancreatic Enzyme Knowledge and Administration: Nursing Care for Cystic Fibrosis Patients”  
      Madison Brandon
48. “Personal Protective Equipment Compliance”  
      Ciarra L. Evans
49. “Effectiveness of Hourly Rounding”  
      Raegen Jo Bransteter
50. “Catheter-associated Urinary Tract Infection Prevention”  
      Morgan Hunsicker
20. “The Development of Intramolecular Indicator Displacement Assays for Determination of Enantiomeric Composition of Chiral Carboxylic Acids”
Johnathan Durgala
3. “GC-MS Analysis of Chinese Baijiu Liquor Flavored as American Bourbon Whiskey”
Heather M. Ketchum
4. “Metallation of [O,O,N,O] Ligands Obtained from Amino Acid Precursors for Applications in Lactide Polymerization”
Cheyanne Laux, Kristina Myers
5. “Computational Modeling of BPA Detection via BPA-peptide Interactions”
Megan R. Nieszola, Samuel R. Powell
6. “Chemical Characterization of Compounds Found in Herbal Cigarette Smoke as a First Step in Bioactivity Analysis”
Kyle Dunnavant
7. “Synthesis of Bimetallic Complexes Using Previously Isolated Palladium Complexes with Amine Bisphosphate) Ligands”
Nicole M. Braunscheidt
8. “Synthesis of Asymmetric [O,N,N,O] Ligands from Benzoxazole Precursors”
Claire L. Griffith
9. “Analysis of Sulfinic and Sulfonic Acids”
Jonathan G. Szczepanik
10. “Preparation of Manganese Complexes of Amine Bis(phosphate) Ligands”
Nathanial C. McCutcheon
11. “Glyphosate Soil Adsorption”
Tiffany N. Street
12. “Expression Changes of Metabolic Regulator FoxO1 between Early and Mid-stage Differentiation in Cinnamon-treated 3T3-L1”
Kayla Boxendall
13. “Cinnamon Extract-induced Epigenetic Modification in MCF-7 Breast Cancer Cells Potential for Adjunctive Therapy”
Seham Almehamdi
Shelby G. McKamey, Ayah T. Daghistani, Lukas R. Jira
15. “Role of RGS2 and RGS4 Proteins in Cocaine Reward”
Allison A. Stevens, Thorne Stoops, Madison Rose
16. “Role of RGS2 and RGS4 Proteins in Nicotine Reward”
Nathaniel H. Emerson, Thorne Stoops, Anduk Tran
17. “Regulator of G-Protein Signaling 5 Protein Modulates Anxiety- and Depression-like Behaviors in the Absence and Presence of Angiotensin II-induced Hypertension”
Trevor C. Guisinger, Haval Norman
18. “CVS One Choice: A Prescription Drug Abuse Education Program for High School Students”
Jennifer Gurevich, Anna Furman, Krista Horvath
Stephanie M. Walton
20. “Relationship between Mental Health Disorders, Perceived Stress Level and a College Student’s Academic Success”
Marisa Christine Rinhart
21. “A Longitudinal Analysis of Glucose Satisfaction and Diabetes Distress”
Christina Marengo
22. “Does a Hands-on, Basic Pharmaceutical Science Exercise Enhance Student Pharmacists’ Learning?”
Emily F. Loudermilk, Hannah Lamb
23. “Effect of Student-led Medication Reviews on Health Literacy and Medication Adherence”
Sierra Iddings, Jessica Kantola, Kayla Herman
24. “Prevention, Treatment, and Recovery: Resources for the Hardin County Opioid Crisis”
Katerina Linz
25. “Measuring the Sensory Characteristics of Cosmetic Emulsions with a Texture Analyser”
Huangying Zhao
26. “Skin Penetration of Caffeine from Marketed Eye Creams”
Amber Smith
27. “The Relationship between Gel Elasticity, Foamability and Amount of Carrageenan/Glycerin Used in Shower Jelly”
An N. Huynh
Jillian Gasser
Brienne Mosley, Mackenzie R. Riggenbach, Leighton Wireman, Jennifer Hipskind
30. “Predator-based Psychosocial Stress Model of Post-traumatic Stress Disorder Differentially Influences Voluntary Ethanol Consumption in Male and Female Rats”
31. “Behavioral Sequelae Induced by a Novel Animal Model of Post-traumatic Stress Disorder: Constant Reminder of the Trauma via Housing Rats with a Predator”
32. “The Impact of Distractor Type and Relaxation on Task Attention”
Keely Wagner, Alanis S. Allison, Courtney Tinkey
Clara A. Huffman, Keely Wagner, Kaitlyn Hurd
34. “Talking it Out: Investigating the Relationship between Verbal Ability and Externalizing Behaviors among College Students”
Ian Smith, Josilyn Lieb, Clara A. Huffman
35. “The Effects of Combined Exercise and Masturbation on Free Recall”
Stephanie Kedenburg, Cheyenne Mader, Ashley Mast, Victoria Sexton, Ian Smith
36. “Impact of Physical Attractiveness on Memory of Personal Information and Skill Set Information”
Alison M. LeBlanc, Amanda N. Mendicino, Sydney M. Yeon
37. “Investigation of Color and Media Type on Working Memory”
Meghan Hutchins, Elizabeth Jane Knapke, Jordyn Martin, Bethany Mae Schneider
38. “The Effect of Song Lyrics on the Perception of Men’s Attractiveness”
Ilaria DiBernardo, Alyssa Jones, Elijah Miller, Dean Cooley
39. “Cell Phone Use and the Likelihood of Suicide”
Hannah Lamb
40. “Self-Identification in Introverts, Extroverts and Ambiverts”
Kala Jilani-Pritchett, Janelle Johnson, Lauren Dickerson, Emma Eickhoff
41. “Mindful Music Listening”
Anna Cammarn
42. “Music’s Effect on Short-term Memory in Undergraduate Students from Introduction Courses”
Nicholas J. Bondra, Destiny F. Grant, Jonah S. Eckert, Jordan M. Watkins
43. “Gender Differences in Stroop Test Results”
Sharon Gallagher, Shae Golden, Rebecca Starn, Abby Blake
44. “Self-care Habits in Today’s Undergraduate Students”
Jaylie Shover
45. “Understanding Post-traumatic Stress Disorder through Body Adornment”
Linore A. Huss
“Eccentric ethics dictates that human life and human wellbeing are fundamentally dependent on our connectedness with nature. As such, one could say (as Aldo Leopold and other environmentalists do) that it is our moral obligation to behave as citizens of nature, rather than to accept the relationship of conqueror and conquered that has been the status quo for the past few centuries. As citizens of nature, there are certain laws that should be obeyed in our relationship with nature. I will draw a comparison between our citizenship in nature and our citizenship in our country, which will allow us to inform policy decisions regarding nature, which ultimately leads to an optimal and ethical relationship between man and nature. By allowing for this new dual citizenship in nation and nature, humanity and nature can have an ethical and healthy relationship that benefits both parties.

“A Comparative Analysis of the Alien Acts of 1798 and Immigration Policy under President Donald Trump”
Paper 3, 12-1:45 p.m., Deans’ Heritage
Presenter: Evan R. Lee (Ohio Northern University)
Research Advisors: Robert Waters (Ohio Northern University), Robert Alexander (Ohio Northern University)

The debate over the Alien and Sedition Acts during the late 1790s resemble contemporary arguments on immigration policy. Today, President Trump’s opponents argue that his administration’s immigration policy is similar to periods of American history when immigration policy was founded upon xenophobic attitudes. Both the Adams administration and the Trump administration rationalized stronger immigration policy by arguing that it would keep Americans safe from external threats. Adversaries of each administration argue that their immigration policies violate the First and Fifth Amendments. The Democratic-Republicans claimed that the Alien Acts discriminated against foreign nationals. Likewise, opponents of contemporary immigration policy assert that Trump’s travel ban discriminated against Muslims, and immigration policy at large discriminates against migrants from Latin America. Critics have also argued that these policies restrict due process for those affected. In addition, the actions of both administrations have faced resistance from states and cities that refuse to enforce federal immigration laws, for they view them as unconstitutional. These sanctuary jurisdictions claim that the Tenth Amendment gives states and cities the flexibility to enforce federal immigration laws as they see best. The intermittent battle over immigration policy, launched in 1798, continues today between President Trump and sanctuary states and cities.

“A Fibonacci-Lucas Experiment”
Poster 42, 10-11 a.m., Ballroom
Presenter: Aaron Kemats (Ohio Northern University)
Research Advisor: Mihai Caragiu (Ohio Northern University)

We consider an arbitrary sequence of generalized Fibonacci numbers G(N) side by side with the sequence of its partial sums, S(N). AN interesting relation is noted between terms of the form G(2K+1) and those of the form S(4K-2) for all positive integer values of K. The relation is mediated by Lucas numbers, thus establishing an interesting phenomenon.

“A Fundraising Journey with the Arts”
Paper 4, 12-1:45 p.m., Wishing Well
Presenter: Lexie Kilgore (Ohio Northern University)
Research Advisor: Mark D. Cruea (Ohio Northern University)

This project addresses the research and planning process for a fundraising cabaret for Broadway Cares Equity Fights AIDS. The effects of social media, company mission statements, and classic fundraising techniques are the main methods used in having this event be a success. My capstone will not only execute the fundraiser, but reflect on the process and success of the endeavor. I anticipate the event to make it to completion with my research on the impact of social media coming into great affect.

“A Longitudinal Analysis of Glucose Satisfaction and Diabetes Distress”
Poster 21, 12:30-1:30 p.m., Ballroom
Presenter: Christina Marenco (Ohio Northern University)
Research Advisor: Benjamin D. Aronson (Ohio Northern University)

Objective: The aim of this study was to examine the relationship between satisfaction with glucose control and diabetes distress over time. Methods: This longitudinal community based participatory research project recruited 194 American Indians recently diagnosed with type 2 diabetes from five Northern Midwest tribes. Diagnostic interviews for major depressive disorder were conducted at baseline. Participants answered questions about satisfaction with glucose control at 6 months, diabetes distress at 6 and 12 months, and demographic variables at baseline. Logistic regression was used to determine if glucose satisfaction was associated with a change in diabetes distress over time, net the effects of baseline depression and demographic factors. Results: At 6 months, 72.1% of participants indicated they had “good” or better glucose control. At 12 months, 39.5% met criteria for diabetes distress. In the logistic regression model, 6-month diabetes distress (OR 3.03, p = 0.017) and satisfaction with glucose (OR 0.64, p = 0.027) were related to 12 month diabetes distress. Discussion: Satisfaction with glucose control was associated with a decrease in diabetes distress over time. While interventions to decrease diabetes distress exist, these findings suggest improving perceptions of glucose control may also play a role.

“A New Pedagogical Landscape for Accounting”
Poster 22, 10-11 a.m., Ballroom
Presenter: Benjamin Neville (Ohio Northern University)
Research Advisor: H. Wilson (Ohio Northern University)

Accounting classes are typically part of the business core course offering at most colleges and universities in the United States. Business schools commonly promote and teach traditional approaches to accounting that includes a two-course sequence of financial accounting and managerial accounting. Recently, however, a few universities have developed a new method for teaching accounting principles that combine and refine material commonly taught in these two courses. The result is a new pedagogical landscape for undergraduate accounting curriculum. This research analyzes and compares the traditional and new landscapes.

“Accurate Documentation of Intake and Output”
Poster 22, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Rachel Green (Ohio Northern University)
Research Advisor: Leslie Bostick (Ohio Northern University)
Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)

Accurate documentation of intake and output (I&O) is vital to evaluate the therapeutic management of patients to ensure proper fluid balance within the body. It was determined that over a 12-hour shift, I&Os were not consistently being documented, which led to longer hospital stays, questioning the effectiveness of medications, and frustration among management. The purpose of this project is to educate the nursing staff on the importance of I&O documentation. A quality improvement project was created that consisted of a pretest/post-test design to survey the nursing staff’s knowledge of
accurate documentation of I&Os on the medical-surgical unit at Hardin Memorial Hospital. Using the results of the pretest, an educational intervention was designed to explain the rationale for accurate documentation of I&O. After educating staff about the importance of this topic, a post-test was distributed which determined compliance and staff viewpoints on the matter. It was found that proper documentation of I&O and staff’s awareness improved.

“Accurate Intake and Output Documentation: A Quality Improvement Project on Nurses’ Attitudes and Perceptions of Intake and Output Documentation”
Poster 35, 11:15 a.m.–12:15 p.m., Ballroom
Presenter: Megan McClain (Ohio Northern University)
Research Advisor: Megan Lieb (Ohio Northern University)
Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)

Intake and output is an important, yet simple and noninvasive method used to monitor kidney function and fluid balance; however, it is commonly documented inaccurately. Working in a Coronary Stepdown Unit, intake and output measurement is an important part of the assessment of a patient with heart failure, but oftentimes, specifically with oral intake and output, what is documented is not accurate. Therefore, a likert survey has been designed to determine nurse attitudes and perceptions towards the effectiveness of the current method for intake and output documentation. After the survey was administered and some discussion took place with the nurses, it was discovered that the nurses on the Coronary Stepdown Unit did not think intake and output were being documented accurately because they felt the trays and patient mugs were being taken care of by disciplines other than nursing – physical therapy, housekeeping, occupational therapy, IV therapy, etc. - and therefore was not getting documented. Due to this finding, an educational piece was created for those disciplines to teach them how to better help the nurses in accurate documentation when removing patient trays or refilling patient mugs. The importance of proper intake and output documentation was also reinforced to the nurses in hopes of changing their attitudes. The previously mentioned survey will then be redistributed to look for a change in nurse attitudes and perceptions. Proper intake and output can directly affect patient outcomes because it is one of the easiest and least invasive methods to monitoring fluid balance, and can often be the first sign of change.

“Advertising with Stop-motion Animation?”
Paper 20, 1:30-2:30 p.m., Bear Cave
Presenter: Kevin Cook (Ohio Northern University)
Research Advisor: William Britton Rowe (Ohio Northern University)

Stop-motion animation is a unique style of photography that brings motionless objects into the realm of animated movement. While it is a time-consuming process, the result is an animated setting, with real depth perception. In the design world, the ability to animate products that people use in their everyday lives could spark imaginations and increase the appeal of these products. This could ultimately increase sales. Why isn’t stop-motion animation widely used by advertisers? How could stop-motion animation be applied to the field of design? This study investigates the top five American companies (by profit) and uses three design research tactics: a business communications analysis, a user testing tactic, and a survey. These tactics will gather information about potential use of media for stop-motion animation and gain insight into audience reactions to advertisements that contain stop-motion animation. This research could help businesses determine if stop-motion animation should be used in their future advertisements. By conducting a business communications analysis of the top five American companies (by profit), the types of media can be found that these companies in their advertisements currently. After that I intend to conduct a test of advertising with stop-motion animation, in regards to another advertisement in the same market. This test will be done by having a few sample audiences watch an Advertisement with and without stop-motion animation for the same product, then be given a questionnaire on the effectiveness of both.

This research could help businesses determine if stop-motion animation should be used in their future advertisements.

“An Examination of Division I Cross-country Runners’ Experiences and Why They Chose Their University”
Poster 6, 10:11 a.m., Ballroom
Presenters: Angeline Seames (Bowling Green State University), Brian Blake (Bowling Green State University)
Research Advisor: Amanda Paule-Koba (Bowling Green State University)
Faculty Sponsor: Cordula Mora (Bowling Green State University)

According to the NCAA, “Division I schools generally have the biggest student bodies, manage the largest athletics budgets and offer the most generous number of scholarships” (NCAA, 2017, ¶ 1). Division II universities generally do not have as large of athletic budgets as their Division I counterparts but they do offer a variety of sports and athletic scholarships. Regardless of the size of the budget, both Division I and Division II are comprised of athletes are often equally competitive, dedicated, academically-inclined, and, in many cases, equally skilled. All things being equal, why would a high school athlete choose to compete at a smaller Division I conference cross-country program over a top Division II program? The purpose of the study is to understand the Division I cross-country athletes experiences and why they chose to participate in Division I athletics. The research questions guiding this study are: ● What is the motivational factor for cross-country athletes to participate in Division I athletics? ● What convinced Division I cross-country runners to choose to participate in Division I over Division II? ● What were these athletes’ experiences with the recruitment process? Cross-country athletes from eleven women’s programs and nine men’s programs in the Mid-American Conference were sent an invitation to partake in a survey about their experiences during the recruitment process and as a Division I athlete. Of the 212 athletes who were emailed the survey, 67 athletes (31.6%) completed the entire survey. The questions included demographic information, their experiences with recruiting, perceptions of being a collegiate athlete prior to enrolling, academics, and why the athlete chose to be a DI athlete. There are many benefits to this study. First, cross-country runner experiences are rarely studied. Their experiences as “non-revenue” athletes are incredibly valuable to understand what motivates them to participate in the long hours associated with being an athlete when they do not receive the same recognition as some of their peers at the Division I level. Second, the findings could be useful for coaches and athletic administrators when figuring out how to recruit top athletes with a finite amount of scholarship dollars available.

“An Illustrative-descriptive Guide to the Cranial Morphology of Subfamily Paradoxurinae (Civet Cats)”
Poster 5, 11:15 a.m.–12:15 p.m., Ballroom
Presenter: Sophia Mae Beery (Ohio Northern University)
Research Advisor: Timothy Koneval (Ohio Northern University)

The lifestyles of an elusive group of mammals known as the Paradoxurinae (civet cats) can be better understood by examining their morphology. This project is designed to create a descriptive guide using handmade ink illustrations of the crania of several genera of subfamily Paradoxurinae (Arctictis, Arctogalidia, Paguma, and Paradoxurus). Illustrative descriptive guides are useful in focusing on important characters that can be harder to distinguish in a photograph. Each genus is illustrated from anterior, lateral, dorsal, and ventral views. Females are illustrated to maintain consistency, and any differences attributable to sexual dimorphism are depicted separately. Descriptive characters, such as postorbital constriction and ectotympanic bullae inflation, are defined and labeled in each genus. This guide is purposed to encourage further research on this group as providing a reference on the morphology of the Paradoxurinae.

“Analysis of American Electric Vehicle Advertisements”
Paper 19, 1:30-2:30 p.m., Bear Cave
Presenter: John McNutt (Ohio Northern University)
Research Advisor: William Britton Rowe (Ohio Northern University)

Vehicles allow us to travel long distances relatively quickly. But, they can also be a danger. Annually, the average car releases 4.7 metric tons of the harmful greenhouse gas, carbon dioxide, into the atmosphere. Automotive companies have begun to take measures to reduce that amount by manufacturing electric powered vehicles. However, they have not made as much of an impact as needed. In 2016, 542,000 out of 269 million vehicles registered in the U.S were electric vehicles. This presentation uses survey data as well as historical analysis and literary review to see how people view electric vehicles, how certain companies have advertised these vehicles in the past, and how one could incorporate certain aspects from other car ads to help increase the sale of these vehicles.

“Analysis of Sulfinic and Sulfonic Acids”
Poster 9, 12:30-1:30 p.m., Ballroom
Presenter: Jonathan G. Szczepa (Ohio Northern University)
Research Advisor: Christopher E. Spiesz (Ohio Northern University)

Methanesulfonic acid (MSA, CH₃SO₂H) is a key component of the global sulfur cycle. MSA is formed from the oxidation of dimethyl sulfide, a key metabolite produced by some marine phytoplankton. Despite its central role in the sulfur cycle, analysis of MSA is limited to relatively clean matrices such as snowpack, ice, and aerosols. Currently the only method for measuring MSA concentrations is ion exchange chromatography, which cannot be used for ocean water due to high chloride concentrations. As such, MSA concentrations in seawater are unknown at present. Quantification of MSA in seawater could be used to give a measure of marine photosynthetic activity, and be used to understand the marine sulfur cycle more fully. This study aims to develop a method for MSA analysis by reduction to methanesulfinic acid (CH₃SO₂H), and then reaction with a diazo compound (Fast Blue BB) and detection using UPLC. Once developed, the method will be used to quantify MSA in seawater samples from the Gulf of Maine and the Sargasso Sea.

“Angels in America: An Actor’s Pursuit in Socio-cultural Exploration”
Poster 43, 10-11 a.m., Ballroom
Presenter: Eli A. Underwood (Ohio Northern University)
Research Advisors: Brian P. Sage (Ohio Northern University), Joan Robbins (Ohio Northern University)

Like dust that settles on a classic piece of literature, so did I find my approach to Tony Kushner’s work with softness and compliance. It is a privilege for any actor to work on a piece that they admire deeply, and my pursuit of finding Joe Pitt in Angels in America spurred many avenues of rabbit hole research. Tony Kushner, father and playwright of Angels in America, created a niche frame of reality to write his own interpretation of the HIV epidemic and its influence on the US in the late 1980s. AIDS, Mormonism, oflactory sexual arousal, sexuality, political radicalism, demagoguery, homosexuality, homophobia, and spiritual awakening are but some of the main themes explored fastidiously during my time in preparation for performance. There is so little discussion of how a piece is adventured through, and so much fanfare to do with the performance itself that the recordings of a process during that process are instrumental for a growing performer to reflect and adapt in years to come. I have completed an accurate and thorough account of that journey, along with a collection of all the research gathered in hopes to dissect an actors work.

“Arby’s Advertising Campaign”
Paper 13, 12:20-1:20 p.m., Bear Cave
Presenter: Ethan Snider (Ohio Northern University)
Research Advisor: William Britton Rowe (Ohio Northern University)

As more and more people move away from the television and the radio, social media has become one of the biggest sources of advertisements and Arby’s has taken advantage of this. Their current campaign targets a niche audience and one post at a time. They create a cardboard model of a show, game or news event that allows Arby’s to tie into interests of people outside of food. In most of the ads they are not advertising the food itself but the creativity and relatability of the company. By creating this safe environment for people from all walks of life, they have been able to generate talk of their food without directly advertising it. To figure out just how effective this ad campaign is I think you could put together a few different methods. By using a company analysis, we could figure out what Arby’s goal is as a company and their values that are portrayed in the ads. Another effective way to figure out the effectiveness of the ads a host could take a select audience and survey them to see if these types of ads interest them. By using this method, we could also see what age groups, social class, etc are interested in Arby’s and this ad campaign. The results could lead more companies to move away from directly advertising their food and force them to try and relate to the customer.

“Are You A Man?: A Conflict of Gender in Macbeth”
Poster 2, 12:1-1:45 p.m., Room 202
Presenter: Kelley Lewis (Ohio Northern University)
Research Advisor: Douglas Dowland (Ohio Northern University)

The societal expectation of gender continues to affect men and women today. By looking into the way Macbeth so easily fell into an imbalance of these gender roles in the 1600s, readers are able to see how Shakespeare is not only a man of his time, but also a writer who creates a timeless lesson. Macbeth gives an example of a man of honor who was easily pushed to tyranny by the threats to his reputation due to his gender. Macbeth shows the negative effects of cutting out feminine humanity and the consequences of an unbalanced gender expression. This paper explores the effects of gender roles in Macbeth and the limitations of the societal gender roles in Macbeth.

“Assessment of Cleaning Product Efficacy on Collegiate Wrestling Mats”
Poster 11, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Holly R. Dyer (Ohio Northern University)
Research Advisors: Katherine L. Krynak (Ohio Northern University), Linda M. Young (Ohio Northern University), Vicki A. Motz (Ohio Northern University)

The cleaning of wrestling mats is critical to reduce transmission of pathogenic organisms between athletes. The efficacy of two residual and two non-residual cleaners was compared. Over the course of a 60-minute practice, mats were swabbed at time 0 and every 15 minutes thereafter (N=80 swabs in total). DNA was extracted from the swab samples utilizing a phenol-chloroform extraction method. Next generation sequencing technology targeting the 16S rRNA gene region of bacterial DNA was used to assess the microbial community composition over time across all four cleaning regimes. Resulting DNA sequences were processed in MOTHUR (V 1.35.1) and all statistical analyses were performed in R (V 3.4.4.3). While cleaning regimes resulted in similar bacterial communities at the start of competition (visualized by non-metric multidimensional scaling ordination (NMDS)), bacterial community composition significantly differed between treatments over time (permutation based analysis of variance; PERMANOVA F(3,72)=1.58, p = 0.01). Indicator species analysis determined 28 bacterial taxa to describe the differences between regimes, half of which are known to be pathogenic or opportunistic pathogens. This study supports previous findings that the non-residual cleaning regime of bleach with the additional use of hand gel was as effective at reducing bacteria as more expensive residual cleaning products.

“Athletes’ Perceptions of Travel on Their Performance on the Field and in the Classroom”
Poster 5, 10-11 a.m., Ballroom
Presenters: Courtney A. Burson (Bowling Green State University), Brett W. Gibbons (Bowling Green State University)
Research Advisor: Amanda Paule-Koba (Bowling Green State University)
Conference realignment is the practice of universities moving from one athletic conference to another in hopes of increased media exposure and revenue. It is a phenomenon that has garnered much attention over the years – mostly in popular press articles. Researchers have examined the topic in a variety of ways including conference realignment and football attendance (Groza, 2010), competitive balance and conference realignment (Perline & Stoldt, 2007; Rhoads, 2014), factors influencing conference realignment (Nwasu, 2015), and rivalry and conference realignment (Havard & Eddy, 2013). The purpose of the study was to understand the how athletes perceive the effects of travel on their performance on the playing field and in the classroom. Football players from the Big 10 and Big 12 and hockey players from the WCHA conference were sent a survey about their perceptions about the travel demands of their sport. This study is significant because athletes spend many hours each week on the road traveling to athletic contests so the ability for them to have a chance to speak about how this affects them will provide new insights.

“ATMAE Conference Robotics Competition Team”
Poster 29, 10-11 a.m., Ballroom
Presenters: Timothy Hoersten (Ohio Northern University), Charles Ranck (Ohio Northern University), Tyler Simmons (Ohio Northern University), Greg Phillips (Ohio Northern University), Patrick Bryant (Ohio Northern University)
Research Advisor: David Rouch (Ohio Northern University)

This research was undertaken to compete in multiple events at the 2017 ATMAE National Conference in Cincinnati, Ohio. We designed a robot that would operate both manually (controlled by a team member in a designated area) and autonomously. The rules supplied to the participating teams across the United States specified maximum sizes, cost constraints, criteria for technical report, presentations, and competitions. The competitions entailed completion of various tasks including an obstacle course, hacky sack retrieval with autonomous corn hole drop, and capture the flag tag. The team’s technical documentation received the first place award, which included all CAD solid models, electrical schematics, fluid power schematics, bill of materials, project schedule, alternative designs, software to hardware integration, and code used to control the robot.

“Behavioral Sequelae Induced by a Novel Animal Model of Post-traumatic Stress Disorder: Constant Reminder of the Trauma via Housing Rats with a Predator”
Poster 31, 12:30-1:30 p.m., Ballroom
Presenters: Paul A. D’Alessio (Ohio Northern University), Connor P. Ney (Ohio Northern University), Kiera L. Robinson (Ohio Northern University), Charis D. Kosler (Ohio Northern University), Brooke J. Hertenstein (Ohio Northern University), Alanis S. Allison (Ohio Northern University), Cassandra S. Goodman (Ohio Northern University), Austen E. Rush (Ohio Northern University)
Research Advisor: Phillip R. Zoladz (Ohio Northern University)

Male rats exposed to a 31-day stress paradigm consisting of two cat exposures and daily social instability exhibit physiological and behavioral sequelae similar to those observed in PTSD. We aimed to enhance the validity of this model by intensifying the “traumatic” experiences and by adding an element of constant “traumatic” reminders to the model. Male Sprague-Dawley rats were given three cat exposures, each separated by 10 days. The first two exposures were “protected”; stressed rats were separated from the cat by a physical barrier. The final exposure was “unprotected”; the cat could physically interact with stressed rats. Stressed rats were subjected to daily social instability throughout the 31-day paradigm. A novel component of the model is that stressed rats were housed with the cat for the duration of the stress paradigm. Rats in the no stress group were handled daily and were not exposed to the cat. On Days 32 and 33, we measured rats’ anxiety-like behavior and startle responses, respectively. Stressed rats exhibited heightened anxiety and a trend toward an exaggerated startle response. The effects observed as a result of this model were more robust than previously witnessed, suggesting its usefulness to further assess the consequences of trauma-related psychopathology.

“Benefits of Training Pre-service Teachers in Functional Behavioral Assessment: A Literature Review”
Paper 5, 12:14 p.m., Room 202
Presenter: Karrie E. Powers (Ohio Northern University)
Research Advisor: Alyssa Emery (Ohio Northern University)

Sustaining an appropriate learning environment is crucial for students’ academic achievement. With a trend of inclusion, students with behavior problems are often placed in general education classrooms, rather than self-contained classrooms. General education teachers must be able to apply effective behavioral management strategies in the classroom, whether the problems be mild or severe. For students identified as having behavioral problems as a function of a disability, schools are required by federal legislation to use a functional behavior assessment (FBA) to create evidence-based, positive behavioral interventions. FBA training is not a requirement for general education teachers in undergraduate teacher preparation. Yet when general education teachers are trained through professional development to conduct FBA, research has shown significant improvement in classroom behavior and academic gains. In this review, I examined the literature on students with conduct disorder in early childhood classrooms, alongside IDEA requirements and current practices utilized by schools, to make a case for educating teacher candidates in FBA before they begin their careers.

“Breakfast at Riley’s”
Poster 18, 10-11 a.m., Ballroom
Presenter: Riley Jones (Ohio Northern University)
Research Advisor: H. Wilson (Ohio Northern University)

Most people begin their day with some version of a breakfast. For those businesses who provide breakfast, there currently exist substantial opportunities to generate considerable revenue. This research analyzes the viability of a breakfast diner in Ada, Ohio. We identify potential customers and analyze their spending habits with regard to breakfast away from home, and we examine existing restaurants that cater to this market. We conclude that Ada would benefit from a breakfast diner and that this new business would be very profitable.

“Can Design Lower Rates of Suicide at Ohio Northern University?”
Paper 6, 11:10 a.m.-12:10 p.m., Bear Cave
Presenter: Alexandra Gesler (Ohio Northern University)
Research Advisor: William Britton Rowe (Ohio Northern University)

The suicide rate peaks among young adults ages twenty to twenty-four. It is the second leading cause of death in that age group. In fact, one in twelve U.S. college students make a suicide plan. The suicide rate keeps growing at a staggering rate, two hundred percent since the 1950s. This has become a nationwide issue campuses are trying to address. At Ohio Northern University, there have been students who have committed suicide, like every other university in the country. How can ONU use design to gain awareness on the issue and get information out to its students? This design research project will study how properly informing students and faculty through design can help reduce the suicide rate in our community. To collect this information, the counseling staff will be interviewed, communicated benchmarking will be analyzed from other institutions, and copy testing research will be conducted. Conclusions from this research will be presented at the colloquium.

“CASK (Calcium/Calmodulin Serine/Threonine/Guanylate Kinase)”
Poster 13, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Audrey Farthing (Ohio Northern University)
Research Advisor: Jamie L. Siders Sanford (Ohio Northern University)

Recently, an RNA interference screen by Aranjuez et. al. has demonstrated a potential role for CASK in Drosophila border cell
migration (BCM). Border cells consist of a cluster of 6-8 cells that migrate from the anterior end of the developing egg chamber to the oocyte during Drosophila oogenesis. BCM serves as a robust model system for collective cell movement, including wound healing and tumour cell metastasis. The current work involves optimization of immunohistochemical analysis of singed protein, a marker of border cell clusters, in wild-type and CASK knockout ovaries. Optimization of the immunohistochemical protocol demonstrated that singed protein can be used to reliably label the border cells in ovaries fixed in 4% Paraformaldehyde plus NP-40 detergent using the DSHB singed monoclonal primary antibody and FITC conjugated goat anti-mouse IgG secondary antibody. Following protocol optimization, immunohistochemical analysis was successfully completed on 5 sets of ten ovaries from 3 wild-type fly lines and the p18 CASK knockout fly line. Future work will involve microscopic analysis of border cell migration to determine whether CASK knockout results in defective cell migration as predicted by the previous RNAi screen.

“Catheter-associated Urinary Tract Infection Prevention”
Poster 50, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Morgan Hunsicker (Ohio Northern University)
Research Advisor: Leslie Bostick (Ohio Northern University)
Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)

Catheter associated urinary tract infections (CAUTIs) are difficult to prevent in the hospital setting. Catheter use is the number one leading cause of urinary tract infections with prolonged use of catheters being the main risk factor. According to the Center of Disease Control (CDC), roughly 25% of patients in the hospital receive urinary catheters, which automatically puts them at risk for infection. The purpose of this study was to educate the nurses on the cardiac stepdown unit of St. Rita’s Medical Center to prevent the occurrence of CAUTIs. The quality improvement project consisted of a pretest/post-test design with a sample size of approximately 20 day and night shift nurses. The nurse manager of the unit handed out the questionnaire during day and night shift huddle for a period of one week. The pretest/post-test consisted of 10 questions about insertion, maintenance, and standard precautions when using urinary catheters. The questionnaire was presented as a Likert Scale, where nurses had to choose from (a) never, (b) sometimes, (c) usually, or (d) always. The American Nurses Association’s (ANA) CAUTI Prevention Tool was used during an educational session to educate the nurses on the cardiac stepdown unit about key practice strategies to reduce the occurrence of CAUTIs. The key practice strategies focused on decreasing catheter use and timely removal. A post-test was conducted to determine if the nurses had a better understanding of techniques to prevent CAUTIs. Results found that nurses improved on CAUTI prevention strategies and plan to utilize the suggested techniques in the future. This QI project showed the need for educational changes to decrease the number of hospital acquired CAUTIs.

“Cell Phone Use and the Likelihood of Suicide”
Poster 39, 12:30-1:30 p.m., Ballroom
Presenter: Alexandra R. Camplese (Ohio Northern University)
Research Advisor: Rebecca Brooks (Ohio Northern University)

This article looks at the use of cell phones amongst a college campus and analyzes the relationship of the use with depression and anxiety rates. Dr. Jean Twenge first analyzed this phenomenon at the use of cell phones amongst a college campus and analyzes the relationship of the use with depression and anxiety rates. Dr. Jean Twenge first analyzed this phenomenon and this article expands on that research while applying the predictions to Ohio Northern University’s campus. Measures used include the CESD-R, Beck’s Anxiety Inventory, the Life Satisfaction Scale, and the Smartphone Addiction Scale Short Version. Surveys were sent out to students on campus and data was analyzed for results. A theoretical analysis from the perspective of Emile Durkheim was done in addition.

“Cell Phone Use and the Likelihood of Suicide: A Theoretical Approach”
Paper 1, 10:11-11:45 a.m., Wishing Well
Presenter: Alexandra R. Camplese (Ohio Northern University)

Research Advisor: Robert Carrothers (Ohio Northern University)

This article looks at the work of American Psychologist Dr. Jean Twenge from the theoretical perspective of two well-known sociologists - Emile Durkheim and Herbert Marcuse. Looking at cell phone use amongst todays generation and comparing this usage to rising depression rates, this article tries to explain why this is using sociological theory. These theories include Durkheim’s theories on suicide and social integration, as well as Marcuse’s take on the “One-Dimensional Man.”

“Centrosome Reduction Is Essential for Fertility and Normal Development in Drosophila Melanogaster”
Poster 18, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Michaela Roberts (University of Toledo)
Research Advisor: Tamer Avidor-Reiss (University of Toledo)
Faculty Sponsor: Amanda Seabolt-Martin (University of Toledo)

One out of seven couples experience a problem with male infertility and diagnosis is only available for half of these cases. An unknown mechanism is likely responsible for these cases. The centrosome is a cellular organelle that aids in cell division, and involves a process in which several centrosomal proteins are diminished. This process known as centrosome reduction takes place in the sperm and may have unknown effects on male infertility. Our hypothesis is that Asterless (Asl), a centrosomal protein, causes developmental defects throughout the lifecycle when it is not reduced normally. Centrosome reduction is conserved in Drosophila Melanogaster making it a suitable model organism for this research. We have found that normally Asl levels are reduced in the sperm as part of centrosome reduction. When paternal Asl is overexpressed, it interferes with normal Asl reduction and there are fewer viable offspring. These results suggest that Asl reduction in the sperm is essential for normal zygote development - the earliest developmental stage of the embryo. In support of the hypothesis, there were also slight developmental delays from the embryo stage to the pupae stage. These results show that the ortholog in humans could be responsible for male infertility.

“Changes in SEBT in College Basketball Players Participating in a Preventative Ankle Program”
Poster 4, 10-11 a.m., Ballroom
Presenters: Haley Potters (Ohio Northern University), Jennifer Miller (Ohio Northern University)
Research Advisors: Kurt Wilson (Ohio Northern University), Michelle Wilson (Ohio Northern University), Edward Potkanowicz (Ohio Northern University)

Introduction: Poor balance has been associated with increased injury among athletes. Preventative rehabilitation programs have been implemented to help with injury prevention, but research has not shown the effectiveness of these programs on balance gains. Objective: The purpose of this study was to use the Star Excursion Balance Test (SEBT) to determine whether participants reach their injury prevention goals. Participants: Six Men’s and Seven Women’s College Basketball players. Methods: The athletes completed the SEBT as a baseline test. After the athletes completed the baseline testing, they took part in a progressive 5-week rehabilitation program which incorporated postural stability, strength and plyometric. The outcome measurements were scored by repeating the SEBT. Results: The SEBT composite scores showed an increase on average. However, only one direction on the left leg. For example, in the posteromedial direction the women significantly increased from 96.6 ± 3.67 to 105.67 ± 3.21 after sessions. The men increased significantly only on the left leg in the anterior, posteromedial and posterolateral directions. Scores increased from 65.89 ± 2.89 to 74.38 ± 3.62, 98.28 ± 3.81 to 108.12 ± 4.09, and 84.69 ± 5.95 to 99.35 ± 5.57 respectively. Conclusion: To use the SEBT , we can demonstrate that a rehabilitation program can increase the balance on college basketball players after they have maintained an ankle injury. In the future, we hope other athletic
trainers can use this program in their preventative protocols to lessen the likelihood of an ankle or lower leg injury.

“Characterization of the CASK Protein in the Drosophila S2R+ Cell Line”
Poster 12, 11:15 a.m.-12:15 p.m., Ballroom
Presenters: Elizabeth Olah (Ohio Northern University), Holly R. Dyer (Ohio Northern University)
Research Advisor: Jamie L. Siders Sanford (Ohio Northern University)
The MAGUK (Membrane-associated guanylate kinase) superfamily of proteins are known for their canonical PDZ, SH3 and GUK domains and their function in establishment and maintenance of cell polarity. A recent RNA interference screen by Kiger et al. identifies the MAGUK protein CASK (Calcium/calmodulin-dependent serine protein kinase) as a regulator of polarity and morpholgy in the Drosophila embryonic S2R+ cell line. However, no further work to characterize CASK’s functional role in development of the S2R+ cell line has been completed. The current work aims to optimize the conditions necessary for growth of the S2R+ cell line in culture. Results show that M3+BPEY insect media provides the best growth conditions when using a 10% (v/v) solution of HycloneTM brand fetal bovine serum. Additionally, a solution of 20% (v/v) fetal bovine serum with 10% (v/v) DMSO was ideal for suspending the growth of cells in liquid nitrogen for later use. Future work will focus on conducting RNA interference analyses to knockdown the CASK protein and to determine the molecular mechanisms by which the CASK protein contributes to establishment and maintenance of cell morphology and polarity.

“Chemical Characterization of Compounds Found in Herbal Cigarette Smoke as a First Step in Bioactivity Analysis”
Poster 6, 12:30-1:30 p.m., Ballroom
Presenter: Kyle Dunnivant (Ohio Northern University)
Research Advisor: Christopher Bowers (Ohio Northern University)
Herbal cigarettes have become a new alternative to tobacco cigarettes by providing the look and feel of smoking cigarettes with an assumption that the health concerns that coincide with smoking tobacco cigarettes vanish. In order to evaluate this, smoke samples of herbal cigarettes were collected on charcoal tubes, desorbed with solvent and characterized by Gas Chromatography-Mass Spectrometry (GC-MS). The compounds detected fell roughly into three categories: compounds formed by the combustion of the plant matter (ethylbenzene, xylene), compounds added to the cigarette filter (triacetin) and volatile compounds from the plant matter or flavor additives (d-limonene, camphor, eugenol). The respective bioactivities of the compounds detected are examined in an attempt to address the question of whether inhaling herbal cigarette smoke can be more harmful than tobacco cigarette smoke, less harmful than tobacco cigarette smoke, or even beneficial to smokers.

“Cinnamon Extract-induced Epigenetic Modification in MCF-7 Breast Cancer Cells Potential for Adjunctive Therapy”
Poster 13, 12:30-1:30 p.m., Ballroom
Presenter: Seham Almehmadi (Ohio Northern University)
Research Advisor: Amy Stockert (Ohio Northern University)
The role of epigenetics in cancer development and progression has exponentially grown in recent years. Polyphenolic compounds from green tea and other sources have been demonstrated to alter methylation status in a variety of genes, including those linked to cancer. Our studies suggest similar results may be possible from treatment of cells with cinnamon extract. We selected the MCF-7 breast cancer cell line to explore the effects of cinnamon treatment on DNA methylation patterns. Following confirmation of total methylation changes we selected genes of interest in cancer development to complete methylation specific PCR aimed at determining the effects of gene specific methylation changes in cinnamon treated cells. Akt2 signaling can play a major role in different signaling pathways to prevent cellular apoptosis and lead to prolonged cell life. Research also demonstrates variable localization of the Akt2 protein, with confirmed identification in both the cytoplasm and the nucleus. Preliminary results in the lab demonstrate the potential for aqueous cinnamon extract to methylation the Akt2 gene in MCF-7 cells, potentially decreasing expression of the protein. Here we will present our results demonstrating the methylation change on Akt2 upon cinnamon extract treatment as well as further characterize effects of cinnamon on Akt2 expression and localization. Collection of treated and untreated cells under various treatment regimens will allow further methylation analysis, RNA extraction followed by quantitative PCR to evaluation expression of Akt2.

“College Education vs. Choosing Life”
Paper 2, 10:11-11:45 a.m., Deans’ Heritage
Presenter: Morgan Couchman (Ohio Northern University)
Research Advisors: Mark Dixon (Ohio Northern University), Robert Alexander (Ohio Northern University)
The question I am challenging is, how do college students value abortion and a college degree? I will be creating a survey to give to 100 random students and evaluate the results. I will also be doing my own research in abortion and college statistics. I predict college students will justifly abortion by saying a college education is more important. Based on these predicted results, I will be explaining why that is not a justifiable answer and how a person cannot put their life before another.

“Comparative Source Distribution of Belizean Reef Sediments”
Poster 2, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Melanie R. Cohn (Heidelberg University)
Research Advisor: Amy Berger (Heidelberg University)
The Belize Barrier Reef Reserve System (BBRRS) is the second largest reef system in the world next to the Great Barrier Reef (GBR). The BBRRS is home to 65 coral species and over 300 fish species (Wells, 2018). Historically, the greatest threat to the BBRRS has been hurricanes; these will likely increase in strength and frequency as a result of climate change (UNSECO, 2018). Biologic activity in healthy reef environments produce sediments in situ (Dudley, 2003). In the GBR, sediment composition and distribution across the reef environment correlates to extent of coral cover (Morgan, 2016), as coralline algae also produces in situ sediment (Rowland, 2013). Corals can be classified on how resistant they are to breakage by wave action. Hence, analysis of coral debris can indicate previous wave induced forces, including hurricane action (Storlazzi et. al., 2004). The purpose of this research is to do a preliminary survey of several different BBRRS environments in the vicinity of San Pedro, Belize, to determine sediment origin and compare source distribution with that of the GBR.

“Comparison of the Stimulatory Effects of Rosemary and Caffeine in the Human Body”
Poster 16, 11:15 a.m.-12:15 p.m., Ballroom
Presenters: Kristina Myers (Ohio Northern University), Courtney Adleman (Ohio Northern University), Cole Pelger (Ohio Northern University), Luke Franks (Ohio Northern University)
Research Advisors: Vicki A. Matz (Ohio Northern University), Rema Suniga (Ohio Northern University)
A study done by the University of New Hampshire estimated 77% of college students use caffeine. Caffeine increases blood pressure (MAP), heart rate (HR), and wakefulness, and has been shown to decrease focus and reaction time, but has no documented effect on memory. Rosemary essential oil, an herbal stimulant, has been shown to increase memory and wakefulness but little data exists on rosemary’s effect on MAP, HR or wakefulness. Therefore, we hypothesized that use of rosemary may promote study focus and improved reaction time without the detrimental cardiovascular effects of caffeine. Ten college-aged participants ingested 200 mg caffeine in 100 mL of water, 45 g rosemary oil in 100 mL of water, and a control of 100 mL of water on three occasions separated by at least 48 hours. MAP, HR, wakefulness (self-reported), memory (word recall), and reaction time (online test), and focus (Stroop test) were
measured before consumption and 10 and 30 minutes post-consumption. No significant change was seen in any of the parameters over time as determined by ANOVA. Nor were significant differences between treatments noted in any time period. The failure of caffeine or rosemary to produce significant change is unexpected and unexplained.

“Compliance of Pediatric Nursing Staff with Personal Protective Equipment Protocol”
Poster 39, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Madeline Sweeney (Ohio Northern University)
Research Advisor: Kami Fox (Ohio Northern University)
Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)

Personal protective equipment (PPE) protects healthcare professionals and patients alike from contracting various infectious diseases present in the healthcare setting. Non-compliance of healthcare professionals with isolation protocols can put patients and themselves at risk for acquiring unwanted and harmful infections which can be difficult to treat. The purpose of this quality improvement project was to identify barriers to strict compliance with current isolation protocols on a pediatric unit and improve nurse and nursing assistant compliance with isolation precautions and the use of PPE. A pre-test/post-test design was used. These tests were developed and distributed to nurses and nursing assistants during morning and evening “huddle meetings” on the 8th floor Specialty Pediatrics Unit of Dayton Children’s Hospital in Dayton, Ohio. The pre-test aimed to reveal barriers to complete compliance with isolation protocols by inquiring about nurses’ and nursing assistants’ habits regarding the use of PPE as well as their perceptions about PPE. Nurses and nursing assistants were then educated about the importance of PPE, consequences of not using PPE, and the correct order for donning and removing PPE. The post-test resurveyed nurses and nursing assistants about their habits and perceptions regarding PPE in order examine the efficacy of the education provided by evaluating if compliance with isolation precautions was improved. It is expected that by improving compliance with isolation precautions, a safer environment will be created for patients and healthcare professionals by decreasing their risk for acquiring dangerous and hard to manage infectious diseases.

“Compliance with Personal Protective Equipment”
Poster 42, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Kristina M. Flak (Ohio Northern University)
Research Advisor: Megan Lieb (Ohio Northern University)
Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)

The purpose of this quality improvement project is to increase knowledge and compliance in wearing proper personal protective equipment (PPE) when entering patient isolation rooms at Kindred Hospital. By not adhering to regulations of proper PPE, nurses pose a risk to their patients for contracting hospital acquired infections. Ensuring the use of proper PPE will improve patient outcomes by reducing the risk of infection. This project will consist of a pretest/posttest design using a Likert scale and will be distributed among nurses on the floor. The survey will contain various questions about personal habits while using PPE and availability of PPE for each patient room. Nurses were educated using a handout reinforcing hospital policy and the implications on their patients when not using PPE. By increasing nurse knowledge about PPE and the importance of compliance with the regulations, patients will have improved outcomes.

“Computational Investigation Deriving from Shor’s Algorithm”
Poster 58, 10:11 a.m.-11 a.m., Ballroom
Presenter: Bryan P. Peck (Ohio Northern University)
Research Advisor: Mellita Caragiu (Ohio Northern University)

At the basis of public-key encryption is the use of a very large number N, obtained by the multiplication of two prime numbers, p and q, also very large. Consequently, the decryption process necessitates the knowledge of the two primes, which could be obtained by factoring N, a task that takes an impractically long time for N with hundreds of digits. Shor’s algorithm is a clever procedure for obtaining p and q. Its success resides in the probability of picking a random number y, between 1 and N-1, such that y has an even order (an odd order y results in it being discarded and another random number being picked). In our analysis, we address, mainly computationally, the following question: given a prime number P, how many of the numbers between 1 and P-1 have an odd order? We also investigate the distribution of the number of odd-order elements for a fairly large initial set of prime numbers.

“Computational Modeling of BPA Detection via BPA-peptide Interactions”
Poster 5, 12:30-1:30 p.m., Ballroom
Presenters: Megan R. Nieszola (Ohio Northern University), Samuel R. Powell (Ohio Northern University)
Research Advisor: Trilisa M. Perrine (Ohio Northern University)

Bisphenol A (BPA) is commonly found in a range of plastic products, including food packaging, adhesives and flame-retardant materials. Recently, BPA has been found to be correlated to many diseases and health risks including cancer, heart disease, and diabetes. It has been found that BPA binds to steroid receptors. Successful detection was accomplished by Yang et al. using a cysteine-flanked heptapeptide sequence Cys-Lys-Ser-Leu-Glu-Asn-Ser-Tyr-Cys (CKSLENSYC). A self-assembled monolayer on a gold electrode was used to determine the varying concentrations of BPA in solution via differential pulse voltammetry (DPV). We use WebMO as an interface to QChem using the LANZDZ basis set with wB97x-D to computationally model and provide an explanation for the observed experimental results. Through geometry optimizations and molecular orbital calculations we are able to provide information regarding the binding of the 13 studied peptide sequences to BPA through their hydrogen bonding interactions. Additionally, the results will help elucidate why certain sequences bind to BPA more effectively than others and how this specific binding interaction takes place. Our results will lead to a better understanding of BPA-peptide interactions and, potentially, to the design of a polypeptide intended specifically for BPA detection.

“Concurrent Nurse Charting”
Poster 23, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Chase O. Mueller (Ohio Northern University)
Research Advisor: Christina Liebrecht (Ohio Northern University)
Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)

Concurrent nurse charting is important because of the effects it has on charting accuracy, charting completeness, continuity of care, and quality of care. The purpose of this study is improving concurrent charting standards in the CCU at Blanchard Valley Hospital. This study aimed to investigate current levels of concurrent charting in the Coronary Care Unit (CCU) at Blanchard Valley Hospital. Identifying barriers that impede charting consistency was the focus of educational improvement and implementation. Documentation is one area in nursing in which nurses are able to control how much or how little information is added to patient charts and the timely manner of documentation following intervention. Methods of inquiry include a ten-question pretest, educational session, and an identical ten-question posttest. Questionnaires were designed using a Likert Scale format with options of a) really weak b) weak c) adequate d) strong e) really strong, short answer, and select all that apply. Questionnaires were distributed in nursing break rooms with participants including day and night shift nurses in the CCU. Participants include both male and female nurses with a wide age range and experience. According to the American Nurses Association, untimely documentation may lead to a variety of undesirable legal outcomes including hirderace of legitimate fact finding; jeopardy of defenses, accusations, and claims of healthcare providers and clients; and liability of health care associations and providers.
“Constitutional Assessment of Lustration, Case of Czech Republic and Albania”
Paper 1, 12:1-45 p.m., Deans’ Heritage
Presenter: Luz Balaj (Ohio Northern University)
Research Advisor: Brian Anderson (Ohio Northern University)

The aim of this paper is to analyze the process of lustration in Czech Republic and Albania as countries that have been part of communist political regimes. Constitutionality of the lustration process and constitutionality of laws that have been dealing with lustration are going to be the main focus of this paper. What was the assessment of Constitutional Court of Czechoslovakia and later Czech Republic and Albania, regarding to principles of lustration? This paper will also explain how these countries have faced the influence of the past in the effort to establish the new democratic governance. What was the rule of the legislative body in the lustration process and was the law on lustration the solution that worked regarding to the idea of establishing the new democratic governance? Also, this paper will analyze the new post-communist constitution to see how those constitutions has given the chance to the legislative body to enact the laws on the lustration in addition to strength the Rule of Law.

“CVS One Choice: A Prescription Drug Abuse Education Program for High School Students”
Poster 18, 12:30-1:30 p.m., Ballroom
Presenters: Jennifer Gurevich (Ohio Northern University), Anna Furman (Ohio Northern University), Krista Horvath (Ohio Northern University)
Research Advisor: Lindsey Peters (Ohio Northern University)

Prescription drug abuse is on the rise in the US, costing our economy over $78.5 billion annually and contributing to a higher death toll than car accidents and shootings. Due to accessibility, lack of education, and risk-taking behavior, teenagers are most vulnerable to the impact of this epidemic. ONU has teamed up with CVS to provide the One Choice Program. Trained ONU pharmacy students present an interactive 60-minute presentation on prescription drug abuse. The goal of the presentation is to spread awareness to a high risk population about the consequences of drug abuse and to equip them with the knowledge and resources to help themselves and others. Feedback about the program has been extremely positive and ONU has been invited to return for subsequent semesters. The program has grown immensely, with a goal of continued spread of impact to more schools. Recruiting more pharmacy students from different locations and colleges will spread the program’s reach to more schools across the state, and eventually across the nation. It is our hope to share the unique design and implementation of this program. In the future, we hope to develop ways to assess and evaluate the impact of this new program.

“Decreasing Preceptor Burnout: A Quality Improvement Initiative”
Poster 29, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Lynn Meredith Kelly (Ohio Northern University)
Research Advisor: Jamie Hunsicker (Ohio Northern University)
Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)

Nationwide Children's Hospital (NCH) utilizes a precepting program that partners an experienced nurse with a new graduate to provide practical clinical training on units in order to increase new nurse retention rates. Preceptors have to monitor their patients, along with their assigned new nurse, which increases their workload and predisposes them to preceptor burnout. The purpose of this quality improvement (QI) project was to assess preceptors’ knowledge of resources available in order to decrease burnout rates. Increasing the nurses’ knowledge regarding available resources will allow the precepting program to continue to develop and be an effective resource for new nurses.

“Deer Dangers in Ohio”
Poster 25, 10-11 a.m., Ballroom
Presenter: Brad Taton (Ohio Northern University)
Research Advisor: H. Wilson (Ohio Northern University)

Ohio is known for having a very large white-tailed deer population, currently estimated at (700,000). Conservationists and hunters have long valued the Ohio deer herd as a needed natural resources. In recent years, a new disease has emerged that threatens to devastate the deer population in Ohio. Toxoplasmosis is one of the most common parasitic diseases and is known to affect nearly all warm-blooded animals and humans. House cats are the primary living host, and biologists now recognize that house cats that are infected with toxoplasmosis are the main vector of transmission for infecting deer. According to recent studies upwards of 65% of all Ohio white-tailed deer may be infected. The current research examines the various implications associated with toxoplasmosis, cats, and white-tailed deer in Ohio.

“Design’s Influence on the Child Development Center”
Paper 17, 1:30-2:30 p.m., Bear Cave
Presenter: JoAnne Houck (Ohio Northern University)
Research Advisor: William Britton Rowe (Ohio Northern University)

Design of children’s learning facilities is influential in the experience it can provide for the child. The Ada Child Development Center on Ohio Northern University’s campus is a five star winner of the Step Up to Quality Award. The center is described to be a clean, organized, and fun environment. Through the community use phase which judges the overall visual appeal of the space, observational research that explores the use of the space, and the effectiveness of the environmental design, and surveys of employees views on the facilities layout, this study investigates whether or not these characteristics are beneficial to the overall learning atmosphere for the child. The results and conclusions of the study will be given during the presentation.

“Development of Genetic Loci to Assist Conservation of Tongued Minnow (Esoxoglossum laureae) of Western Ohio”
Poster 7, 11:15 a.m.-12:15 p.m., Ballroom
Presenters: Maddison O. Guthrie (Ohio Northern University), Alexander M. Wood (Ohio Northern University)
Research Advisor: Kenneth J. Oswald (Ohio Northern University)

Tongued minnow (Esoxoglossum laureae) maintains a highly restricted distribution in Ohio, occurring only in the upper Mad River of Logan and Champaign counties. Assessment of genetic diversity within this small population aims to assist in its conservation. Polymerase chain reaction (PCR) primers for multiple mitochondrial DNA (mtDNA) and single-copy nuclear DNA (scnDNA) loci were tested on genomic DNA extracted from several individuals (n = 5) collected from the upper Mad River. Success of all PCR products was assessed using by visualizing electrophoresed agarose gels under ultraviolet light. A total of four loci using four PCR primer sets have been developed to date, inclusive of both mtDNA and scnDNA loci, and development of additional mtDNA and scnDNA loci is planned. All successful PCR products will be DNA sequenced to estimate intraspecific variation within the upper Mad River population of tongued minnow.

“Distractions: The Viability of an Entertainment Center near Ada, Ohio”
Poster 14, 10-11 a.m., Ballroom
Presenter: Austin Frontos (Ohio Northern University)
Research Advisor: H. Wilson (Ohio Northern University)

A common complaint among ONU students and Ada residents pertains to the lack of entertainment offered in surrounding area.
While ONU provides some activities for students on campus, there are very few alternatives and most students are left to their own devices to entertain themselves. The current project examines the Ada area for the viability of an entertainment center that provides video games, putt-putt, go-karts, movie theatre, laser tag, and ice skating. The center would also contain a Bar/Grill that provides food and beverages. This market analysis develops a profile of the typical customer and then researches the Ada area for the prevalence of this demographic.

“Does a Hands-on Basic Pharmaceutical Science Exercise Enhance Student Pharmacists’ Learning?”
Poster 22, 12:30-1:30 p.m., Ballroom
Presenters: Emily F. Loudermilk (Ohio Northern University), Hannah Lamb (Ohio Northern University), Taylor Mahfouz (Ohio Northern University), David Kinder (Ohio Northern University)
Research Advisors: Deidre L. Myers (Ohio Northern University)
Faculty Sponsor: Yusuf Rojeab (Ohio Northern University)
Pharmacy students spend a significant amount of time learning about the impact of pH on drug ionization, solubility and consequently oral absorption. Students often do not seem to retain this information very well over time. The primary objective of this study was to evaluate whether incorporating a novel, hands-on exercise would enhance students’ understanding of this vital concept. Prior to beginning the exercise, students were given a 15-question pre-survey and an informed consent. The first five questions were subjective and asked each student to use a Likert scale to assess their comfort level with solubility concepts. Questions 6-15 were knowledge-based. Afterwards, students were instructed on the procedure for the hands-on laboratory exercise. Finally, they were given a post-survey containing the same 15 questions and all responses were recorded. The three main question groups (subjective, objective questions, and total) all showed statistically significant increases in score from the pre- to post-survey (p < 0.001, paired t-test). However and when studied individually, those differences were attributed to seven of the 15 survey questions. Study findings suggest that involving students in a hands-on, active learning exercise seem to significantly enhance their comfort level and knowledge base with regard to drug solubility.

“Does Day-light Intensity Alter Melatonin Production and the Gut-associated Bacterial Microbiome of Zoo-housed Pottos (Perodicticus potto)?”
Poster 9, 9:15 a.m.-12:15 p.m., Ballroom
Presenters: Olivia C. Keserich (Ohio Northern University), Tyler Tanto (Ohio Northern University)
Research Advisors: Katherine L. Krynak (Ohio Northern University), Patricia Dennis (The Ohio State University, Cleveland Metroparks Zoo)
Melatonin, a hormone associated with sleep, follows a daily secretion circadian rhythm with peak levels at night. Nocturnal animals in zoos are often housed on reversed light cycles so visitors can see active animals in darkness during visiting hours. This study examines effects of daytime lighting brightness on behavior and health of nocturnal pottos (Perodicticus potto). Recent discovery has shown an association between melatonin levels and gut-microbiome. We hypothesized that increasing daytime light intensity would result in changes of activity, melatonin levels, and gut microbiome. We investigated the effect of changes in daylight intensity (3.3-13.5 lum/ft2) in two communally housed pottos at the Cleveland Metroparks Zoo. Salivary samples were collected to measure melatonin levels associated with changes in intensity. Behavioral data were collected using continuous behavioral sampling. Gut-associated bacterial communities were assessed by sequencing the 16S rRNA gene region of bacterial DNA (V4 target) using the Illumina MiSeq platform. Sequence samples were processed using MOTHUR and statistical analyses performed in R. Time spent active increased for one animal in the increased intensity period. Salivary melatonin levels were too low for detection and preliminary microbiome analyses indicate no relationship between daylight light intensity and gut-associated microbiome (PERMANOVA F(2,59) =1.42, p=0.16).

“Does Diet Influence Gut-associated Microbial Communities of Gorilla gorilla gorilla”
Poster 10, 11:15 a.m.-12:15 p.m., Ballroom
Presenters: Elizabeth Naugle (Ohio Northern University), Alyssa Griffith (Ohio Northern University)
Research Advisor: Katherine L. Krynak (Ohio Northern University)
A recent study has linked cardiac disease and the gut microbiome of western lowland gorillas (Gorilla gorilla gorilla), an association also seen in humans. It was hypothesized that the diet of affected zoo housed gorillas could be altered to influence the gut microbiome, perhaps to more closely resemble that of heart-healthy animals. To assess the relationship between diet and gut microbiome composition, the gut microbiomes of two communally-housed male western lowland gorillas, previously diagnosed with cardiac disease, were evaluated before and after a prescribed dietary change (N=16). The diet was changed from a processed nutritional biscuit diet to a high fiber/low starch diet. DNA was extracted from fecal samples using phenol chloroform extraction methodology and samples were sequenced amplifying the 16S rRNA gene region of bacterial DNA with Illumina MiSeq. Sequences were processed using MOTHUR and statistical analyses (PERMANOVA and NMDS) were performed in R (V 3.4.2) to assess beta diversity of the gut bacterial community. The dietary change resulted in shift in the gut microbiome composition (PERMANOVA F(1,15)=10.703, P<0.001). The use illumina sequencing technology will allow for the comparisons of gut-microbiomes between heart-healthy individuals from a related study and the microbiome of these heart-disease animals after their diet alteration.

“Ecological Niche Model for Tongue-tied minnow (Exoglossum laurae) of the Upper Great Miami River”
Poster 6, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Sophia Mae Beery (Ohio Northern University)
Research Advisors: Kenneth J. Oswald (Ohio Northern University), Kalyn Rossiter (Ohio Northern University), Yong Wang (Ohio Northern University)
Identification of the ecological factors that influence the occurrence of a population within a watershed bears significantly on the design of management plans aimed at maximizing species security. Population-level management is an especially important consideration for fishes that maintain highly fragmented distributions across small geographic ranges. Tongue-tied minnow (Exoglossum laurae) is a rare species with a disjunct distribution across four watersheds of the eastern United States. For this study, an ecological niche model for the Upper Great Miami River population was constructed based on a total of 15 water quality and stream habitat variables. Water temperature and river gradient contributed substantially to the model (> 30% each), whereas the remaining 13 were of much less (< 5%) importance. These results strongly suggest that the species occurrence is dependent upon these two variables and support previous hypotheses for a montane evolutionary origin for this rare species. The model also revealed that the Upper Great Miami River provides only marginally suitable habitat for tongue-tied minnow. Therefore, management must focus on maintaining low (< 17°C) water temperature and high stream gradient to conserve this extremely vulnerable population.

“Effect of Student-led Medication Reviews on Health Literacy and Medication Adherence”
Poster 23, 12:30-1:30 p.m., Ballroom
Presenters: Sierra Iddings (Ohio Northern University), Jessica Kantola (Ohio Northern University), Kayla Herman (Ohio Northern University)
Research Advisor: Michelle Musser (Ohio Northern University)
Background: Medication adherence is one of the most significant causes for healthcare failures in patient care, leading to increased readmission rates and decreased health outcomes. Health literacy is
also a contributing factor to decreased positive health outcomes. Taken together, an increase in patients’ health literacy can lead to improved medication adherence. A program led by pharmacy students was developed providing educational sessions at various locations on common health conditions focusing on improving patients’ understanding of medication management followed by one-on-one counseling sessions based on their personal medication list to improve their health literacy. Adherence changes will be assessed during patient follow-up. **Methods.** Groups of students from varying levels in a Doctor of Pharmacy program conduct educational sessions on common health conditions and medical management at various locations. After the presentation, upper level pharmacy students will hold one-on-one counseling sessions with the participants to review medication lists and improve their overall health literacy. Participants are evaluated using the Brief Medication Questionnaire to assess their current health literacy and adherence habits. Patient follow-up is conducted in 2 weeks to assess changes in adherence and health literacy. **Results and Conclusions.** Research in progress.

**“Effectiveness of Hourly Rounding”**
Poster 49, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Raegen Jo Bransteter (Ohio Northern University)
Research Advisor: Leslie Bostick (Ohio Northern University)
Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)

The aim of this quality improvement project was to explore the current hourly rounding system and how it impacts patient satisfaction at St. Rita’s Medical Center in Lima, Ohio. Hourly rounding has been put in place to anticipate care for a patient, thereby eliminating the use of call lights and minimizing patient falls. Currently, two different systems for charting hourly rounds are being used, one for the patients’ benefit and one for the staff’s benefit. A ten-question pretest was administered to both day and night shift nurses, as well as, clinical support personnel in the staff breakroom and were made available for a week to complete. The survey was designed to evaluate the staffs’ perceptions on which of the two different hourly rounding systems is more effective. An educational intervention was implemented to provide ways to improve the current rounding system. Staff were then asked to complete a posttest, which assessed for an increase in the staff’s knowledge and optimization of hourly rounding. This quality improvement project improved the effectiveness of hourly rounding, resulting in improved patient satisfaction.

**“Effects of Taxol, Atorvastatin, and Midi-GAGR Combinations on Axon Outgrowth of Primary Cortical Neurons”**
Paper 3, 10:11-11:45 a.m., Wishing Well
Presenter: Forarah Alarananai (University of Toledo)
Research Advisor: Guofa Liu (University of Toledo)

Brain and spinal cord injuries are the leading cause of disability and the third cause of death in the US. Neurons in these areas lack the capability to regenerate after injuries resulting in these complications. The goal of this study is to examine the effects of Taxol, Atorvastatin, and Midi-GAGR combinations on axon outgrowth. Previous studies indicated that Atorvastatin or Midi-GAGR was effective in promoting axon outgrowth. We found that 2 nM Taxol induced a significant increase in axon outgrowth. We hypothesize that a combination of one or both of these drugs with 2 nM Taxol may induce a synergistic effect on axon outgrowth. Experiments were performed on E15 primary cortical mouse neurons. After 54 months of investigations, our results showed that 1-M or 10-M of Midi-GAGR combined with 2nM Taxol yielded synergistic effects. We also discovered that 1pm or 10 pm Atorvastatin induced significant axon outgrowth, but this effect was decreased when combined with Taxol. These findings are important because a combination of drugs rather than individual one can be developed as a potential treatment for critical cases of brain injuries. They also show the importance of investigating drug combinations effectiveness to avoid any side effects of such treatments.

**“Environmental Influences on Microbial Community Composition of Blue Crabs (Callinectes sapidus)”**
Poster 8, 11:15 a.m.-12:15 p.m., Ballroom
Presenters: Julia R. Heenan (Ohio Northern University), Dakota R. Swisher (Ohio Northern University), Crystal L. Scales (Ohio Northern University)
Research Advisor: Katherine L. Krynak (Ohio Northern University)

Changing environments can alter ecological community compositions at many scales. This study assessed the influence of environmental characteristics on the microbial community composition on blue crabs (Callinectes sapidus). Samples were collected from five C. sapidus at each of eight sites along forty miles of Florida’s Gulf Coast (N=40). Temperature, pH, conductivity, total dissolved solids (TDS), and dissolved oxygen (DO) were measured at each site. Samples were preserved, frozen, and cultured on agar plates. Bacterial and fungal taxa were identified and quantified via colony morphology. Both α and β diversity of the microbial communities were assessed across sites. One-way analysis of variance (ANOVA) indicated pH, conductivity, temperature, TDS, and DO predicted microbial community α diversity differences across sites (p<0.05). Non-metric multidimensional scaling ordination (NMDS) indicated that β diversity differed across sites and Pearson correlation tests indicated temperature, pH, TDS, conductivity, and DO were significantly correlated with microbial community differences (p<0.05). These findings support the hypothesis that microbial communities of C. sapidus are influenced by external environmental conditions. Future research will utilize samples collected for next generation sequencing to assess whether the relative abundances of bacterial taxa associated with C. sapidus shell diseases are also correlated with habitat characteristics.

**“Evaluating the Social Cost and Benefits of Urban Agriculture”**
Poster 34, 10-11 a.m., Ballroom
Presenter: Brady Spitalski (University of Toledo)
Research Advisors: Define Apul (University of Toledo), Anna Petit-Boix (University of Freiburg)

Urbanization and interest in fresh and local food have created a push for sustainable food systems. Urban agriculture is promoted as an alternative to conventional food production that can potentially provide greater environmental, economic, and social benefits to society. However, there is limited information about urban agriculture’s potential costs and benefits. The goal of this study is to assess the social cost (the sum of direct and indirect costs and benefits) of urban agriculture. This will be done for three case studies from regionally and culturally different cities–Toledo, Ohio; Salt Lake City, Utah; and Barcelona, Spain. A life cycle assessment (LCA) model will be developed to estimate the environmental impacts from urban agriculture. The ecosystem services will also be calculated to quantify the benefits. The environmental impacts and benefits from these models will be monetized while also considering the self-sufficiency potential of each city. The comparison of the costs, benefits, and self-sufficiency potentials of each city will identify the specific parameters (characteristics of regions, populations, and urban agricultural practices) that support an environmentally and economically sustainable urban food system.

**“Evaluating Nursing Knowledge of the Central Line Maintenance Bundle”**
Poster 20, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Ashley N. Gephart (Ohio Northern University)
Research Advisor: Cynthia Woodfield (Ohio Northern University)

The aim of this quality improvement (QI) project was to explore and evaluate nursing staff knowledge of the central line care maintenance bundle on the pediatric oncology unit at University Hospitals Rainbow Babies and Children in Cleveland, Ohio. Central line maintenance bundles have been constructed using evidence based practice (EBP) in order to prevent the occurrence of central line associated blood stream infections (CLABSI). The current bundle provides a detailed explanation of central line care including...
daily line assessment, proper documentation of the insertion site condition, dressing change frequency, and proper use of the line including ports, injection caps and intravenous (IV) tubing changes. A ten-question pre-survey was administered to day shift and night shift nurses designed to evaluate the nursing staff’s knowledge level and execution of the current bundle. Using the results of the pre-survey, an educational intervention was designed and implemented providing further information on the central line maintenance bundle and importance of improved patient outcomes when it is utilized correctly. Following the educational intervention, the same nursing staff was asked to complete a post-survey. This assessed both increased knowledge and utilization of central line maintenance bundle. The aim of this quality improvement project is to improve nursing staff’s knowledge of the current maintenance bundle and encourage optimal use further resulting in a decreased occurrence of CLABSIs.

“Evaluation of the Efficacy of Antifungal Agents in the Treatment of Drug-resistant Human Melanoma”
Poster 14, 12:30-1:30 p.m., Ballroom
Presenters: Shelby G. Mckamey (Ohio Northern University), Ayah T. Daghistani (Ohio Northern University), Lokas R. Jira (Ohio Northern University)
Research Advisor: D. W. Koh (Ohio Northern University)

The multidrug resistance (MDR) phenotype allows cancer cells to display decreased sensitivity to chemotherapy. A well-characterized drug resistance gene in cancer is MDRI, which encodes for the p-glycoprotein/ATP-binding cassette (ABC) transporter. Lesser known are the roles of the multidrug resistance-associated protein 1 (MRP1) and lung resistance-related protein (LRP) in melanoma. Here we characterized the expression levels of these drug resistance genes in melanoma cell lines derived from human patients and determined their susceptibility to novel antifungal treatments. MDRI expression was observed in multiple human melanoma lines, while increased levels of MRP1 and LRP were observed in normal skin cells and melanoma lines. Treatment with the antifungal agents, clotrimazole and econazole, caused significant decreases in proliferation and increases in cell death in all MDR melanoma lines. No extensive cell death was induced in noncancerous human skin cells. These results indicated that antifungal treatment selectively induced cytotoxicity in drug-resistant melanoma lines. In conclusion, this study demonstrated the differential expression levels of MDRI, MRP1, and LRP in melanoma and normal skin cell lines. Because all melanoma lines were susceptible to antifungal treatments, we conclude that antifungal treatments have in vitro efficacy toward drug-resistant human melanoma cells.

“Expression Changes of Metabolic Regulator FoxO1 between Early and Mid-stage Differentiation in Cinnamon-treated 3T3-L1”
Poster 12, 12:30-1:30 p.m., Ballroom
Presenter: Kayla Baxendell (Ohio Northern University)
Research Advisor: Amy Stockert (Ohio Northern University)

The ramification of obesity and type 2 diabetes is broadening within the United States to include detrimental effects to health of patients and the fiscal stability of healthcare. Over 9% of the US population has some form of diabetes, costing approximately $254 billion in the year 2012. Development of new first line treatment is expensive; discovering effective and safe alternatives will result in significant cost savings globally as well as improving quality life for the potentially 1 in 3 individuals expected to develop type 2 diabetes by the year 2050. Key mechanistic links between type 2 diabetes and obesity in multiple cell types will translate into streamlined treatment efficiency and establishment of new preventative therapies. Clinically we have demonstrated significant reduction in blood glucose values with supplementation of cinnamon, while other researchers have reported reduction in lipid values. Our lab has examined differentiation of pre-adipocytes treated with cinnamon and have identified significant effects on cell size and lipolysis. Among other cinnamon effects observed, research suggests cinnamon alters expression of glucose transporter 4 (GLUT4) in adipose cells. Likewise, peroxisome proliferating-activated receptor gamma (PPARY) is involved in adipose cell differentiation. Results in our lab indicate an influence of cinnamon on adipose differentiation, likely via modulation of PPARY. Expression of PPARY and GLUT4 are both mediated by metabolism modulator, forkhead box 1 (FoxO1), a transcription factor highly sensitive to epigenetic modifications. Here we identify differences in FoxO1 expression of cinnamon treated 3T3-L1 pre- adipocytes during early and mid-stage chemical differentiation induction. Our data clearly show a significant increase in FoxO1 expression during mid stage differentiation when treated with cinnamon.

“Family Conflict and Drug Abuse: Effects of Divorce on Juvenile Drug use”
Paper 4, 10:11-45 a.m., Room 202
Presenter: Isaiah Simerman (Ohio Northern University)
Research Advisors: Keith Durkin (Ohio Northern University), Robert Carrothers (Ohio Northern University)

For this paper I sought to find out whether or not the child of a divorced couple will be more likely to abuse drugs, such as marijuana and other substances, than that of a child in a two-parent household. I also related my research to a couple of theorists discussed in my classes. The methods I used in order to achieve my results was gathering information from peer-reviewed scholarly articles written and uploaded on databases through the internet and our school resources. I found different pieces from different articles that were relevant and beneficial to coming to a conclusion and the information about the theorists was gathered through the use of in class notes. My predictions were that the results would show that there was a higher likelihood of juveniles abusing drugs if their parents were divorced which meant that conflict between a child’s parents has a significant negative effect on them. The theorists that I tied into the paper help to explain the reasoning behind what the results of my findings indicated.

“Farm-to-table Awareness of Chief’s Customers”
Paper 9, 11:10 a.m.-12:10 p.m., Bear Cave
Presenter: Catherine Jenks (Ohio Northern University)
Research Advisor: William Britton Rowe (Ohio Northern University)

The farm-to-table movement started in the 1960s when people were becoming dissatisfied with processed foods. Farm-to-table produce is directly put onto tables, reducing the miles food travels. Foods from local farms are picked at their freshest and most nutritious. Foods shipped from all over the country are picked before they are ready and loose nutritious values quickly. How do you know where your food is coming from? Is it actually local or is it coming from across the country? Does Chief’s Market use graphic design to aid in the farm-to-table awareness of their customers purchasing produce? The farm-to-table movement is often overlooked or misunderstood. And sellers, such as Chief’s Market, are responsible for helping customers gain knowledge of where their produce is coming from. Three research tactics will be used to investigate these issues: visual voice classification, copy testing, and communications benchmarking. Results and conclusions of this study will be given in my presentation.

“Fortune 500 Companies in Ohio”
Poster 23, 10-11 a.m., Ballroom
Presenter: Brian Ruffini (Ohio Northern University)
Research Advisor: H. Wilson (Ohio Northern University)

Ohio has long been important to Fortune 500 companies. Many of these companies, for example, have their corporate offices in the western portion of the state along the I-75 corridor. The current research identifies the location of Fortune 500 company headquarters in Ohio. In analyzing their importance to Ohio, we observe the location of each company individually, as well as their clustering within certain cities. This study also examined the relative worth of each company in terms of its recent business profile and relationship with customers.
"GC-MS Analysis of Chinese Baijiu Liquor Flavored as American Bourbon Whiskey"
Poster 3, 12:30-1:30 p.m., Ballroom
Presenter: Heather M. Ketchum (Ohio Northern University)
Research Advisor: Regan Silvestri (Lorain County Community College)

Gas chromatography-mass spectroscopy (GC-MS) is routinely used to profile the flavor compounds in alcoholic beverages. This method has been applied to unique experimental samples of Chinese Baijiu liquor flavored to taste more similar to American bourbon whiskey. Chinese Baijiu is a clear liquor, usually considered strong in flavor by the western palate. In an effort to modify these liquors into something more akin to the routine western palate, experimental samples have been produced of Chinese Baijiu liquors flavored to taste similar to American bourbon. This has been accomplished by subjecting Chinese Baijiu liquor to a novel accelerated aging process which employs pressure, as opposed to conventional time, to mature the spirit quickly and impart wooden barrel flavors. By processing Chinese Baijiu liquor via this innovative technology of accelerated pressure aging, the clear spirit becomes colored and flavored with wood in the short time of a few days. The distinct flavor compounds in these experimental liquors have been identified and profiled using routine direct injection GC-MS. Foremost, the wood aged Chinese Baijiu flavor is characterized by an increase in ethyl hexanoate, which imparts a sweet and fruity nuance.

"Gender Differences in Stroop Test Results"
Poster 43, 12:30-1:30 p.m., Ballroom
Presenters: Shannon Gallagher (Bluffton University), Shae Golden (Bluffton University), Rebecca Starn (Bluffton University), Abby Blake (Bluffton University)
Research Advisor: Deanna Barthlow-Potkanowicz (Bluffton University)

The purpose of this research experiment was to assess for possible gender differences in performance on a modified Stroop Test. Participants were 22 undergraduate students (11 male and 11 female) who were not previously familiar with the Stroop Effect. Participants each completed 3 versions of a Stroop Test (Black and White, Standard, and Alternative Colors.) It was hypothesized that men would perform better (faster times and fewer errors) on the standard Stroop Test (traditional colors) and that women would perform better on the test that used alternative colors (maroon, olive, teal, and lavender). Results from independent samples t-tests showed that women averaged 46.5 seconds on the Alternative Stroop Test and 41.02 seconds on the standard Stroop Test. Men averaged 50.24 seconds on the Alternative Stroop Test and 44.39 seconds on the standard Stroop Test. Even though women had better time than men on the tests, women averaged more mistakes than men. On average, women made 1.5 mistakes per test on the Alternative Stroop Test and the standard Stroop Test. Men made 1.1 mistakes on the Alternative Stroop Test and 1.27 mistakes on the standard Stroop Test.

"Generation of UAS-CASK_RA-GFP and UAS-CASK_RB-GFP Transgenic Constructs"
Poster 14, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Jordyn E. Sanner (Ohio Northern University)
Research Advisor: Jamie L. Siders Sanford (Ohio Northern University)

Border cell migration is a process in Drosophila oogenesis in which two non-motile polar cells are transported from the anterior of the egg chamber to the oocyte by a group of 4-6 motile border cells. This process serves as a model of collective cell movement. Calcium/calmodulin-dependent serine protein kinase (CASK) belongs to the membrane-associated guanylate kinases (MAGUKs) protein family, and recent genetic screens suggest that knockdown of CASK results in defective border cell migration. Drosophila express two major classes of CASK isoforms, known as CASK alpha and CASK beta. Previous work has not determined isoform class responsible for cell migration defects nor characterized molecular means by which CASK contributes to cell movement. To determine CASK’S function in border cell migration, the current work focuses on the generation of both pUAS-CASK_RA-GFP and pUAS-CASK_RB-GFP constructs to produce transgenic fly lines. Coding sequences were obtained from pf1c vectors and subcloned into pENTR-D-TOPO entry vectors. Gateway cloning reactions will be performed to yield desired pUAS-CASK-GFP constructs. Generation of transgenic fly lines will allow for characterization of CASK’s function in oogenesis by enabling visualization of protein localization in vivo and will allow for conduction of rescue experiments via genetic crosses with CASK knockout fly lines.

"Global Embarrassment: The Tipping Point in Becoming the Leading State in the Paris Agreement"
Poster 49, 10-11 a.m., Ballroom
Presenter: Auston Davenport (Ohio Northern University)
Research Advisor: Nusta Carranza Ko (Ohio Northern University)

In depth this paper looks at China’s ability to continue to implement their environmental standards by investing in more renewable energy, while taking on the role to lead the Paris Agreement. China is in a position to lead the international community by example, but they are far from perfect. After a national embarrassment of mishandling their pollution crisis, China has pushed for cleaner environmental laws. They are educating themselves to understand how to implement environmental policies without damaging their economy by studying other countries environmental policies and economies. Learning from their mistakes, China is improving their environmental agency by establishing more regulations that favor greener environments. Investing in jobs surrounding the environment, they have opened a new market. China is growing at a steady rate in economic terms while complying to their environmental standards and the Paris Agreement. Xi has pledged to combat global warming by investing in renewable energy and the development of a low-carbon technology. These investments have stimulated their economy and caught foreign interest, resulting in billions of dollars in international deals.

"Glyphosate Soil Adsorption"
Poster 11, 12:30-1:30 p.m., Ballroom
Presenter: Tiffany N. Street (Ohio Northern University)
Research Advisor: Christopher E. Spiese (Ohio Northern University)

Glyphosate causes a problem in the environment. Glyphosate is found in pesticides and herbicides and when they run off the fields and into the water the molecule attaches to phosphate from the soil and releases it into the water. This increases the amount of free nutrients available for algae to bloom rapidly and harm the local ecosystem that includes the fish and humans. The algae make the water toxic to both humans and marine wildlife. We are trying to measure the amount of phosphate that is released due to glyphosate, so that we can determine how much damage glyphosate is doing. We collected soil samples from various sites in northwest Ohio and northeast Indiana. We used these samples and standards to determine glyphosate’s effect. The soils were let to equilibrate with water and FMOG-Ci, which is used only to attach to free phosphate so that it fluoresces, and we can quantify the amount of free phosphate in solution. The soil samples that we tested were all from the winter time, so our results showed that not a lot of phosphate was released, but this was expected because during the off season for farming the amount of glyphosate from pesticides and herbicides are minimal. Form here we are trying to develop a better and cheaper method of quantifying the amount of free phosphate there is in the water caused by glyphosate, and test different types for pesticides and herbicides to determine which are better for the environment, i.e. lowering the amount of phosphate adsorption.

"Golf and Advertising"
Poster 15, 10-11 a.m., Ballroom
Presenter: Sean Goll (Ohio Northern University)
Research Advisor: H. Wilson (Ohio Northern University)
Golfing is one of the most popular recreational sports in all of Ohio, and is one of the largest spectator sports in the world. However, those who play golf do not necessarily watch golf on television. The opposite is true as well. The current research examines the correlation that exists between those who golf and those who watch golf events on television. The analysis reveals differing landscapes that could benefit advertisers. For example, identifying areas with high percentages of golf enthusiasts would help businesses target these areas with golf clothing and equipment advertisements.

“Graphics vs. Words: The Most Effective Way of Learning Sign Language”
Paper 3, 10-11 a.m., Bear Cave
Presenter: Rachel Lynn Rusnak (Ohio Northern University)  
Research Advisor: William Britton Rowe (Ohio Northern University)

ASL (American Sign Language) is a natural language that serves as the predominant sign language of deaf communities in the United States. For this community, it is a daily challenge to communicate with others. They mainly communicate with others who don’t understand sign language through lip reading and pointing to various objects. This challenge could largely be solved by learning to sign. But, what is the quickest way to learn sign language, by graphics or words? This study uses three tactics (video protocol, psychographics, and benchmarking) to investigate this issue.

“Handoff Sheets at Shift Report”
Poster 41, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Chelsey Dues (Ohio Northern University)  
Research Advisor: Megan Lieb (Ohio Northern University)  
Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)

In the healthcare setting, shift report is a vital time for the oncoming nurse to receive the information he or she needs in order to successfully care for patients. If a full, detailed report is not given, it is possible that the ignored information will become detrimental to the patient’s outcome. This quality improvement project aims to collect data about the effectiveness levels of shift report among floor nurses at Upper Valley Medical Center. The project was completed through a pretest/posttest design. Nurses were surveyed on how well the Situation, Background, Assessment, Recommendation (SBAR) tool is utilized during shift report without the use of a standardized handoff sheet, which is not available on the floor. Survey questions were analyzed through a Likert scale. A standardized handoff sheet was then created and used as an intervention to improve communication during report. The handoff sheet included information such as IV fluids running, PRN medications given, and outstanding lab values. The sheets were distributed during morning huddle for the nurses to use and also placed in the nurse’s lounge for nurses who do not attend huddle. The sheets were expected to be used during shift report. A posttest was distributed two weeks later to see if SBAR was utilized more with the use of the standardized handoff sheet. The expected finding, leading to improved patient outcomes, is that nurses will have more effective communication during report with the use of the handoff sheet. A more comprehensive shift report is predicted to improve the quality of care nurses give their patients.

“Hierarchical Modulation for Quality of Service (QoS) in Wireless Communication Systems”
Poster 36, 10-11 a.m., Ballroom
Presenters: Andy Berger (Ohio Northern University), Minsup Sim (Ohio Northern University), Sarah Schoafer (Ohio Northern University)  
Research Advisor: M. Ajmal Khan (Ohio Northern University)

The wireless spectrum has and is becoming increasingly crowded. In this noisy environment, full of signals, both critical and noncritical, there is constantly data flowing. It stands to reason that some of this data is critical or time sensitive, while other data is not. Using conventional modulation techniques, such as Phase Shift-Keying (PSK) or Quadrature Amplitude Modulation (QAM), each bit of information has equal likelihood of being corrupted. Adaptive hierarchical modulation is constituted of nonuniform signal constellations to provide varying levels of bit error protection in a Quality of Service (QoS) system. This approach has been used in Digital Video Broadcasting (DVB) and mobile TV systems. In hierarchical modulation multiple data streams are modulated into one transmission with varying priority. Receivers which receive a high quality signal will be able to discern both the basic bit stream and the refined bit stream, whereas receivers with poor reception will only receive the basic bit stream. In this project, we have developed a prototype using the National Instruments Universal Software Radio Peripheral (USRP) that reduces error for important transmissions by utilizing hierarchical modulation as a means of expressing data stream priority, assigning an unequal protection to the different data streams as needed.

“How Do Colors Psychologically Affect Customers in Fast Food Restaurants?”
Poster 48, 11:10 a.m.-12:10 p.m., Bear Cave
Presenter: Shi ori Kasuga (Ohio Northern University)  
Research Advisor: William Britton Rowe (Ohio Northern University)

The purpose of this research project is to learn about how fast food restaurants use colors to psychologically affect customers. The study focuses on three restaurants: McDonald’s, Taco Bell, and Subway. How do these fast food restaurants choose and use colors in their dining facilities? How do these colors psychologically affect customers? For example, red and yellow are often used in the fast food industry. The psychological associations of these colors trigger appetite, hunger, and attract attention. Yellow triggers the feelings of happiness and friendliness. When you combine red and yellow, it’s about speed, quickness. Yellow is also the most visible color in daylight, which is why the McDonald’s M can be seen from a far distance. The language of color is communicated quicker to the brain than words or shapes as they work directly on our feelings and emotions. Three research tactics are used to investigate this issue: customer observation, a design audit, and a gap analysis. Results and conclusions for this research will be presented at the Colloquium.

“How the Midwest Was Won”
Poster 47, 10-11 a.m., Ballroom
Presenter: Troy Brinkman (Ohio Northern University)  
Research Advisor: Robert Alexander (Ohio Northern University)

This paper explores multiple reasons why Donald Trump was able to win the Presidential election of 2016. I do this by drawing from relevant research and contemporaneous forms of media is the main avenue of forming a conclusion. I find that factors that contributed to Trump’s victory. These include a rising populist movement, voting behavior and turnout, partisanship, “fake news,” economic insecurity, and nationalism. Donald Trump was given little to no chance of winning the nomination of the Republican Party, let alone the presidency. The 2016 election represents the fifth time the loser of the popular vote won the Electoral College. Trump’s victory was due largely to his performance in five Midwestern states. While this paper seeks to understand the election in its entirety, a particular focus will be on the five Midwestern states that Donald Trump was able to flip to the Republican party from the 2012 election to the 2016 election: Iowa, Wisconsin, Michigan, Ohio, and Pennsylvania.

“Impact of Personalized Medicine on the Pharmaceutical Supply Chain”
Poster 5, 10-11:45 a.m., Wishing Well
Presenter: Hannah Starcher (Ohio Northern University)  
Research Advisor: Cigdem Kochan (Ohio Northern University)

Personalized medicine is a rapidly expanding new form of medicine that focuses on tailoring a treatment for a specific disease according to the patient’s genetic makeup. This new approach is rapidly gaining attention from medical professionals and the media, and its consequences associated with the traditional supply chain model for pharmaceuticals has been brought into question. This paper uses a systematic literature review (SLR) to review information about the
current impact personalized medicine has on the pharmaceutical supply chain. The paper examines peer-reviewed articles to provide a concise review of current challenges in integration. The study examines the expansion opportunities in current literature surrounding personalized medicine and the pharmaceutical supply chain. The study acknowledges the challenges in the creation and distribution of personalized treatments as well as the comparison between the traditional therapeutic pharmaceutical supply chains and the evolving personalized medicine pharmaceutical supply chains. The study also focuses on the impact specific personalized treatments, such as 3D printing, may have on the pharmaceutical supply chain. This study helps to understand the impact that personalized medicine has on the current pharmaceutical supply chain models and suggests recommendations for improving the models.

“Inaccurate Weight Assessments”
Poster 38, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Braden Kuhn (Ohio Northern University)
Research Advisor: Megan Lieb (Ohio Northern University)
Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)

Accurate weight assessments on a cardiovascular intensive care unit (CVICU) are crucial to patient outcomes. This quality improvement project aims to investigate how weight assessments are completed, reported and recorded by nurses. In the CVICU, patients can be weighed from the bed scale or on standing scale. Accurate patient weights are essential to calculating accurate medication dosages. A pretest and posttest were distributed to the nurses who worked in the CVICU. This survey asked nurses if they tare (zero) beds correctly, take personal items off the bed when weighing the patients, and if nurses understood how to use a standing scale. Using the results of the pretest, an educational intervention was developed and presented to increase the nurses’ knowledge on performing accurate weight assessments. A posttest was given after the education session to indicate the nurses had improved knowledge of completing accurate weight assessments.

“Inhibition of Tumor Cell Migration through Slit/Robo/TUBB3 Pathway”
Poster 17, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Shirley Yee (University of Toledo)
Research Advisors: Guofa Liu (University of Toledo), Tao Yang (University of Toledo)

Studies have shown that the Slit-Robo signaling pathway is important in guiding neural and non-neural cell migration through attraction and repulsion, and more recently has been found that Slit and Robo also have important roles in tumorigenesis, cancer progression, and

“Income and Leisure Spending”
Poster 27, 10-11 a.m., Ballroom
Presenter: Jeffrey Urizar (Ohio Northern University)
Research Advisor: H. Wilson (Ohio Northern University)

Debate has long existed with regard to the correlation between income, income spent on leisure activities, and quality of life. The prevailing notion is that areas with higher income enjoy a relatively higher quality of life, and also a direct correlation between income and leisure spending. However, this is not always true. California, for example, has a relatively high average household income and is ranked near the bottom in terms of quality of life, while in Minnesota the opposite is true. This research analysis whether higher incomes in different states spend more on leisure activities.

“Increasing Isolation Protocol Adherence: A Quality Improvement Project”
Poster 30, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Alyssa Bowen (Ohio Northern University)
Research Advisors: Megan Lieb (Ohio Northern University), Cynthia Woodfield (Ohio Northern University)

Due to the fast paced environment, the pediatric intensive care unit is faced with challenges related to the interdisciplinary team adhering to isolation precautions. If the healthcare team does not follow these precautions this can put many patients at risk of developing an additional harmful infection or complications. In this quality improvement project a pretest using the Likert scale survey was delivered to the nursing staff in the pediatric intensive care unit at Toledo Children’s Hospital. This survey addressed the topics regarding the importance of these precautions, if staff understood the implications on the patients if not used, and how available personal protection equipment was for staff. Using the results of the pretest, an educational intervention was developed and presented to the staff to increase adherence in using personal protective equipment and isolation precautions on the unit. A posttest was then distributed in the same manner as the pretest. This posttest evaluated what was learned and if it improved staff adherence to infection control precautions. Emphasis on infection control precautions is important to improving overall patient outcomes.
metastasis. Specifically, Robo binds to a tubulin protein known as TUBB3. The purpose of this research is to investigate the involvement of Slit and Robo signaling in glioblastoma progression. Though the mechanisms have yet to be fully explored, a connection between the presence of the Slit protein and the rate of cancer cell invasion, specifically glioblastoma, may exist, which can lead to a better understanding of the Slit/Robo/TUBB3 pathway and the promising development of new drugs to target specific cancers. Here, the effects of Slit2 was investigated for human embryonic kidney (HEK) and glioblastoma multiforme (T98G) cells. HEK cells showed no difference with the presence of Slit2 medium in the wound healing assays, but interestingly, Slit2 instead promoted migration in T98G cells. On the other hand, Taxol, a drug that stabilizes microtubules, may play a role in inhibiting cell migration. From the Western blot and immunoprecipitation, it suggests that a connection exists between Robo-TUBB3 and Slit2 regulation of this interaction.

"Interacting with AI: A Rapidly Approaching Future in Communication"
Paper 2, 12:1-1:45 p.m., Wishing Well
Presenter: Trevor Smith (Ohio Northern University)
Research Advisor: Mark D. Crueva (Ohio Northern University)

As stated by McCorduck (2004), Artificial Intelligence (AI) began as “an ancient wish to forge the gods” (p. 8). Throughout time technology is rapidly advancing and so is the development of true AI. We seek to build AI that can interact with us, work with us, and most importantly, communicate with us. This, however, raises the question, are we ready to accept and welcome AI into our society? Through different means of media and other current topics such as job security, AI may not be welcomed by a number of those involved in our communities. I seek to find in what scenarios and situations are we, as humans, ready to accept and welcome AI units into our world.

"Interactive Influence of Sex, Stressor Timing, and the Bcl-like Glucocorticoid Receptor Polymorphism on Stress-induced Alterations of Long-term Memory"
Poster 29, 12:30-1:30 p.m., Ballroom
Presenters: Brianne Mosley (Ohio Northern University), Mackenzie R. Riggenbach (Ohio Northern University), Leighton Wireman (Ohio Northern University), Jennifer Hippsknd (Ohio Northern University)
Research Advisor: Phillip R. Zoladz (Ohio Northern University)

The BclI polymorphism of the glucocorticoid receptor (GR) gene (NR3C1) is a common polymorphism associated with increased GR sensitivity, blunted cortisol responses to stress, and increased susceptibility for stress-related psychological disorders. Given extensive work implicating glucocorticoid signaling in the effects of stress on learning, we predicted that the BclI polymorphism might influence such effects. Two hundred and thirty-five individuals were exposed to the socially evaluated cold pressor test or a control condition immediately or 30 min prior to learning a list of words. Participants’ memory for the words was tested immediately and 24 h after learning, and saliva samples were collected to genotype participants for the BclI polymorphism. Results showed that stress immediately before learning exerted sex- and genotype-dependent effects on long-term memory. Specifically, stress enhanced long-term memory selectively in male non-carriers of the BclI risk allele (G). Stress had no effect on females or male risk allele carriers. Stress 30 min before learning impaired long-term recognition memory in risk allele carriers. These findings suggest that carriers of the BclI polymorphism may retain a sensitized stress response system. They also suggest that the association between the BclI polymorphism and stress-related disorders might relate to its influence on emotional memory.

"Intravenous (IV) Infiltration: Nurses’ Knowledge of Prevention and Treatment"
Poster 25, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Claire Beadle (Ohio Northern University)
Research Advisor: Christina Liebrecht (Ohio Northern University)
Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)

Intravenous (IV) therapy is an important part of nursing care, and it is even more prevalent in an outpatient setting. While it is important part of therapy that can provide life-saving measures to patients, problems such as infiltration, or the movement of IV fluid into the surrounding tissue, can occur with even the most experienced nurses. IV infiltration can cause added pain and added treatment on top of what the patient is already at the hospital for. The purpose of this Quality Improvement (QI) study looks at Blanchard Valley Hospital (BVH) nurses’ knowledge regarding treatment of infiltration of specific IV fluids and medications on the outpatient unit. A pretest was administered to the day shift nurses on the unit that surveyed their general knowledge and confidence regarding treatment of IV infiltration. Following the pretest, an educational program containing pamphlets and posters identifying best practice for infiltration was distributed among the unit nurses, and any questions about the subject were answered. After having one to two weeks to review the material, the nurses received a posttest to measure how their knowledge and confidence changed. With the new educational materials and time to review them, the expectation is nurses would be able to more effectively manage care patients experiencing IV infiltration, as well as to educate their patients on the occurrence of the problem. This higher knowledge will allow nurses to better prevent and IV infiltration and cause less unneeded pain for patients.

"Introduction to Multiagent Control and Open Problems Related to Consensus of Higher-order Integrator Agents"
Poster 37, 10-11 a.m., Ballroom
Presenter: Bryan P. Peck (Ohio Northern University)
Research Advisor: Heath J. LeBlanc (Ohio Northern University)

The control of several devices and systems to perform a group objective is considered multiagent control. It has many applications in unmanned aerial vehicles (UAVs), spacecraft, robotics, and vehicular systems. These strategies enable tasks such as flocking of swarms, group formation, synchronization, rendezvous, and consensus of systems. This paper will include a brief introduction to multiagent control and a brief evaluation of a distributed control algorithm proposed by Ren et al. utilizing the state information of agents that may be modeled as a chain of integrators. We present an open problem in the resilience of the consensus algorithms proposed for higher-order integrator agents and demonstrate that they are susceptible to attacks from adversaries. One class of attacks on multiagent systems consists of hijacked agents that attempt to subvert the group objective by acting abnormally or communicating false and even harmful information. Proper resilience to hijacked agents requires that the other agents of the system are still able to achieve the desired task. The addition of resilience would improve the safety and security of the control protocol in real-world applications, such as planar vertical takeoff and landing (PVTO) of fixed-wing aircraft and swarms of Segway vehicles.

"Investigation of Color and Media Type on Working Memory"
Poster 37, 12:30-1:30 p.m., Ballroom
Presenters: Meghan Hutchins (Ohio Northern University), Elizabeth Jane Knape (Ohio Northern University), Jordyn Martin (Ohio Northern University), Bethany Mae Schneider (Ohio Northern University)
Research Advisor: Megan Kraynok (Ohio Northern University)

Duzkilic and Mustafar (2013) reviewed studies that show how color impacts learning and memory, but it is unclear if type of media used to study or learn is more effective. Students often use a variety of media when studying. The media ranges from paper, pencils, and note cards to online programs like Quizlet. The purpose of the present study is to test the effects of color and media presentation on memory. Participants will complete a learning task where they will be shown either a PowerPoint or a set of flash cards with nonsense syllables on it for a total of 5 seconds. Next, they will be asked to recall those nonsense syllables. We will ask the participants to complete arousal measures before and after the task as a manipulation check. We hypothesize that those who have the flash
“Investigation of the Antimicrobial Activity of Curcumin and Polymerized Green Tea Extracts”
Poster 1, 1:30 p.m., Ballroom
Presenter: Will Sberna (Bowling Green State University)
Research Advisors: Subhalakshmi Nagarajan (Bowling Green State University), Ram Veerapaneni (Bowling Green State University)

Antimicrobial resistance is a recognized global threat, creating a need to develop new effective antimicrobials. Among the different classes of naturally occurring compounds, green tea catechins and curcumin have been investigated for their anti-microbial activity. Four major catechins found in green tea - epicatechin, epicatechin-3-gallate (ECG), epigallocatechin (EGC), and epigallocatechin-3-gallate (EGCG) have been shown to exhibit anti-microbial activity. While green tea has shown to exhibit anti-bacterial activity, the variability in the composition of green tea, and low solubility in water is still a concern. Curcumin has been known to exhibit good synergistic activity with catechins. The use of curcumin in anti-bacterial applications has limited because of its poor solubility in water (11ng/ml). This leads to very poor absorption in the body, fast metabolism, and quick systemic elimination. To overcome these limitations, these compounds were polymerized using environmentally benign methods involving naturally occurring enzymes as catalysts. The anti-bacterial activity of these compounds against both gram positive and gram negative bacteria was evaluated using disk diffusion and minimum inhibitory concentration (MIC) assays. A significant challenge was to determine reaction conditions and solvents which did not affect the MIC. Preliminary results on the anti-microbial activity of these compounds will be presented.

“Investigation of Whole-limb Motion as a Primary Motor Goal during Gait”
Poster 33, 11 a.m., Ballroom
Presenters: Brittany Sommers (Ohio Northern University), Andrew Shelton (Ohio Northern University)
Research Advisor: Louis DiBerardino (Ohio Northern University)

Human gait is critical in daily locomotion and its study can result in greater understandings of restorative processes for normalization after injury. Lower-limb kinematics are frequently studied for these purposes. A previous study conducted on a treadmill demonstrated that cycle-to-cycle variability was much lower for an individual’s whole-limb angle than for their individual joint angles. The goal of this study is to further investigate whether maintaining whole-limb motion is the primary motor goal of overground gait by determining if overground gait produces similar results of low whole-limb variability relative to the individual joint motions. It is hypothesized that whole-limb angle variability will be lower than individual joint angle variability during overground gait. Subjects were equipped with retroreflective markers from their sacrum to their toes and asked to walk at multiple recorded paces through a capture volume system. Overall, the whole-limb proved to have less cycle-to-cycle variability than the hip, knee, and ankle angles during gait. This is similar to the previous treadmill study and supports the hypothesis that whole-limb motion is the primary motor goal during gait.

“Is It Worth It? Risks Encountered by Game Wardens in the Line of Duty”
Paper 2, 10-11 a.m., Room 202
Presenter: Bryce Richardson (Ohio Northern University)
Research Advisors: Keith Durkin (Ohio Northern University), Robert Carrathers (Ohio Northern University)

One of the most overlooked professions in the law enforcement field is the job of game wardens. It is also one of the most dangerous law enforcement careers. The purpose of this paper is to provide an overview of the role of game wardens, and elaborate on the risks associated with their jobs, such as the increased risk of injury compared to other law enforcement professions. Emile Durkheim can be used to help understand why the occupation of game warden is so dangerous, with his ideas of collective conscious, division of labor, and suicide can help unravel the dangers game wardens face. The lack of community interaction causes people to have misconceptions about the role game wardens play in society. This causes the wardens to become disconnected from the collective conscious. The role of a game warden has also, become more specialized then most law enforcement professions.

“Is Trump the New Reagan?”
Poster 46, 10-11 a.m., Ballroom
Presenter: Jocelyn McKaylene Reinhart (Ohio Northern University)
Research Advisor: Robert Waters (Ohio Northern University)
Faculty Sponsor: Robert Alexander (Ohio Northern University)

Ronald Reagan and Donald Trump are both examined and classified as outsiders in their respective years in the United States presidency. This research shows the comparison of Reagan and Trump, with their entrance into politics. While there are similarities, there are differences between the two presidents being discussed. Reagan and Trump both ran as republicans and received the votes from the base of their party to secure their wins to the White House. The 1980 presidential election was as exhilarating and surprising as the 2016 presidential election was. Each election was polled and viewed with a different outcome. This research found a vast majority of similarities between each president, and a few differences as well.

“Lacrosse Participation in the United States”
Poster 10, 10-11 a.m., Ballroom
Presenter: Mack A. Callhoun (Ohio Northern University)
Research Advisor: H. Wilson (Ohio Northern University)

Lacrosse is commonly referred to as the “fastest sport on two feet.” However, most people do not know that lacrosse is also one of the quickest growing pastimes in America. Every year more and more states recognize lacrosse as a “state-sponsored high school sport.” This research examines the implication of this status to states, as well as the spread of lacrosse across the United States within high schools. We examine the correlation that exists between the growing popularity of high school lacrosse and states that have recognized lacrosse as a “state-sponsored high school sport.” We conclude that this recognition facilitates the acceptance and promotion of high school lacrosse, and present a method for achieving this status.

“Major League Baseball Popularity”
Poster 9, 10-11 a.m., Ballroom
Presenter: Ian Brown (Ohio Northern University)
Research Advisor: H. Wilson (Ohio Northern University)

Major League Baseball (MLB) has waned in popularity in recent years. According to Forbes.com, regular season attendance for the 2017 season was the lowest season total since 2003, and according to Sports Business Journal, TV viewership is down for over half the teams in the MLB. This research examines the correlation between MLB team locations and their proximity to their fans in attempts to measure team popularity. The variables that will be used to determine popularity will be television viewership of regular season games and attendance of regular season games. We hypothesize that rates of attendance will be highest in states that have MLB teams and significantly lower in states without teams, while rates of viewership will be more even overall, but remain highest in areas closer to MLB teams. An understanding of the relationship between popularity and geographical proximity promises to offer valuable insights as the MLB attempts to maintain their place as one of America’s major professional sports.

“Major Payne: A Psychoanalytic Analysis of a Payneful Film”
Paper 4, 12-1:45 p.m., Room 202
Presenter: Morgan D. Reich (Ohio Northern University)
Research Advisor: Adrienne C. Goss (Ohio Northern University)
The psychoanalytic lens is one of several frameworks that can be used to analyze film. This critical media analysis uses the Lacanian perspective of psychological development to analyze the film Major Payne. Using three stages of Lacan’s theory—the imaginary, the symbolic, and the real—I show how one of the characters demonstrates the lack that can result from the successful completion of the Lacanian order or development. By the end of the film, we see how even though the character has inappropriate fantasies, he can still function as a normal adult because he has successfully completed the Lacanian order of development.

"Making the Private Sphere Public: How Middle-class Female Reformers Influenced the Repeal of the Contagious Diseases Acts"
Poster 2, 12:1-45 p.m., Deans’ Heritage
Presenter: Abigail Greene (Ohio Northern University)
Research Advisor: Catherine Albrecht (Ohio Northern University)

An epidemic of sexually transmitted diseases plagued British society in the 1800s. Prostitution was seen as a necessary evil that facilitated the spread of diseases. In response to the growing spread of contagious diseases, Parliament passed a set of acts. In 1864 a series of laws collectively known as the Contagious Diseases Act passed in British Parliament, legalizing the forceful examination of women for venereal diseases without their consent. The Acts simultaneously subordinated women while instilling a false sense of security in men that they would not contract venerable diseases from prostitutes. Female reformers formed coalitions to oppose the new laws. The Ladies National Association for the Repeal of the Contagious Diseases Acts formed the largest reform group to oppose the Acts. The Ladies National association orchestrated public meetings, published articles, and petitioned to repeal the Contagious Diseases Acts. The Ladies National Association gave women a unique outlet to influence public policy while using traditional feminine roles. Nineteenth-century British women employed the private sphere concepts of female morality, motherly responsibility to protect girls from danger, and personal liberty against invasive physical procedures to champion repeal of the Contagious Diseases Act in the face of Britain’s patriarchal political and legal regimes.

"MAPK Signaling in Ovarian Cancer Spheroid Growth and Invasion"
Poster 19, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Sarah J. Harmynch (University of Toledo)
Research Advisor: Deborah N. Chadee (University of Toledo)

Growing cells in cell culture dishes where they form a monolayer is a widely used method in cancer research. Though this allows researchers to study various cell functions, it is not an accurate representation of how cells interact in the body. In the body, cancer cells interact with one another to form tumors that have a 3-dimensional shape. The interaction between cells and between cells and the extracellular matrix in tumors is critical for their ability to invade and metastasize to other areas within the body. The goals of this study were to establish the growth conditions for ovarian cancer spheroids, and evaluate the role of mixed lineage kinase 3 (MLK3), a mitogen-activated protein kinase (MAPK), in the development of ovarian cancer spheroids. Ovarian cancer cells (SKOV3) were transfected with MLK3 small inhibitory RNA (siRNA) to inhibit MLK3 expression, or treated with a kinase inhibitor of MEK (another MAPK), and then plated using the simple hanging drop method to form 3D ovarian spheroids. The invasiveness of the cells was also tested by analysis of their migration from the ovarian spheroid into Matrigel. Our results suggest that MLK3 and MEK are important for ovarian spheroid formation and invasiveness.

"Measuring the Sensory Characteristics of Cosmetic Emulsions with a Texture Analyser"
Poster 25, 12:30-1:30 p.m., Ballroom
Presenter: Huangying Zhao (University of Toledo)
Research Advisor: Gabriella Baki (University of Toledo)

The sales potential of cosmetic products is greatly determined by skin feel and skin sensory performance. In order to please the target audience, it is important to gather information about consumers’ perception of products’ sensory characteristics. The main goal of this research was to measure the sensory characteristics of cosmetic emulsions with a texture analyser and compare the results with consumers’ perception of the same products’ sensory characteristics gathered during a clinical study. In this study, six different cosmetic emulsions were formulated, two water-in-oil emulsions (W/O), two steric stabilized oil-in-water emulsions (O/W), and two liquid crystal-stabilized O/W emulsions. In each group, one emulsion contained olive oil, the other did not. TA.XTplus texture analyzer was used to evaluate the six emulsions for spreadability, stickiness, firmness, thickness and adhesiveness. This research focused on whether a texture analyzer can reliably predict certain sensory parameters of cosmetic emulsions, which could be a useful tool during prototype development and product optimization as a complimentary to descriptive sensory analysis.

"Metallation of [O,O,N,O] Ligands Obtained from Amino Acid Precursors for Applications in Lactide Polymerization"
Poster 4, 12:30-1:30 p.m., Ballroom
Presenters: Cheyenne Laux (Ohio Northern University), Kristina Myers (Ohio Northern University)
Research Advisor: Amelia Anderson-Wile (Ohio Northern University)

Over the past decade, interest has grown in the development of organometallic complexes for the polymerization of monomers from renewable resources. Our research targets the polymerization of lactide to Polylactide (PLA) using metal complexes bearing variations of amine bis(phosphate) ligands. Current work focuses on determining the ideal amino acid isomer for ligand synthesis and further complexation to the metal center. Preliminary investigations of these complexes as catalysts for the oxidation of benzoin are underway. All ligands, metal complexes, and products of catalysis will be fully characterized using NMR techniques (1H, 13C, 13C DEPT, HSQC, HMBC, COSY), IR, TLC, melting point, and x-ray crystallography.

"Microbial Survey of a 100 m Deep Ice Core Section from the Newall Glacier, Antarctica"
Poster 4, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Shannon Turner (Bowling Green State University)
Research Advisors: Scott O. Rogers (Bowling Green State University), Kurt S. Panter (Bowling Green State University)

The Newall Glacier is located in Antarctica between Mount Newall and Mount Weyant, at approximately -77° 29’ 59.99” S, 162° 49’ 59.99” E. Having existed for millions of years and being rarely touched by human populations today, glaciers are a major key to information on climate and life of the past. During the past five decades, multi-country team of scientists have collaborated to drill deep into many of Antarctica’s glaciers and ice fields and removed large cores of ice in order to investigate some of this information that glacial ice can provide. The ice core section chosen for this project was drilled from the Newall Glacier in 1988 and its depth was from 100,670 m to 101,000 m. While countless studies can be performed on a single ice core, the purpose of this study was to identify any viable organisms approximately 100 m into the Newall Glacier. The result was an extremely low concentration and diversity of taxa as a result was an extremely low concentration and diversity of taxa as
to healthily respond and cope to said emotions. Mindful Music Listening is a study designed to combine musical selections with the clinical practice of mindfulness in attempt for the children to increase emotional identification, and attention span. Children were to listen to a piece of music, and identify they emotions portrayed over a course of five weeks. It was practiced in a music therapy setting, yet does not reflect the empirical based research of music therapy. Because the study was so small (n=7), data is organized and analyzed in the format of a case study, along with data collection and analysis. This research was done as a graduation requirement for intern at the Episcopal Center for Children (ECC) under the department Related Services and Activities, Anna Cammarn, to complete a Bachelor’s of Psychology at Bluffton University for the Research Seminar course. The study was supervised by faculty and staff at the Episcopal Center for Children including Raynika Thomas, music therapist; Catherine Tafur, occupational therapist; and Dodd White, CEO of ECC.

“Minimum Wage and Its Relation to American Politics”
Paper 4, 10-11:45 a.m., Deans’ Heritage
Presenter: Gabe D. Rastatter (Ohio Northern University)
Research Advisors: Robert Alexander (Ohio Northern University), Matthew Kutch (Ohio Northern University)
This paper will explore the research done regarding the minimum wage of the United States and specifically the state of Ohio. Further, this paper will delve into the involvement of the minimum wage regarding American politics well, with respect to campaigns, platforms, and political parties, and their respective stances. Specifically looking at the state of Ohio and surrounding states, this research will show election and residential tendencies of both parties, and how the minimum wage influences these outcomes. Using both the economic and political perspective, cause and effect relationships will be discussed on what happens when the minimum wage increases, and when the minimum wage decreases. This paper will gather valuable opinions from both state politicians, as well as economists on what course of action the government should be recommended to take moving forward with potential policy, and decision making. Finally, after all information and research is considered, a final recommendation will be included as to what may be the best potential approach to this issue, and the outcomes of such.

“Misinterpretations of the Hijab: The American Perception and Socialization”
Poster 48, 10-11 a.m., Ballroom
Presenter: Ky’la Sims (Ohio Northern University)
Research Advisors: Catherine Albrecht (Ohio Northern University), Nusta Carranza Ko (Ohio Northern University)
Thesis Prior research has demonstrated that negative images depicting Muslim women do exist, however, no research has yet been done understanding whether these negative images influence the perceptions and political socialization of non-Muslim American adults. This research aims to understand the effects perception has on political socialization. My research examines whether American adults perception of the hijab is associated with their support of restrictive rights for Muslims who wear the hijab in public. For my research I have constructed a simple survey that will help identify the factors that has shaped an individual’s perception and how this perception influences an individual’s political attitude. My hypotheses is that American adults who have negative exposure and experiences, as well as limited knowledge of Muslims who wear the hijab, will support more restrictive public rights for Muslims wearing the hijab.

“Music’s Effect on Short-term Memory in Undergraduate Students from Introduction Courses”
Poster 42, 12:30-1:30 p.m., Ballroom
Presenters: Nicholas J. Bondra (Bluffton University), Destiny F. Grant (Bluffton University), Jonah S. Eckert (Bluffton University), Jordan M. Watkins (Bluffton University)
Research Advisor: Deanna Barthlow-Potkanowicz (Bluffton University)
The purpose of this study was to investigate the effect of listening to music on memory. Participants were 31 undergraduate students from introductory courses. Participants had three minutes to look at a list of 20 randomly-chosen words that ranged in length from 3 letters to 6 letters. The words were then removed and the participants were asked to write down as many words as they were able to remember in three minutes. Participants completed the study twice: once while listening to music through headphones and once without music. There was no significant difference in the number of correct words recalled between the two conditions (music vs. no music).

“Night Shift Nurses’ Fatigue and Quality of Rest”
Poster 31, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Dylan R. Galford (Ohio Northern University)
Research Advisor: Leslie Bostick (Ohio Northern University)
Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)
Nurses who work during night shift struggle to get appropriate amounts of sleep prior to starting their clinical day. Nurses report the main reason they do not receive adequate amounts of sleep is due to other important aspects of their lives including family, friends, and second jobs, that require them to be up during the day hours (Rathore, Shukla, Singh, Tiwari, 2012). Having less sleep is often unavoidable due to these other life responsibilities. Therefore, it is important to focus on the number of hours and the quality of rest nurses get when they do sleep. If a nurse is sleep deprived, unproductive and unable to focus on work, patient outcomes can be negatively affected. The purpose of this quality improvement project is to determine nurse’s perceptions of their level of fatigue, ability to focus on work, and the impact on patient outcomes. This capstone project will consist of a pretest/posttest design and will survey staff nurse’s knowledge about receiving adequate rest before a clinical night shift. The survey will be distributed to each floor of the hospital within a week time span to gather a wide variety of information from all clinical night shift nurses. Using the results of the pretest, an educational intervention will be developed. Nurses will be taught about how to improve their quality of sleep and how more appropriate rest will provide improved patient outcomes. A posttest will be distributed after the educational intervention to determine if the information provided helped nurses improve their rest, and therefore, the quality of care delivered to their patients. As a result of this quality improvement project, clinical night shift nurses will gain knowledge regarding methods to increase amounts of quality sleep, thereby decreasing likelihood of negative patient outcomes.

“Nonconsensual Pornography: An Examination of Community Awareness at Ohio Northern University”
Paper 1, 10-11:45 a.m., Room 202
Presenter: Courtney L. Walland (Ohio Northern University)
Research Advisor: Joseph DeLeeuw (Ohio Northern University)
The prevalence of nonconsensual pornography has increased in recent years due to technological advancements and the development of new avenues for the distribution of such content. The growing threat of nonconsensual pornography is particularly formidable for college age students. Victims of nonconsensual pornography in the United States often find it difficult to get justice from a system that struggles to define the crime itself. Today, only 38 states and Washington DC have enacted laws to specifically address the creation or dissemination of nonconsensual pornography. This study aims to examine the subject of nonconsensual pornography, discuss laws and legal issues of nonconsensual pornography, and review prior studies of nonconsensual pornography on college campuses in the United States. Furthermore, Ohio Northern University students’ and faculties’ experiences, perceptions, and knowledge of nonconsensual pornography will be assessed through an anonymous survey. The results of this study are placed in the context of the larger literature and provides a useful first step to
informing an improved response to the issues at Ohio Northern University.

“Non-serum Specimen Collection and Labeling Errors”
Poster 36, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Luke Glischenki (Ohio Northern University)
Research Advisor: Megan Lieb (Ohio Northern University)
Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)

Often times errors occur with specimen orders, retrievals, or testing. Specifically, contaminated samples or labels that omit the date, time, collector, or source of the specimen, can lead to improper treatment for patients based on inappropriate laboratory results or patient data. If the specimen is not collected or labeled correctly, extra time is needed to fix the errors, which leads to an overall slow in patient care. The purpose of this paper is to provide information and education on proper non-serum specimen collection and labeling in the healthcare setting. Likert scale pretests, concerning non-serum specimen collection and labeling practices, were distributed to nurses on 3 South at Lima Memorial Health Systems. After compiling the results, an educational poster was created to inform nurses of the best practice method for specimen collection and labeling, according to facility standards. After education, Likert scale posttests were administered to gauge how well the information was received by the nursing group and the results were assembled to determine specimen collection compliance and best practice. This quality improvement project showed the level of facility compliance within the hospital regarding non-serum specimen collection and labeling, and provided education on best practices. This knowledge will reduce specimen errors and improve treatments based on specimen data, which will lead to safer and more efficient patient care within the clinical setting.

“Nurse Knowledge of Policy for Appropriate Medication Administration Time Windows”
Poster 36, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Luke Glischenki (Ohio Northern University)
Research Advisor: Megan Lieb (Ohio Northern University)
Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)

Complex patients hospitalized in intensive care units (ICU) or stepdown units are prescribed large quantities of medications to be administered throughout the day. Each medication has a scheduled time and frequency, and contains parameters based on the frequency of administration. These parameters determine appropriate time windows in which each medication can be administered safely. The purpose of this Quality Improvement (QI) project is to assess nurses’ knowledge of proper medication administration policy, identify how often nurses administer medications on time, and identify potential barriers to timely medication administration at Kindred Hospital in Lima, Ohio. This QI project contains a pretest/post-test design consisting of seven multiple choice questions and one short answer question structured to assess the staff knowledge of appropriate time windows for different medication orders. An educational intervention will be developed from the results of the pretest and posttest design that was distributed to both day and night shift nursing staff. The pretest surveyed staff nurses’ general knowledge of the fall risk protocol, priority of knowing a patient’s fall risk, and perceptions of effectiveness of the current protocol. Using the results of the pretest, an educational intervention was developed and presented to staff nurses. After the educational intervention, a posttest was distributed. The results of the posttest revealed nurses felt adequately educated and able to better utilize the fall risk protocol to improve overall patient outcomes.

“Nurses’ Perception of Neonatal Neuronal Development in the Neonatal Intensive Care Unit”
Poster 45, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Sydney Taylor White (Ohio Northern University)
Research Advisors: Cynthia Woodfield (Ohio Northern University), Amy Seekely (Rainbow Babies and Children’s Hospital)

This quality improvement project was carried out at University Hospital’s Rainbow Babies and Children’s Hospital in the Neonatal Intensive Care Unit (NICU). Using a pretest/posttest design, nurses were surveyed regarding their knowledge of the need for an educational program meant to increase parent-infant bonding by implementing developmentally appropriate techniques. The pretest survey was targeted at nurses. The effectiveness of the intervention is being evaluated in a post-test survey compared to the baseline consensus of the pretest survey. Using the pretest results, an educational program was developed based off of current evidenced-based practice theories on neonatal neuronal development through appropriate stimulation and bonding techniques that improved infant and parent well being. The educational intervention will include mandatory classes, via parental information, and informational handouts pertaining to their infant’s current medical diagnosis. Following the educational intervention, a posttest was distributed to the nursing staff assessing for improved understanding of importance of infant parent bonding and methods to assist in this process. This program is important to nursing practice because it is set to improve the developmental outcomes of infants in the NICU while educating nurses on how to implement evidence based research into practice.

“Nurses’ Perceptions of Stress and Stress Reduction Techniques in the Clinical Setting”
Poster 24, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Haley Lyle (Ohio Northern University)
Research Advisor: Megan Lieb (Ohio Northern University)
Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)

This quality improvement (QI) project aims to gauge the stress levels and knowledge about stress reduction techniques for nursing staff on a heart and vascular unit (HVI) at Good Samaritan Hospital in Dayton, Ohio. This problem needs to be addressed in this hospital unit due to the high levels of stress in the critical care environment and also because of the added pressures due to the hospital closing in a few short months. A Likert-scale survey was used to assess a change in stress levels and nursing knowledge following an education intervention utilizing a pre- and post-test design. The specific education intervention was aimed at improving stress coping strategies and decreasing stress on the unit. During this education, a variety of stress reduction techniques were introduced, including deep breathing techniques, pressure point techniques and others. The nursing staff of the HVI unit (N=____) completed the pretests and posttests on both night and day shift. The purpose of this study is to decrease overall stress levels on the nursing unit. The clinical significance of this QI project is in addressing stress related to nurse burnout and retention, patient outcomes, and patient satisfaction ratings. This QI project showed many nurses are not aware of stress reduction techniques that can be used in the clinical setting, but when
presented with such strategies are open to learning about stress reduction and different techniques that can be used.

"Nurses’ Knowledge of Appropriate Medication Administration Time Windows”
Presenter: Luke Glischinski (Ohio Northern University)
Research Advisor: Megan Lieb (Ohio Northern University)
Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)

Complex patients hospitalized in intensive care units (ICU) or stepdown units are prescribed large quantities of medications. Medications are scheduled to be administered at varying times throughout the day. However, depending on the frequency of administration, the time window nurses have to administer the medications can vary. The purpose of this Quality Improvement (QI) project is to assess nurses’ knowledge of proper medication administration policy, identify how often nurses administer medications on time, and identify potential barriers to timely medication administration with long-term acute care (LTAC) patients at Kindred Hospital in Lima, Ohio. This QI project contains a pre/post-test design consisting of seven multiple choice questions and one short answer question to assess the staff knowledge of appropriate time windows for different medication orders. An educational intervention will be developed from the results of the pretest and presented to the nursing staff at Kindred Hospital. A post-test will be given to assess for improvement in knowledge and understanding of proper medication administration time windows. This QI project is important for patient safety because medications given at incorrect time intervals can result in decreased therapeutic effects or cause unintended harm to the patient.

“Nursing Knowledge of Pressure Ulcer Treatment Algorithm Guidelines”
Poster 21, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Elizabeth A. Yaeger (Ohio Northern University)
Research Advisor: Megan Lieb (Ohio Northern University)
Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)

Pressure ulcers are commonly found among patients with chronic illnesses and long-term hospital stays; therefore, wound treatment is an essential part of patient care in the Intensive Care Unit (ICU) and ICU stepdown. Knowledge of how to best treat pressure ulcers is critical to providing pressure ulcer care. The purpose of this quality improvement project was to improve nursing knowledge of pressure ulcer treatment algorithm protocol in an ICU and ICU stepdown. In addition, the goal was to increase nurse confidence in providing wound care. Nurses at Kindred Hospital Lima completed a Likert-Scale pretest to determine knowledge level of pressure ulcer treatment. Based on the results, an educational intervention was developed and presented regarding pressure ulcer treatment protocol and wound staging information specific to pretest results. Nurses were then given the same Likert-Scale test to determine if pressure ulcer treatment knowledge increased. This quality improvement project increased nurses’ knowledge regarding pressure ulcer treatment knowledge, thus increasing patient outcomes.

“Ohio Northern University Division III In-season, Intercollegiate Athletes’ Perception of When Stress Levels Are Highest: In-Season or Out-of-season”
Poster 2, 10:11 a.m., Ballroom
Presenters: Melissa Foltz (Ohio Northern University), Hannah Reich (Ohio Northern University)
Research Advisor: Michelle Wilson (Ohio Northern University)

Context: There has been research on the stress college students endure; however, there is limited research on stress among intercollegiate athletes. Intercollegiate athletes struggle with a greater amount of stress factors. Objective: The purpose of this study is to evaluate whether Ohio Northern University (OUNI) Division III intercollegiate athletes recognize the highest levels of stress factors in-season or out of season. Design: An anonymous 17-question, paper survey was handed out to in-season, winter and spring athletes. Five categories of stress were included: time-management, injury, academics, sleep, and sport. These five categories were found to be the most common stressors among intercollegiate athletes within the literature. Setting: Surveys were handed out to athletes after their practices and completed by the participants after researchers and coaches stepped out. Completed consent and survey forms were placed in assigned manilla folders.

Participants: A stratified sample population of male and female, winter and spring sport sophomore junior and senior level Division III intercollegiate athletes were selected. Out of 352 selected winter and spring sport athletes, 186 participated. Predicted Results: We predict that results from our survey will show OUNI Division III intercollegiate athletes perceive highest levels of stress factors in-season than out of season.

“Ohio Northern University Robotic Work Cell”
Poster 31, 10:11 a.m., Ballroom
Presenters: Joseph C. Warnecke (Ohio Northern University), Walker Karg (Ohio Northern University), Aaron Fashing (Ohio Northern University), Nathan Dean McCollum (Ohio Northern University), Cal N. Huffman (Ohio Northern University), Evan Hickey (Ohio Northern University), Zack Meronoff (Ohio Northern University)
Research Advisors: Richard Miller (Ohio Northern University), Joseph Ekong (Ohio Northern University)

The question or problem that ONU Robotics team is facing is, can the group develop a fully autonomous robotic work-cell that produces fidget spinners. The stock pieces used for the fidget spinners will be loaded into the work-cell, along with the bearings, and then be put into action. First loading them into the CNC mill, cutting out an insert for the bearings and finally the stock and bearings will be pressed together pneumatically. These steps will be assisted by the KR3 KUKA robotic arm which will place the finished spinners into a drop chute to be collected. We will be able to run plastic and wooden stocks for the fidget spinners to show our equipment’s versatility. Our predicted results include producing two fidget spinners within the ten-minute presentation window. We will use PLCs and other programming languages to complete the work-cell and allow each machine in our process to communicate with each other. The application of our work-cell and what the group has learned through the duration of this project can be directly transferred to the techniques and methods used in the manufacturing field. The work-cell offers the team experiences that replicates what they would experience in the real world.

“One for One: The Effectiveness of TOMS Branding”
Paper 11, 12:20-1:20 p.m., Bear Cave
Presenter: Soteria Mathewson (Ohio Northern University)
Research Advisor: William Britton Rowe (Ohio Northern University)

Americans see, hear, and watch thousands of advertisements every day. Displayed across a myriad of mediums, these advertisements consciously and subconsciously flood the minds of consumers. TOMS has produced countless conscious advertising campaigns throughout the years. These ads have certainly reached a large audience, but do they effectively communicate the TOMS brand to the public? Do the advertisements that consumers see and hear communicate the values that the TOMS company intends to display? This study aims to analyze the effectiveness of TOMS branding in print and web advertisements. I will be specifically exploring the branding characteristics and how they subsequently relate to consumers’ perception of the company. Understanding the impact of branding on consumers’ opinions is valuable information for TOMS and other brands and their advertising campaigns. I will use copy testing research, a psychographic survey and situation analysis to look further into this issue. The results of this study will be discussed in the final presentation.

“Outdoor Retailers in Franklin County, Ohio”
Poster 19, 10:11 a.m., Ballroom
Patients spend a significant amount of time in hospitals, mainly for MRSA. This QI project is focused on improving hospital practice to provide PPE. Using the results of a pretest/posttest design with 20 nurses, the project was to educate the nursing staff on 2 South at Lima Memorial Hospital (LMH) about the importance of wearing PPE. Upon the pretest, an educational intervention was developed and delivered to the nursing personnel. The post-test was given to determine if nurses have increased PPE compliance following education when caring for patients on isolation, mainly for MRSA. This QI project is important because illnesses can spread to people all over the hospital and proper use of PPE is essential to prevent the spread of illness like MRSA.

"Playing without Pain: An Interactive Web Resource to Treat Performance-based Injuries in Collegiate Music Students" Poster 45, 10-11 a.m., Ballroom
Presenter: Francesca Leo (Bowling Green State University)
Research Advisor: Lisa Martin (Bowling Green State University)

Musicians across all career stages experience performance-based pain and injury, and due to demanding rehearsal and performance schedules, collegiate musicians are uniquely vulnerable to these conditions. To provide collegiate musicians the most effective coping mechanisms for performance-based pain and injury, it is important to first understand the extent to which collegiate musicians are affected by these conditions. The purpose of this multi-tiered study was to create a customized web resource to connect collegiate musicians with local, accessible treatment and prevention options. An initial questionnaire was distributed to music students attending Bowling Green State University, and this questionnaire received 45 valid responses. Significant results of this questionnaire highlighted that the vast majority of participants (84%) experienced pain problems that interfered with their ability to play their instrument or sing at the level of which they are accustomed. My project, titled Playing Without Pain, is designed to provide collegiate music students with attainable resources to treat and prevent performance-based injuries through an interactive website. I intend to create a dialogue about performance-based pain within the collegiate music student community in hopes of normalizing this problem and providing students with the help they need to pursue a healthy and prosperous career in music.

"PowerPoint Design in Business College Classrooms" Paper 10, 11:10 a.m.-12:10 p.m., Bear Cave
Presenter: Tetsuharu Hashimoto (Ohio Northern University)
Research Advisor: William Britton Rowe (Ohio Northern University)

At Ohio Northern University, many professors utilize some sort of presentation tools to lecture. In the ONU business college, every professor uses different PowerPoint design. Each design seems to be the primary variable utilized in this study. The relative location of police stations in high crime areas has long concerned the criminal justice community. Studies have shown that police response time is directly correlated to property and violent crime rates. Further research shows that the presence of police departments also serves to deter crime. The current research examines the correlation between the location of police departments in and near areas with high crime rates. It also presents a method for identifying locations for new police departments in these areas. The Total Crime Index, a standardized measure commonly used in similar research, serves as the primary variable utilized in this study.

"Personal Protective Equipment Compliance" Poster 48, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Ciarra L. Evans (Ohio Northern University)
Research Advisor: Jamie Hunsicker (Ohio Northern University)
Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)

Within the hospital setting, personal protective equipment (PPE), is used to protect staff members who come into contact with patients who have contagious illnesses and are in isolation. PPE protects the staff and the patients they encounter from acquiring or spreading unwanted illnesses. The purpose of this Quality Improvement (QI) project was to educate the nursing staff on how to use PPE properly at Lima Memorial Hospital (LMH) about the importance of wearing PPE. Upon observation, nurses fail the most at using PPE when caring for patients with Methicillin Resistant Staphylococcus Aureus (MRSA). This QI project consisted of a pretest/post-test design with a sample size of approximately 20 day and night shift nurses. The pretest/post-test design consisted of a 10-item questionnaire presented as a Likert Scale assessing staff compliance with PPE. Using the results of the pretest, an educational intervention was developed and delivered to the nursing personnel. The post-test was given to determine if nurses have increased PPE compliance following education when caring for patients on isolation, mainly for MRSA. This QI project is important because illnesses can spread to people all over the hospital and proper use of PPE is essential to prevent the spread of illness like MRSA.

"Passive Scalar Transport of Contaminants via Traveling Waves" Poster 41, 10-11 a.m., Ballroom
Presenter: Ian Simpson (Ohio Northern University)
Research Advisor: William Fuller (Ohio Northern University)

In this paper we examine passive scalar transportation of contaminants via traveling waves. We utilize a system of partial differential equations to describe the motion and behavior of the contaminant and the ambient fluid. The advection diffusion equation is used to model the behavior of the contaminant we use the advection diffusion equation. Since the contaminant has no dynamical effect on the ambient fluid, we examine how the contaminant will behave traveling with the ambient fluid.

"Pancreatic Enzyme Knowledge and Administration: Nursing Care for Cystic Fibrosis Patients" Poster 47, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Madison Brandon (Ohio Northern University)
Research Advisor: Kami Fox (Ohio Northern University)

More than 30,000 people are living with cystic fibrosis (CF), a genetic disease affecting the lungs and pancreas. Patients spend a considerable amount of time within healthcare facilities receiving acute and chronic treatment for CF. Healthcare for CF patients has improved, specifically with the use of pancreatic enzymes. Pancreatic enzymes are vital to the care of children living with CF as they aid in digestion and improve lung function. This makes the administration of enzymes with food intake critical to the care of a child with CF. The aim of this capstone project was to determine nurses’ knowledge and documentation practices of administering pancreatic enzymes to children with CF. This quality improvement project consisted of a pretest, educational intervention, and posttest for the nurses, who work with giving care to CF patients, at a pediatric hospital. Anticipated findings are expected to identify knowledge deficits regarding understanding, administration, and documentation of pancreatic enzymes. After results are analyzed, an educational intervention will be developed and it is expected that an increase in knowledge and compliance will occur.

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Presenter: Ian Simpson (Ohio Northern University)
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"Personal Protective Equipment Compliance" Poster 48, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Ciarra L. Evans (Ohio Northern University)
Research Advisor: Jamie Hunsicker (Ohio Northern University)
Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)

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"Playing without Pain: An Interactive Web Resource to Treat Performance-based Injuries in Collegiate Music Students" Poster 45, 10-11 a.m., Ballroom
Presenter: Francesca Leo (Bowling Green State University)
Research Advisor: Lisa Martin (Bowling Green State University)

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"Police Department Locations as a Crime Deterrent" Poster 8, 10-11 a.m., Ballroom
Presenter: Ashlie Baumann (Ohio Northern University)
Research Advisor: H. Wilson (Ohio Northern University)

The relative location of police stations in high crime areas has long concerned the criminal justice community. Studies have shown that police response time is directly correlated to property and violent crime rates. Further research shows that the presence of police departments also serves to deter crime. The current research examines the correlation between the location of police departments in and near areas with high crime rates. It also presents a method for identifying locations for new police departments in these areas. The Total Crime Index, a standardized measure commonly used in similar research, serves as the primary variable utilized in this study.

"PowerPoint Design in Business College Classrooms" Paper 10, 11:10 a.m.-12:10 p.m., Bear Cave
Presenter: Tetsuharu Hashimoto (Ohio Northern University)
Research Advisor: William Britton Rowe (Ohio Northern University)

At Ohio Northern University, many professors utilize some sort of presentation tools to lecture. In the ONU business college, every professor uses different PowerPoint design. Each design seems to be communicating something different to students. How does PowerPoint design correlate with students’ understanding? What are professors’ objectives to using PowerPoint, and does it affect outcomes? This study examines the process of finding out connections between PowerPoint types and students’ understanding of lectures through observation and surveys for both professors and students. The observation process selects two professors who have different PowerPoint designs, but lectures to similar students level. The survey will occur after the observation process is completed. Information from both professors and students will be collected. The
data may find patterns to PowerPoint design and show a certain design quality factors into students’ outcomes.

“Predator-based Psychosocial Stress Model of Post-traumatic Stress Disorder Differentially Influences Voluntary Ethanol Consumption in Male and Female Rats”
Poster 30, 12:30-1:30 p.m., Ballroom
Presenters: Kiera L. Robinson (Ohio Northern University), Madelaine R. Huntley (Ohio Northern University), Brooke J. Hertenstein (Ohio Northern University), Paul A. D’Alessio (Ohio Northern University), Connor P. Ney (Ohio Northern University), Kasey E. Mucher (Ohio Northern University), Charis D. Kasler (Ohio Northern University), Austen E. Rush (Ohio Northern University)
Research Advisor: Phillip R. Zoladz (Ohio Northern University)

We previously reported that a predator-based psychosocial stress model of PTSD led male rats to consume more ethanol than controls. Recently, we found that this model of PTSD did not produce PTSD-like behavioral sequelae in female rats. Thus, we tested the hypothesis that the model would exert sex-dependent effects on voluntary ethanol intake as well. Male and female Sprague-Dawley rats were given access to either ethanol or water in 12-hr cycles (1930-0730) using a two-bottle, free choice test for 20 days. Beginning the day after this ethanol pre-exposure period, rats were exposed to psychosocial stress or control conditions for 31 days. Stressed rats were given two cat exposures, separated by 10 days, and subjected to daily social instability throughout the paradigm. Control rats were handled daily. Following the 31-day paradigm, rats were again given access to ethanol or water for 20 days, followed a day later by an assessment of anxiety-like behavior. The results showed that the stress model of PTSD led to significantly greater ethanol intake and heightened anxiety in males, but had no impact on either behavior in females. The findings suggest that this model may be useful for examining sex differences in stress-induced alterations of ethanol consumption.

“Preliminary Survey of Invertebrate Bioindicators of Rock Creek”
Poster 1, 11:15 a.m.-12:15 p.m., Ballroom
Presenters: Brianna Marie Casement (Heidelberg University), Austin Joseph Nainiger (Heidelberg University)
Research Advisor: Amy Berger (Heidelberg University)

Across much of Northwest Ohio, agricultural drainage and roadway runoff transport pollutants to streams and small rivers. These factors affect stream ecosystems and health (Lovett et al, 2007; Reuben H. Wolff, 2005). Rock Creek is a third order creek that drains a primarily agricultural watershed. As Rock Creek passes through Heidelberg University’s campus, it enters an urban watershed. The objective of this study is to use macroinvertebrates as indicators to determine the local stream health. We expected to observe as significant difference in invertebrate diversity across the boundary between the agricultural and urban environments that Rock Creek drains. We placed 18 Hester-Dendy samplers along a 1.11 km stretch of Rock Creek adjacent to Heidelberg’s campus. After six weeks, during which time invertebrates populated the samplers, we removed and placed them in ethyl alcohol to preserve invertebrates for identification. The preserved organisms were then identified down to family. Total number and diversity of invertebrates were then used to score relative health of each of the locations. Resulting data differed across locations but the results were more complex than originally expected.

“Preparation of Manganese Complexes of Amine Bis(pheno)late Ligands”
Poster 10, 12:30-1:30 p.m., Ballroom
Presenter: Nathaniel C. McCutcheon (Ohio Northern University)
Research Advisor: Bradley M. Wile (Ohio Northern University)

Organometallic complexes are interesting both in terms of their potential as catalysts and their ability to model bonding motifs unique to metals. As ecological considerations become more prevalent, research has shifted focus from using rare earth metals in these complexes to the more accessible base metals. Previous work in complexing a series of amine bis(pheno)late ligands with palladium was successful, and prompted efforts to produce analogous complexes with the base metal manganese. Early success in this endeavor shows promise for the further synthesis of a series of novel manganese complexes.

“Presidential Political Campaigns and Their Associated Branding”
Paper 2, 10-11 a.m., Bear Cave
Presenter: Bryan Zane Kelly (Ohio Northern University)
Research Advisor: William Britton Rowe (Ohio Northern University)

In this past 2016 election, there was a massive paradigm shift in how presidential campaigns branded themselves and attempted to make themselves stand out from other candidates. Because of the current political confusion and strong identity politics, it has been increasingly difficult for candidates to distinguish themselves. Branding is one of the initial experiences that the public has with a presidential campaign. The question is how can design exemplify the entirety of a candidate’s platform in just one logo? How can they make all of a candidate’s ideals palatable for the public and easily consumable? This presentation discusses how specific campaigns attempted to brand their platforms, why they did what they did, and how successful they were based on the public’s initial reception.

“Prevention, Treatment, and Recovery: Resources for the Hardin County Opioid Crisis”
Poster 24, 12:30-1:30 p.m., Ballroom
Presenter: Katerina Linz (Ohio Northern University)
Research Advisor: Karen Kier (Ohio Northern University)

The opioid epidemic continues to worsen and has become a focus for the White House. From 2016 to 2017, opioid overdose-related emergency visits increased 24% in Ohio alone. In the state, an average of 11 people die each day from opioid overdose. Of Ohio’s 88 counties, Hardin County is one of the hardest hit. In order to better understand and combat this public health crisis, an analysis of local clinics, support groups and other related resources in Hardin County and surrounding areas were compiled. This investigation takes into consideration the demographics and socioeconomic dynamics of the county. The information gathered shall be utilized as a tool to assist ONU HealthWise in working with patients and families dealing with addiction.

“ Proper Care of Peripherally Inserted Central Catheters (PICCs) in the Pediatric Population”
Poster 27, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Michaela Rask (Ohio Northern University)
Research Advisor: Megan Lieb (Ohio Northern University)

The purpose of this quality improvement project was to assess the knowledge of pediatric nurses at Toledo Children’s Hospital regarding Peripherally Inserted Central Catheter (PICC) care. On this general pediatric unit, nurses are not exposed to patients with PICC lines each shift; therefore, certain aspects of proper line care can be forgotten. Since PICC lines are invasive, infection and thrombosis can easily occur when the standard care is omitted during a shift. This project consisted of a pre-test/post-test design, and surveyed staff nurses’ knowledge about the proper care of PICC lines. Using the results of the pre-test, an educational intervention was provided, consisting of the risks associated with these central lines, proper care guidelines, and implementation of catheter care. The post-test determined how the nurses’ knowledge improved regarding PICC line care. Proper care of these lines is vitally important in the pediatric setting because infections and thrombosis can easily develop. Increasing nurses’ knowledge regarding the care of PICC lines can increase the quality of care that patients receive and lead to improved outcomes.

“Recyclable K-Cup Design”
Paper 5, 10-11 a.m., Bear Cave
Presenter: Crystal Amberlyn (Ohio Northern University)
Billions of Keurig single-serve k-cups are disposed of each year. Keurig has tried multiple solutions to aid this problem and now hopes to have the ultimate solution. Keurig has recently designed a new, recyclable k-cup and plans to make 100% of their k-cups recyclable by the end of 2020. With this new design, how is Keurig communicating the recycling aspect of the cups? Is it clear how to recycle them? Is it easy to recycle the new cups? How likely are Keurig users to recycle these cups? In this study, students, faculty, and staff of Ohio Northern University were surveyed about their Keurig k-cup usage and opinions about a recyclable k-cup. Participants also underwent a user test to define the level of difficulty of removing the k-cups. Finally, participants were interviewed for easy testing research to test the communication of the packaging and recycling instructions. Results and conclusions to this study will be given during presentation.

“Reducing Blood Culture Contamination in the Emergency Department”
Poster 43, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Alex L. Infantino (Ohio Northern University) Research Advisors: Leslie Bostick (Ohio Northern University), Megan Lieb (Ohio Northern University), Cynthia Woodfield (Ohio Northern University)

In the emergency department (ED), blood culture collection contamination remains a continued problem. Blood culture contamination leads to increased healthcare costs and a decrease in patient satisfaction. Patients with contaminated blood cultures will be subject to unnecessary antibiotic treatments, lab tests, and invasive treatments (Self et al. 2013). The purpose of this quality improvement capstone was to evaluate and reduce the cause of blood culture contaminations in the ED. This study consisted of a pre and posttest regarding nurses’ familiarity with proper protocol for obtaining blood cultures. The test were distributed during shift report by the charge nurse. The goal sample size is IO-ZO nurses in the emergency department. The pretest will assess nurses’ openness to education while the posttest will assess the effectiveness of the education. The intervention consisted of education regarding current policy and evidence-based practice (EBP) for proper blood culture collection. The author of this capstone obtained hospital statistics regarding blood culture contamination before and after the intervention. Implementation of this intervention effectively reduced the number of costly blood culture contaminations in the ED.

“Reducing Falls in Neurological Patients”
Poster 28, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Abigail N. Hall (Ohio Northern University) Research Advisor: Nancy Schroeder (Ohio Northern University) Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)

Patients on acute neuroscience critical care units are at a higher risk for falls due to several different factors. The nature of neurological conditions puts the patient at risk for seizures, increased confusion, motor and sensory disturbances, altered mental status, orthostatic hypotension, weakness, and syncope. Additionally, many neurologic patients have a history of falls, which have been proven to significantly increase the risk for subsequent falls, likely resulting in further health risks (Rodriguez-Moliner, et al. 2017). Falls are a high-risk and costly issue in acute care facilities around the world. Therefore, staff should be fully educated regarding interventions available on the unit. Additionally, documentation such as fall risk assessments need to be completed by the nurse every shift to determine the level of interventions that are needed for each individual patient. Hospital policies are in place to ensure these required interventions are being utilized correctly and it is essential that staff are aware of and comfortable with these guidelines. This quality improvement project addresses these interventions and further educates staff on fall prevention strategies specific to patients with neurologic conditions. The purpose of this project is ultimately to enhance the education offered and therefore, reduce falls on the unit in 2018. A pre-test will be distributed to the staff to complete over the course of a week to assess their knowledge base. This information then allows insight into which areas need enhancement efforts. A subsequent post-test given the week after the offered education assesses the effectiveness of the provided education among nurses. This positively impacts the unit and the nursing profession in general by keeping patients safer, reducing health care institution cost, shortening hospital stays, and improving client satisfaction.

“Reducing Falls in Patients with Comorbidities”
Poster 34, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Paula K. Wells (Ohio Northern University) Research Advisor: Cynthia Woodfield (Ohio Northern University)

The purpose of this quality improvement project is to identify nurse’s knowledge on fall risk prevention. Falls and fall-related injuries can contribute to longer hospital stays, recurrent falls, or even death, especially within six months following a fall (Siri-an, Tirrell, Bean, Lipshitz, & Liu, 2017). Pre-test and post-test questionnaires explored nurses understanding of the appropriate use of fall prevention methods, knowledge on hospital policy, and the importance of providing patient education on the use of fall prevention methods. Using the pretest results, an educational intervention was developed and included information regarding effects of falls, appropriate fall risk prevention interventions, and hospital policy. Education was presented to staff nurses through verbal teaching with the inclusion of an educational pamphlet. The post-test evaluated nurses increased knowledge on fall interventions, prevention of falls, and the effects of falls in a patient with comorbidities. Through the process of assessing the knowledge of nurses and providing education on fall prevention, the number of falls occurring on this particular unit can be decreased through proper interventions thereby improving overall patient health. Nurses with an increased knowledge base on fall prevention interventions are able to provide patient centered care and reduce the likelihood of falls in at risk patients.

“Regulator of G-Protein Signaling 5 Protein Modulates Anxiety- and Depression-like Behaviors in the Absence and Presence of Angiotensin II-induced Hypertension”
Poster 17, 12:30-1:30 p.m., Ballroom
Presenters: Trevor C. Guisinger (Ohio Northern University), Haval Norma (Ohio Northern University) Research Advisors: Sophocles Chrissobolis (Ohio Northern University), Manoranjan S. D’Souza (Ohio Northern University), Sarah L. Seeley (Ohio Northern University), Boyd R. Rorabaugh (Ohio Northern University)

Hypertension is a major risk factor for cardiovascular disease. Angiotensin II (Ang II), which contributes to hypertension, may also contribute to anxiety and depression by causing oxidative stress. Regulator of G-protein signaling (RGS) proteins modulate responses to extracellular signals (such as Ang II) acting through G-protein coupled receptors. In this study, we examined the role of RGS5 in modulating cerebral vascular oxidative stress, and anxiety- and depression-like behavior in the absence and presence of elevated Ang II levels in adult male mice. Wild-type (RGS5+/+) and RGS5-deficient (RGS5−/−) mice were treated with vehicle (saline) or Ang II (1 mg/kg/d) for 21 days. Anxiety and depression-related behaviors were assessed in conscious mice; superoxide levels were examined in isolated cerebral vessels. In vehicle-treated RGS5−/− mice, anxiety-like behavior was increased compared to vehicle-treated RGS5+/+ mice, suggesting that RGS5 deficiency causes anxiety-like behavior. Combined RGS5 deficiency and Ang II treatment resulted in an increase in depression-like behavior, suggesting that combined RGS5 deficiency and Ang II treatment increased depression-like behavior. Ang II treatment or RGS5 deficiency had no effect on cerebral vascular superoxide levels. Overall, these data suggest important roles for RGS5 in modulating anxiety-and depression-like behavior.
Life itself is always in process, and there are incessant amounts of change one may deal with throughout their lifetime. While there are various changes and major events in the process of life, there are also interpersonal connections that help develop and form this process. Relationships themselves are continuously in development, require copious amounts of communication, and can lead us to question the connection on many levels due to tensions, conflict, personality, or simply how one interprets or approaches life as a whole. By examining Leslie Baxter and Barbara Montgomery’s theory of Relational Dialectics and questioning college students within a focus group, this study provides the application of the theory of Relational Dialectics with that of Empty Nest Syndrome. Furthermore, this study questions why tensions might form between students and parents after they have left the home for college.

“Role of RGS2 and RGS4 Proteins in Cocaine Reward”
Poster 15, 12:30-1:30 p.m., Ballroom
Presenters: Allison A. Stevens (Ohio Northern University), Thorne Stoops (Ohio Northern University), Madison Rose (Mount Vernon Nazarene University)
Research Advisors: Manoranjan S. D’Souza (Ohio Northern University), Boyd R. Rorabaugh (Ohio Northern University), Sarah L. Seeley (Ohio Northern University)

Cocaine addiction is a cause for preventable health- and crime-related cost borne by society. Currently, there are no medications for treating cocaine addiction. Hence there is a need to identify new neural targets for the treatment of cocaine addiction. Regulator of G protein-signaling (RGS) proteins are a family of more than 30 intracellular proteins that negatively modulate signaling pathways of G protein-coupled receptors (GPCRs). GPCRs play an important role in mediating the effects of neurotransmitters like dopamine and serotonin, which in turn play an important role in mediating rewarding effects of drugs like nicotine. However, the role of RGS proteins in mediating the rewarding effects of nicotine have not been fully investigated. The proposed work will utilize genetically-modified mice and conditioned place preference model to assess the role of RGS2 and RGS4 proteins in the rewarding effects of nicotine. The data is currently being evaluated. The proposed work will help elucidate the role of the RGS2 and 4 proteins in cocaine-induced behaviors and provide novel targets for treatment of cocaine addiction.

“Self-care Habits in Today’s Undergraduate Students”
Poster 44, 12:30-1:30 p.m., Ballroom
Presenter: Casley Shover (Bowling Green State University)
Research Advisor: Lauren Maziarz (Bowling Green State University)

The purpose of this research study is to examine the self-care routine of BGSU undergraduate students with the hopes of exposing the daily life of today’s undergraduate students. Are they thriving or merely trying to survive? This information will be obtained via correlations of student’s responses to a five part survey. Questions included areas of study such as sleep, nutrition, exercise, social relationships, and spirituality. Questions were scaled for quantitative analysis with several open-ended questions for a qualitative perspective. This format seeks to not only find out their habits, but to provide further insight into their daily health habits. This will further gain perspective of student’s general well-being or lack thereof. This research is going to provide an understanding of today’s undergraduate student’s lifestyle. Surveys will be sent out on March 27, 2018 and are expected to close in 3 weeks. Results are expected to comply with the thesis that today’s undergraduate students face many barriers to living a healthy lifestyle.

“Self-identification in Introverts, Extroverts and Ambiverts”
Poster 10, 12:30-1:30 p.m., Ballroom
Presenter: Sarah L. Seeley (Ohio Northern University)
Research Advisor: Mark D. Cruza (Ohio Northern University)

Self-identification is the process of perceiving oneself and is generally categorized into the three temperaments of Introvert, Extrovert, and Ambivert. The purpose of this research is to examine the self-identification of undergraduate students in these three temperaments. This purpose was carried out by using Likert-type scales which were then analyzed statistically. Results were found that introverts are significantly less likely to identify as introverts than extroverts. The finding of this research suggests that self-identification is related to the student’s personality type.
Poster 40, 12:30-1:30 p.m., Ballroom

Presenters: Kala Jiliani-Pritchett (Bluffton University), Janelle Johnson (Bluffton University), Lauren Dickerson (Bluffton University), Emma Eickholt (Bluffton University)
Research Advisor: Deanna Barthlow-Potkanowicz (Bluffton University)

Exploring the literature around introversion, extroversion and ambiversion, we found little information about the self-identification process. We sought to create a study in which we would look at what category one identifies oneself with and what category one would psychologically fit into. We then observed if there were any contrasts between one’s prediction and the category they tested into; predicting that introverted people would have the least differences.

We surveyed fifty-one people of diverse gender, collegiate year (including faculty), field of study, and athletic involvement. After categorizing themselves, our participants took an online quiz that placed them into one of the three categories. After analyzing the data we found that our prediction was correct and the introverted participants had the least amount of incorrect self-placements.

“Self-scent Detection for Homing Behavior in Whip Spiders”
Poster 28, 12:30-1:30 p.m., Ballroom
Presenter: Jillian Gosser (Bowling Green State University)
Research Advisors: Verner Bingman (Bowling Green State University), Daniel Wiegmann (Bowling Green State University)

Homing behavior in whip spiders is a fascinating and complex notion. Previous experimentation has shown that homing is still possible for the animals with the removal of eyesight, which leads one to conclude that olfaction is the probable sense that guides the animals home. The experiment I performed tests that idea in an overnight choice test between an animal’s self scent in a shelter or a clean shelter. Animals of the P. marginemaculatis species were given five days in an incubation shelter, where they had the chance to deposit their suspected self-scent on filter paper, while an identical piece of filter paper was incubated in a separate chamber, without an animal. In the test phase, animals were placed in a release shelter and video tracked throughout the night. Initial results indicate that whip spiders preferred the shelter containing the filter paper that was located in their incubation shelter, a finding consistent with the hypothesis that cuticular hydrocarbons deposited from an animal can be used to recognize a home refuge.

“Shareholder Theory versus Stakeholder Theory”
Paper 3, 10-11:45 a.m., Deans’ Heritage
Presenter: Marshall Kuieck (Ohio Northern University)
Research Advisors: Patrick Croskery (Ohio Northern University), David McClough (Ohio Northern University)

Many ideas as to how a business should conduct its operations have arisen over the years. The main goal of this project is to compare several theories. One of these theories, known as shareholder theory, looks at shareholders as the focus of running a business. As the shareholders are the owners of the company, it would only seem correct that their interests should be the ones expressed through the actions of the company and its employees—within the constraints of the law. The next theory is stakeholder theory. Stakeholder theory explains that a business should give focus towards the ‘stakeholders’ in society including its customers, employees, and all who have some sort of interest in the success of the business. The strengths and weaknesses of each theory are then observed, considering their responsibility to society, their roles as an agent, and the amount of power in which they either should, or should not, hold in society. Finally, the development of enlightened shareholder theory will be explored whose motive is to give directors the motivation to look towards long term decisions for positive effects on the corporations and, specifically, the shareholders—which would eliminate many of the issues shareholder theory holds.

“Shoe Brand Loyalty in the Cincinnati Area”
Poster 17, 10-11 a.m., Ballroom
Presenter: Austin Jensen (Ohio Northern University)
Research Advisor: H. Wilson (Ohio Northern University)

Adidas, Nike and Under Armour are all big name brands within the shoe industry. However, given the loyalty of most customers to their preferred shoe brand, markets for these companies vary from place to place and competition among shoe companies for increasing markets is fierce. This is especially true in Cincinnati, Ohio. In recent years, Nike has enjoyed being the most preferred shoe brand in Cincinnati. Recently Adidas has increased sales and is close to taking the top spot from Nike. This project examines shoe brand loyalty in Cincinnati.

“Shooting Smack: An Analysis of the Heroin Epidemic and Social Factors”
Paper 5, 10-11:45 a.m., Room 202
Presenter: Joseph A. Williams (Ohio Northern University)
Research Advisor: Keith Durkin (Ohio Northern University)
Faculty Sponsor: Robert Carrothers (Ohio Northern University)

This paper explores several studies that analyze relationships between opioid and heroin abuse and addiction and how that intersects with social class and race or ethnicity as well as mental health problems. Also included, is a discussion of sociological theory from Emile Durkheim to explore a discussion of bonding to society as a correlate of heroin use. The discussion is continued with an analysis using C. Wright Mills to explore the role of conflict in relation to heroin use. Limitations of each theorists’ conclusions in relation to the application of heroin use are discussed as well.

“Site Suitability Analysis of a Bookstore in Hardin County, Ohio”
Poster 26, 10-11 a.m., Ballroom
Presenter: Dominic Turnea (Ohio Northern University)
Research Advisor: H. Wilson (Ohio Northern University)

Many people enjoy reading as a popular pastime in America. Further, many are required to read for their job or education. The success of bookstores such as Barnes & Noble depends on these and other markets. They also depend on the relative location of their stores with respect to their customers. The current research analyzes the correlation between income and amount spent on books in Hardin County, Ohio. Specifically, it assesses the market of a new Barnes & Noble within Hardin County and suggests a viable location for this store. We conclude that a medium-size Barnes & Noble would prove quite lucrative if built just east of Kenton, Ohio.

“Ski Resort Industry in Ohio”
Poster 13, 10-11 a.m., Ballroom
Presenter: Mitchell Frisby (Ohio Northern University)
Research Advisor: H. Wilson (Ohio Northern University)

Many people look forward to winter as their chance to frequent ski resorts. This is particularly true in Ohio, where five resorts currently exist. The current research examines Ohio ski resorts, their respective amenities and services, and their popularity in terms of customers and revenue. While it can generally be said that Ohio enjoys this seasonal recreation, the current research shows a variable landscape influenced by services and equipment sales. We conclude that a new resort would be very successful during the winter months, and could capitalize on existing markets in the off season. We further propose a location for this new business.

“Skin Penetration of Caffeine from Marketed Eye Creams”
Poster 26, 12:30-1:30 p.m., Ballroom
Presenter: Amber Smith (University of Toledo)
Research Advisor: Gabriella Baki (University of Toledo)

Caffeine has recently become popular as a component of topical anti-aging cosmetic products due to its wide-ranging biological activity. The aim of this study was to determine the amount of caffeine that penetrated through a skin-like synthetic membrane from marketed eye creams. A prestige and a mass anti-aging eye cream
for women and an anti-aging eye cream for men were selected to be studied. Physicochemical characteristics, including pH, appearance and droplet size were studied. Permeation of caffeine was tested in vitro using Strat-M® membrane on Franz diffusion cells. Caffeine was analyzed using HPLC. Appearance of the products slightly differed, their pH was similar. All three eye creams were monodisperse, the average droplet size varied between 1.35 - 3 μm. The mass product for women contained the highest amount of caffeine in 1 g eye cream. In this 24-hour study, the largest caffeine permeation (0.49%) via Strat-M® membrane was observed from the prestige eye cream for women. Eye creams containing caffeine will be formulated using in silico modeling and tested for in vitro release and in vitro permeation. Data from this preliminary study will guide in designing the creams. A. S. acknowledges support from the UT Office of Undergraduate Research (FYSR).

“Skin Preparation of Electrocardiogram (EKG) Leads to Minimize Alarm Fatigue”
Poster 40, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Patrick Sullivan (Ohio Northern University)
Research Advisor: Cynthia Woodfield (Ohio Northern University)

Alarm fatigue is a universal issue which can occur on a variety of medical units in the hospital setting. Noise pollution that contributes heavily to alarm fatigue comes from telemetry monitors. These alarms sound for a variety of reasons including a failure to capture cardiac electrical activity, disconnected electrical leads, or patient physical activity. Proper skin cleaning and incorporating an electrocardiogram (EKG) lead care bundle has reduced the occurrence of alarms (Sendelbach, Wahl, Anthony, & Shotts, 2015). Ultimately, alarm fatigue has the potential to jeopardize patient safety and health outcomes. The purpose of this quality improvement (QI) project was to assess the nurse’s knowledge, skills, and attitudes (KSAs) towards proper skin preparation of EKG leads in relation to alarm fatigue. A pretest and post-test were developed and distributed to assess the nurse’s KSAs towards proper skin preparation and perceptions of alarm fatigue. Educational materials were then distributed to these nurses explaining the importance of proper skin preparation leading to minimal alarms. Demonstration of effective skin preparation for EKG leads was provided. A post-test was dispersed to the same nurses to assess the effectiveness of the educational materials. The intent of this QI project was to help reduce noise pollution on the medical unit to reduce the risk for alarm fatigue among nursing staff.

“Soybean Phytochemicals and Their Roles in Disease Resistance against Phytophthora sojae, a Root Rot Pathogen”
Poster 3, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Renee Dallard (Bowling Green State University)
Research Advisors: Vipa Phuntumart (Bowling Green State University), Gayathri Beligala (Bowling Green State University)
Faculty Sponsor: Cordula Mara (Bowling Green State University)

Economic losses caused by the oomycete pathogen, Phytophthora sojae, in soybean production is estimated to be $1-2 billion worldwide. Utilization of resistance genes is an effective method to breed Phytophthora-resistant soybean cultivars. Disease resistance can also be conferred by incorporation of beneficial microorganisms. The goal of this study is to explore the protection of soybean from Phytophthora infection using a microbiome approach. The initial step is to identify the bacteria associated with susceptible and resistant soybean varieties. To isolate soybean-associated root microbes, soil from 5 different soybean fields located within Wood county, Ohio were collected and used to grow susceptible (Williams) and resistant (Williams82) soybean varieties under greenhouse conditions. Soybean seedlings were allowed to grow for 4-7 days, and rhizosphere and endophytic microorganisms were extracted from the soil surrounding soybean roots of both varieties. These microbial suspensions were coated onto susceptible soybean seedlings followed by inoculation with P. sojae. Microbial extract from Williams82 plants grown in the soils of location D (GPS coordinates; 41.40824, -83.702) showed enhanced resistance against P. sojae infection in Williams, indicating microbial mechanisms might be involved in disease suppression. Culturable rhizosphere and endophytic bacteria were isolated from the microbial suspensions of location D, which were then identified by 16s rDNA analysis followed by BLASTN and phylogenetic analysis (Mega 7). Identification of eight representative colonies showed that they are bacteria in the genera Pseudomonas, Bacillus, Agrobacterium, Rhizobium and Sphingobacterium. Williams and William82 both contain Pseudomonas and Bacillus while Agrobacterium, Rhizobium and Sphingobacterium species are found to associate with only Williams82.

“Spatial Analysis of NBA Spending and Revenue”
Poster 40, 10-11 a.m., Ballroom
Presenter: Don Chapman (Ohio Northern University)
Research Advisor: H. Wilson (Ohio Northern University)

Professional basketball has enjoyed much popularity among Americans in recent decades. In terms of overall revenue, the NBA consists of small, medium, and large markets teams. These three categories all have different strategies for generating revenue. The current research examines expenditures and the revenue for each NBA team and postulates that spatial correlations exist that are strongest nearest the cities of each respective NBA team, and weaken with distance from each city.

“Stellar and Gas Kinematics in the Elliptical Galaxy NGC 2434”
Poster 40, 10-11 a.m., Ballroom
Presenter: Bradley Lockhart (Ohio Northern University)
Research Advisor: Jason Pinkney (Ohio Northern University)

We observed the E0 elliptical galaxy NGC 2434 in 2001 using the B&C spectrograph on the Magellan I 6.5-m telescope. The slit was not long enough to sample the sky spectrum without including galaxy light and so a new approach was developed for sky subtraction. We describe the approach briefly and report here on the findings for NGC 2434. The sky contamination in the NGC 2434 data was primarily airglow since it was observed in dark sky conditions. Our new sky subtraction method reveals that a little less than half of the counts at the ends of the slit (R>35") are attributable to sky and the rest are galaxy. The new method allows stellar kinematics measurements beyond 25" from the galaxy's center at two different position angles. Our kinematics help clarify the galaxy's major axis, which is ambiguous from surface photometry alone. Subtraction of a stellar template allows us to also measure extended gas kinematics in NGC 2434 from the residual [OIII] emission. We are aware of no other published gas kinematics for this galaxy.

“Stellar and Gas Kinematics in the Lenticular Galaxy NGC 3489”
Poster 39, 10-11 a.m., Ballroom
Presenter: Matthew Sibila (Ohio Northern University)
Research Advisor: Jason Pinkney (Ohio Northern University)

We observed the SO3 lenticular galaxy NGC 3489 using the B&C spectrograph on the Magellan I 6.5-m telescope in 2001. The slit was not long enough to sample the sky spectrum without including galaxy light and so a new approach was developed for sky subtraction. We describe the approach briefly and report here on the findings for NGC 3489. The sky contamination in the NGC 3489 data was primarily airglow since it was observed in dark sky conditions. Our new sky subtraction method reveals that about half of the counts at the ends of the slit (R>35") are attributable to sky and the rest are galaxy. The absolute galaxy counts are greater than the other galaxies observed that night, improving the reliability of kinematics beyond 25". Our stellar velocity dispersions are significantly lower than Caon et al (2000) but consistent with the results of SAURON (Emsellem et al. 2004). Subtraction of a stellar template allows us to also measure gas kinematics in NGC 3489 from the residual [OIII] emission.

“Study Factors on Academic Achievement”
Poster 1, 10-11 a.m., Ballroom
**Context:** Academic achievement determines the student’s level of expertise in regards to the academic content. It also plays a role in life after school, determining whether the student will be successful or not. The suggestion can be made to schools to aid in planning curriculums and choosing teaching strategies which will help them recognize and adjust to the difference between genders in the classroom. **Objective:** To examine the response differences between male and female study factors on academic achievement. We hypothesize male and female students will have different study factors leading to academic success. **Design:** By the use of Qualtrix, the study will examine the different study factors individuals use. The opinion of the student’s current academic status will also be considered. A survey will be sent out via email to all Ohio Northern University students. **Participants:** Volunteer sample of Ohio Northern University students 18 or older. There are roughly 3,000 students at Ohio Northern University but due to compliance there was a 283 student response.

“Suitability Analysis of a First Federal Bank of the Midwest Branch in Ada, Ohio”
Poster 7, 10-11 a.m., Ballroom
Presenter: Konner Aldridge (Ohio Northern University)
Research Advisor: H. Wilson (Ohio Northern University)

Residents in rural areas tend to have limited options when it comes to securing their financial resources. In Ada, Ohio, for example, there are only two FDIC-insured banking institutions within the village. This research examines the viability of establishing a new financial institution in Ada, a branch office of First Federal Bank of the Midwest. It examines local demographics and consumer needs in establishing the need for such an institution. The research also compares services provided by existing institutions in Ada to those offered by First Federal Bank of the Midwest. We conclude that, based on the local financial needs, establishing this new business in Ada would be a successful venture.

“Synthesis of Asymmetric [O,N,N,0] Ligands from Benzoxazine Precursors”
Poster 8, 12:30-1:30 p.m., Ballroom
Presenter: Claire L. Griffith (Ohio Northern University)
Research Advisor: Amelia Anderson-Wile (Ohio Northern University)

Over the past decade, interest has grown in the development of organometallic complexes for the polymerization of monomers from renewable resources. Our group’s research targets the polymerization of lactic acid to Poly(lactic acid) (PLA) using different metal complexes (Ti, Mo, V, etc) bearing variations of amine bis(phenolate) ligands. These [OONO] ligands have been synthesized by a Mannich reaction between formaldehyde, 2,4-disubstituted phenol, and N,N-dimethylethylenediamine. So far, the reported variations of these ligands have all been symmetric. Current work focuses on the development of a method for isolating the benzoxazine intermediate of the Mannich reaction, then reacting it with a different substituted 2,4-disubstitutedphenol to form asymmetric amine bis(phenolate) ligands. The asymmetric [OONO] ligands will then be complexed with titanium isopropoxide and their catalytic activity compared to that of the symmetric amine bis(phenolate) ligands.

“Synthesis of Bimetallic Complexes Using Previously Isolated Palladium Complexes with Amine Bis(phenolate) Ligands”
Poster 7, 12:30-1:30 p.m., Ballroom
Presenter: Nicole M. Braunscheidel (Ohio Northern University)
Research Advisor: Bradley M. Wile (Ohio Northern University)

Bimetallic complexes featuring earth abundant, dissimilar metals have been shown to exhibit divergent reactivity from their monometallic counterparts. Using existing palladium complexes featuring partial coordination of various amine bis(phenolate) ligands, we sought to prepare bimetallic complexes with a titanium center. The combination of titanium, an early transition metal with palladium, a late transition metal, provides an opportunity to study the characteristics of an early-late bimetallic complex. A series of bimetallic complexes with amine bis(phenolate) pendant, bridging, and/or fluorine-appended ligands are reported.

“Talking it Out: Investigating the Relationship between Verbal Ability and Externalizing Behaviors among College Students”
Poster 34, 12:30-1:30 p.m., Ballroom
Presenters: Ian Smith (Ohio Northern University), Josilyn Lieb (Ohio Northern University), Clara A. Huffman (Ohio Northern University)
Research Advisor: Ann Johnson (Ohio Northern University)

Although some research suggests that children struggling with externalizing behaviors may experience co-occurring difficulties with language development, there is a dearth of research examining the relationship between verbal abilities and maladaptive social behaviors in adults. The current study sought to examine the relationship between verbal ability and adult versions of externalizing behavior, such as alcohol use, ADHD symptoms, delinquent activity, and poor emotion regulation. Preliminary analyses have suggested that verbal abilities may predict self-reported ADHD symptoms but not other measures of externalizing behavior.

“Teenage Tobacco Use in Ohio”
Poster 21, 10-11 a.m., Ballroom
Presenter: Austin Morehouse (Ohio Northern University)
Research Advisor: H. Wilson (Ohio Northern University)

Teenage tobacco usage has declined significantly in the past 10 years. This decline is due to greater knowledge of health risks associated with tobacco, ad campaigns emphasizing the use to quit, and overall rising prices of tobacco products. Despite these statistics, there are still retail stores dedicated to selling tobacco products and accessories. The current research examines many variables associated with recent tobacco use in Ohio, including the decline in the tobacco consumer, revenue generated, geographic clustering of use, and poor emotion regulation. Preliminary analyses have suggested that verbal abilities may predict self-reported ADHD symptoms but not other measures of externalizing behavior.

“The Connection of Music along the Silk Road”
Poster 1, 12:15 p.m., Room 202
Presenter: Lydia D. Smith (Ohio Northern University)
Research Advisor: Sarah Waters (Ohio Northern University)

The Silk Road, a series of ancient trade routes dating back to 100 BCE, was an influential part of life throughout Asia and even stretched into parts of Africa and Europe. Because of the trade that occurred for over a thousand years, cultures, science, language, arts, and music from each of these areas spread all over the Silk Road. In turn, musical styles, modes, and instruments influenced and were influenced by each other along the Silk Road. While listening to music from China as compared to Turkey, little similarities may be heard at first, but many of the instruments from each of these places have common ancestors. Similarly, musical modes and styles from China and across the world have been found to resemble one another, proving the exchange of thoughts along with the exchange of traded goods. In addition, music in this area is primarily learned aurally, giving opportunities for traders to easily pick up even small influences from along their journeys. In a similar way, then, the listener will “travel” along the Silk Road, learning about the musical styles and instruments from China, Central Asia, India, Persia, and Turkey.

“The Design of the Ohio Northern University Map for International Students”
Poster 12, 12:20-1:20 p.m., Bear Cave
Presenter: Kenji Kosai (Ohio Northern University)
Research Advisor: William Britton Rowe (Ohio Northern University)
There are a lot of new students or visitors coming from all over the world to ONU. These international students study and live around Ada. The ONU campus map helps them to find buildings and services which they need. These students get the map at orientation meetings or McIntosh information desk. The numbers on the map are assigned to the alphabetical order list of buildings. Considering the demographics of these students, is the map easy to understanding and to use by the international students? Three research methods (design audit, scenario analysis, and design lifestyle research) are used to investigate the information design the ONU map.

“The Development of Intramolecular Indicator Displacement Assays for Determination of Enantiomeric Composition of Chiral Carboxylates”
Poster 2, 12:30-1:30 p.m., Ballroom
Presenter: Johnathon Durgala (Bowling Green State University)
Research Advisor: Pavel Anzenbacher (Bowling Green State University)

Due to different biological activities of enantiomers, there are strict guidelines for the quantification and use of chiral compounds by the U.S. Food and Drug Administration (FDA). Thus, the ability to determine enantiomeric excess (ee) in chiral compounds is important for the development of new chiral drugs. Optical spectroscopy based ee determination is of particular interest because the superior sensitivity, a short analysis time and circumventing of the expensive chromatographic separation. In our study we used enantioselective indicator Displacement Assays (eIDAs) for the determination of enantiomeric excess (ee) of carboxylic acids. In this eIDA we utilize two chiral receptors (Cull(1R,2R)-1,2-N, N-bisquino-polin-2-methyl-diphenyl-1,2-diamine))2+ and (Cull(1S,2S)-1,2-N, N-bisquino-polin-2-methyl-diphenyl-1,2-diamine))2+ in conjunction with Coumarin 343 as a fluorescent indicator. This chiral receptor-fluorophore sensing ensemble is shown to be useful in determination of enantiomeric excess of carboxylic acids including non-steroidal anti-inflammatory drugs (NSAIDs).

“The Effect of Song Lyrics on the Perception of Men's Attractiveness”
Poster 38, 12:30-1:30 p.m., Ballroom
Presenters: Ilaria DiBernardo (Ohio Northern University), Alyssa Jones (Ohio Northern University), Elijah Miller (Ohio Northern University), Dean Cooley (Ohio Northern University)
Research Advisor: Megan Kraynak (Ohio Northern University)

Bressler and Balshine (2006) found that pairing humorous statements with either an average or unattractive face would make the face seem more attractive, compared to when pairing faces with neutral statements. Additionally, men rated women as more attractive when using humor while women did not rate men attractive with humor (Lundy, Tan, & Cunningham, 1998). There is an abundance of research about attractiveness when males are requested to rate female faces (Xu, Rhaman, & Zheng, 2016; Gueguen, Meineri, & Fischer-Lokou, 2014), but few studies have used male faces as the target. The current study aims to determine how humorous song lyrics and sexually suggestive lyrics impact the perception of average and unattractive male faces (Bressler, & Balshine, 2006, Lundy, Tan, & Cunningham, 1998). Participants will either listen to songs with suggestive or humorous lyrics and then rate either an average or unattractive face with a 7-point Likert scale. First, we hypothesize that average faces will be rated as more attractive compared to unattractive faces in every condition. Second, we hypothesize that humorous song lyrics will influence a higher rating of average and unattractive faces.

“The Effectiveness of Static and Dynamic Stretching Programs on Hamstring Flexibility in Male and Female Intercollegiate Soccer Athletes”
Poster 3, 10-11 a.m., Ballroom
Presenters: Casey D. Miller (Ohio Northern University), Abbey Oswald (Ohio Northern University)
Research Advisor: Kurt Wilson (Ohio Northern University)

Context: Decreased hamstring flexibility can be a risk factor for low back pain (LBP) and lower extremity injuries. Increasing hamstring flexibility may reduce such risk. Objective: To analyze the effectiveness of a four-week static and dynamic flexibility program on hamstring flexibility. Design and Setting: Research was randomized and controlled. Participants were divided into a control group, static stretching, or dynamic stretching protocol. Participants: Athletes from the men’s and women’s intercollegiate soccer teams at Ohio Northern University. Interventions: Non-control participants performed static or dynamic exercises 3 times per week during off season workouts. Pre and post survey was taken and hamstring flexibility was measured using the Active Knee Extension Test. Main Outcome Measures: An ANOVA test was used to detect significance between groups. Surveys were analyzed to determine significant changes in LBP, and performance. Results: Static and dynamic groups both showed a significant changes in hamstring flexibility. There was no significant change in LBP and perceived effect of hamstring flexibility on performance. Conclusions: Dynamic and static stretching programs can be used in the future to promote hamstring flexibility.

“The Effects of Combined Exercise and Masturbation on Free Recall”
Poster 35, 12:30-1:30 p.m., Ballroom
Presenters: Stephanie Kenedburg (Ohio Northern University), Cheyenne Mader (Ohio Northern University), Ashley Mast (Ohio Northern University), Victoria Sexton (Ohio Northern University), Ian Smith (Ohio Northern University)
Research Advisor: Megan Kraynak (Ohio Northern University)

Moderate exercise before studying can enhance free recall (Galas, Minakata, & Kelemen, 2011), and chewing gum may have similar effects (Miles, Charig, & Eva, 2008). Our research investigates the relationship between chewing gum, exercise, and memory. We will have four groups of participants (exercise and chew, do not exercise and do not chew, exercise without chewing, and chewing without exercise). The gum groups will be given gum to chew for two minutes. The exercise groups will perform aerobic exercises for five minutes. The order of exercising and gum chewing will be alternated weekly to ensure that order effects are not an influencing factor. After participants complete these tasks, a picture of 30 items will be shown followed by a spatial memory distractor test. Then, a written free recall for the earlier 30 items will be conducted. We expect to find that those who exercise as well as chew gum will score the highest on a semantic memory test, with those who only exercise scoring higher than those who just chew gum. We expect that these groups will all score higher than the no-exercise, no-chew control group.

“The Effects of Packaging Design on Consumer Purchases”
Paper 7, 11:10 a.m.-12:10 p.m., Bear Cave
Presenter: Emily Fergus (Ohio Northern University)
Research Advisor: William Britton Rowe (Ohio Northern University)

Subconsciously we form opinions on everything we encounter, from the things we wear to the food we eat. These opinions help us make educated decisions about what we incorporate into our lives. Walmart, the biggest retailer in the world, carries around 142,000 different items at supercenter stores, and nearly a third of the U.S. population visits these stores regularly. With so many options, our instincts are important in helping us decide what we buy. Of course the literal cost of the product is important, but how does packaging design affect this? Through benchmarking, analysis of visual voice and customer intercepts, this research will help identify people who buy what they do and the possible methods used by companies to persuade people to choose their products over competitors. Specifically, cereal will be used for analysis because it is a product purchased by many on a regular basis and there is a large variety of options available to shoppers. The conclusions made from this study can help consumers identify methods of persuasion and make better educated purchasing decisions.

“The Effects of Parental Incarceration on Young Children”
The effects of having a parent or parents in prison affects children, starting at young age. This research looks at crime in the United States, and the rise in women being incarcerated. This research encompasses many studies dating back to the early nineties all the way to present studies. Topics studied in this research include; the learning, behavioral, and developmental issues associated with the effects of parental incarceration, a cost - benefit analysis of raising children in prison nurseries, short and long-term effects on mothers and children, the issues children face in school along the probability of them graduating high school and college, and the pros and cons of prison nurseries in women facilities and conjugal visits in men's facilities. Even though some may think children would be better off in foster care, the anticipated outcome of this research is to allow conjugal visits and prison nurseries because parental incarceration can cause behavioral and developmental issues, and this could be fixed a long with the recidivism rates among citizens in the US prison population. This research is then compared and critiqued to early philosophers in sociology.

“The Effects of Traveling”
Paper 3, 12:1-45 p.m., Wishing Well
Presenter: Monica Fouisy (Ohio Northern University)  
Research Advisor: Mark D. Cernea (Ohio Northern University)

This paper is researching how traveling impacts a person’s mood and how traveling impacts a person’s view of other cultures. A survey will be sent out to people of all ages via email to collect data for the research. Only people who have traveled are allowed to participate in the survey. This survey is not limited to only Americans and will be sent out to people across the world. People from all over who are passionate about traveling are predicted to respond. It is predicted that traveling will have had a positive impact on respondents’ mood and respondents have a greater appreciation and draw to other cultures after traveling.

“The Fame: A Look at the Modern-day Celebrity”
Paper 1, 1-1:45 p.m., Bear Cave
Presenter: Alexander Michael Capeneka (Ohio Northern University)  
Research Advisor: William Britton Rowe (Ohio Northern University)

Lady Gaga once said, “There is no stopping. I didn’t create the fame; the fame created me.” In a world where everyone is getting their 15 minutes of fame, Lady Gaga has managed to stay a relevant force in pop culture for the last decade. With a debut album (The Fame, 2008) inspired by the celebrity lifestyle, and a follow up EP (The Fame Monster, 2010) that explored the negative side of fame, Lady Gaga seems to know what she is doing when it comes to being in the spotlight. This study is going to explore branding and brand identity comes to being in the atmosphere they want to create for their followers. To find out whether or not live-streaming ads are worth pursuing, the method will be tested on a few participants. This will determine its effectiveness, and the consumers response of the advertisement. A tactic that will be used is copy testing, but for these live streamed ads. A survey would be given to those who participated and how they react would be recorded. The performance of both pre-recorded ads and live ones will be analyzed, and they will be compared to conclude which method could potentially be more beneficial to the companies, as well as the consumers. The results of these tests could begin the switch from pre-recorded advertisements to live ones.

“The Impact of Distractor Type and Relaxation on Task Attention”
Poster 32, 12:30-1:30 p.m., Ballroom
Presenters: Keely Wagner (Ohio Northern University), Alanis S. Allison (Ohio Northern University), Courtney Tinkey (Ohio Northern University)  
Research Advisor: Kristie Payment (Ohio Northern University)

Previous research suggests that distractors significantly increase anxiety levels while individuals attempt to complete a task, thus having a negative impact on task performance (Mosser, Moran, & Leber, 2015). Further, distractors that involve people have been shown to be significantly more distracting than distractors that are non-social in nature. (Doherty, Patai, Duta, Nobre, & Searf, 2016). As well as this, research on relaxation techniques (specifically deep-breathing methods) has been found to reduce test anxiety (Cho, Ryu, Nah, & Lee, 2016). The current study observed whether engaging in a brief deep breathing exercise before performing a visual perception task would allow participants to better ignore distracting conversations. 76 participants (22 males, 54 females; mean age of 19.59 years) were recruited. Using a 2x3 between-subjects design, relaxation technique (technique or no technique) and distractor type (socially relevant, socially irrelevant, or no distractor) were manipulated. The number of correct responses on the visual perception task was the dependent variable. During the target task, participants were instructed to identify the direction of briefly flashed arrows, either right or left. As the target task was being completed, experimenters held either a socially relevant conversation, a socially irrelevant conversation, or no conversation. A 2x3 between subjects ANOVA indicated that no significant main effects occurred, suggesting that neither relaxation technique nor distractor type had any impact on task performance. These conclusions, however, are severely limited due to ceiling effects. Future research on this topic needs to be done with a more challenging target task.

“The Impact of Restaurant Colors on Customers”
Paper 4, 10-11 a.m., Bear Cave
Presenter: Savannah Carter (Ohio Northern University)  
Research Advisor: William Britton Rowe (Ohio Northern University)

In order to best examine why individuals eat at the restaurants they do, one must analyze how a company’s colors impact customers’ mood and hunger. With a gap analysis, one can see the differences between types of restaurants and how different colors work for different styles of restaurants. Through phase research, the customer’s entire restaurant experience can be analyzed as well as those individual’s impression from the colors around them. Likewise, observational research will demonstrate how customers interact with the restaurant environment based on the atmosphere the colors create. This information can be beneficial for up-and-coming restaurants who need to know the best way to design their business in order to attract customers. Through secondary research, it is clear to see that warmer colors have a tendency to increase heart rate whereas cool colors create an unpleasant or somber environment. Based upon the data collected, restaurateurs intentionally base their colors upon the type of atmosphere they want to create for their customers.

“The Importance of Effective Medication Communication on Improving Patient Outcomes”
Poster 46, 11:15 a.m.-12:15 p.m., Ballroom
Presenter: Alec Lunney (Ohio Northern University)
The purpose of this quality improvement (QI) project is to improve patient outcomes by assessing and improving patient education regarding prescribed medication among nurses working in the Coronary Care Unit at Blanchard Valley Hospital in Findlay, Ohio. It has been found that patients do not fully understand their medications and do not adhere to proper use because information is not sufficiently communicated, leading to poor patient outcomes. A pretest/posttest of 10 questions was administered to nursing personnel using a Likert Style Survey. The pretest assessed nurses’ communication to patients about medications and if there is a specific method that nurses use for patient education. Using the pretest results, an educational intervention was developed and presented to the nursing staff. This education included: communicating important medication information to patients, ways to improve patient education, and enhancing nurse communication with patients regarding important medication information. A posttest was distributed to determine nurses’ increased knowledge and understanding of communication with patients regarding medications.

“The Political Landscape in Cuyahoga County”
Poster 24, 10-11 a.m., Ballroom
Presenter: Audrey Ryder (Ohio Northern University)
Research Advisor: H. Wilson (Ohio Northern University)

Cuyahoga County, in Northeast Ohio, has a reputation as a predominantly Democrat urban area surrounded by Republican rural counties. For example, most Cuyahoga County residents voted for the Democrat candidate during the past several presidential elections. However, this general political trend is more intricate when examined at a local scale. The political of residents within each community and zip code within Cuyahoga County vary and are influenced by a myriad of factors. This project examines the factors and reveals the diverse ideological landscapes that exists in Cuyahoga County.

“The Relationship between Gel Elasticity, Foamability and Amount of Carrageenan/Glycerin Used in Shower Jelly”
Poster 27, 12.30-1:30 p.m., Ballroom
Presenter: An N. Huynh (University of Toledo)
Research Advisor: Gabriella Baki (University of Toledo)

Shower jelly products have been becoming popular personal care products in the last few years. Elasticity is one of the main parameters characterizing shower jellies. The main purpose of this research was to formulate various shower jellies by varying the amount of carrageenan and glycerin used, and study how changes in composition affects the elasticity and foaming of the products. First, the formulation process was developed and finalized. Shower jelly batches contained 4% sodium laueth sulfate, 1.5-2.5% carrageenan, 30-60% glycerin, water and a 0.5% preservative blend. After formulation, foaming was tested and compared to a marketed product. Finally, gel elasticity was tested using a TA.XTplus texture analyzer and TA-S1Q, 0.5” cylinder probe, to understand the relationship between gel elasticity and amount of carrageenan/glycerin used. Results show that the higher amount of carrageenan and glycerin used produces a more elastic jelly and less foamability. Studying the relationship between product composition and product performance is a very important step during prototype development and product optimization.

“The United States’ Political Interference in the Islamic World”
Paper 4, 12:1-45 p.m., Deans’ Heritage
Presenter: Derek K. Price (Ohio Northern University)
Research Advisor: Kofi Nsia-Pepra (Ohio Northern University)
Faculty Sponsor: Nusta Carranza Ko (Ohio Northern University)

Since the time of the Ottoman Empire, in the Middle East, the United States has used its economic, military, and technological powers to shape the politics of that region. This trend of foreign political influence by the United States increased drastically after the Cold War and the rise of the unipolar world. The hegemonic reign of the United States has forced Islamic countries to submit to the insertion of foreign agendas within their respective nations. This political influence has led to positive outcomes like democratization and resource security but, it has also lead to a clash of civilizations, terrorism, political instability, and forced migrations. This study analyzes the history and effect of the United States’ political influence over the Middle east and offers plausible solutions to this ongoing problem.

“The Use of Disinfectant Intravenous Caps on a Cardiac Unit”
Poster 10, 11:15 a.m.-12:15 p.m., Ballroom
Research Advisor: Christie Kipper (Ohio Northern University)
Research Advisor: Jamie Hunsicker (Ohio Northern University), Cynthia Woodfield (Ohio Northern University)

Evidenced-based practice has shown that the use of disinfectants, such as alcohol caps, on intravenous (IV) tubing ports can decrease occurrences of infection, including sepsis. Yet occasionally, nurses either do not use a disinfectant or improperly clean the ports on the IV tubing. The purpose of this Quality Improvement project was to evaluate the consistent use of disinfectant caps for IV catheter tubing. Nurses on the cardiac floor at Lima Memorial Hospital were given questionnaires to determine their knowledge, usage, and perceptions of disinfectant caps. After collecting the questionnaires, the nurses participated in a presentation regarding the use of IV alcohol caps and a post test was administered concerning the learning outcomes of the presentation. The aim of this study was to increase the awareness of the complications associated with not properly disinfecting IV ports, so more, if not all nurses on the floor use the alcohol caps to decrease infection risk.

“Time- and Sex-dependent Effects of Stress on Learning and Memory”
Poster 2, 10-11:45 a.m., Wishing Well
Research Advisor: Phillip R. Zoladz (Ohio Northern University)

Stress-induced alterations of learning and memory have been associated with several psychological disorders. Thus, developing a better understanding of stress-related changes in cognition could provide insight into the mechanisms underlying the onset and/or maintenance of these disorders. Research has shown that stress can enhance, impair, or have no effect on learning and memory. Such effects depend, in part, on the biological sex of the stressed participant, and the timing of stress relative to learning. This presentation will summarize the findings of several studies from our laboratory that have examined stress effects on learning and memory and their dependency on sex and the timing of stress relative to learning. Results from such studies suggest that stress immediately before learning enhances long-term memory and improves memory accuracy, effects that have been associated with autonomic mechanisms (e.g., heart rate). On the other hand, stress that is temporally separated from learning impairs long-term memory, which has been associated with corticosteroids (e.g., cortisol). Moreover, females appear to be more sensitive to the enhancing effects, yet more resistant to the impairing effects, of stress on long-term memory. The implications of these findings with regards to understanding emotional memory and psychological disorders will be discussed.

“Time-sensitive Medication Administration in Critical Care: Quality Improvement Project”
Poster 32, 11:15 a.m.-12:15 p.m., Ballroom
Research Advisor: Christina Liebrecht (Ohio Northern University)
Faculty Sponsor: Cynthia Woodfield (Ohio Northern University)

The purpose of this quality improvement project is to explore the nurses’ knowledge, in the cardiac care unit (CCU) at Blanchard
Valley Hospital about the importance of administering scheduled medications within the specified time frame to decrease adverse outcomes among patients. Administering medication outside of the scheduled time frame, in critical care settings, increases the possibility for adverse effects among patients. Nurses were given a pre-test using the Likert scale which included various questions about how often they administer medications outside of the alluded time frame. Several nurses completed the survey and demographics included both male and female nurses with ASN and BSN degrees with varying levels of experience from new graduate nurses to nurses with 10 or more years of nursing experience. Nurses were then provided with an informational handout about the potential risks posed to the patient if medications are not given at the proper time. The informational handouts were also posted in common areas throughout the unit in places such as the break room and main nurses’ station. A posttest will then be given to the nurses to assess if their knowledge and actions have changed regarding medication administration after receiving their educational handout. Ensuring medications are being given at the proper time will reduce the number of potentially harmful medication errors, thus improving patient outcome in the CCU at Blanchard Valley Hospital.

“Traditional Lecture and Active Engagement Teaching Methods for Theatre Education”
Paper 5, 12:1-4:5 p.m., Wishing Well
Presenter: Eli A. Underwood (Ohio Northern University)
Research Advisor: Mark D. Cruea (Ohio Northern University)

Pedagogical is a difficult word. The shape of the word itself is clunky and misshapen; giving an orator a moment of pause before speaking it into the air, and causing several attempts while reading it. The syllables clash against each other creating a blinding and aurally difficult task for the listener’s ears. Not to mention the intellectual distance that it flaunts; a far off and remote island of the chosen few who can speak and think in a high caliber not meant for the normal man. In many ways, this description of the word pedagogical is exactly what practitioners of pedagogy fear their teachings may become: distant, unappealing, and useless. The area of pedagogy, the study of how people teach, is a common but yet unconscious area of study for performing artists when the subject itself is evasive and organic?

“Understanding Consumers of Digital Templates”
Poster 28, 10-11 a.m., Ballroom
Presenter: Hana Pittman (Bowling Green State University)
Research Advisor: Jerry Schnep (Bowling Green State University)

This project aims to discover what drives individual consumers to buy digital templates for personal events online, and what method of delivery of the digital template is most suitable to the consumer. This data will be used to enable sellers of digital templates to improve their offering and gain a greater understanding of their customers. The two methods of delivery are editable PDFs requiring the customers to have Adobe Acrobat, and “Templett,” an in-browser editing software that gives the customer greater editing powers. Both of these methods are used by current sellers, but it is unclear which offers a greater advantage for both customers and sellers. The presentation will include data from actual customers who have bought and used these templates, as well as supplemental data from user testing. There will be quantitative data collected, as well as qualitative open-ended answers to get the best results.

“Understanding Post-traumatic Stress Disorder through Body Adornment”
Poster 45, 12:30-1:30 p.m., Ballroom
Presenter: Linore A. Huss (Bowling Green State University)
Research Advisors: Thomas P Muir (Bowling Green State University), Amanda McGuire Rzicznek (Bowling Green State University)
Faculty Sponsor: Marissa L. Saneholtz (Bowling Green State University)

The problem I chose to address is the misconception that post-traumatic stress disorder (PTSD) survivors fit a particular description or backstory. I interviewed five survivors and recorded their stories, then made a piece of jewelry or interactive art to portray their struggle. These pieces and a pamphlet with the stories will be on display at BGSU’s BFA show which opens on March 17th. I predict that the majority of viewers will be interested enough to pick up and skim through the pamphlet, and that a subset of those will understand PTSD in a new light. One major issue in our society is a lack of communication about difficult issues; this project will make it easier to start a conversation about PTSD and other mental illnesses. My ultimate goal is to educate people about a variety of mental illnesses as I continue the series and open their minds to the struggle that those around them are going through every day.

“Unwanted among the Wealthy: Why Lucy Audley Was Institutionalized?”
Poster 3, 12:1-4:5 p.m., Room 202
Presenter: Dominic Tornia (Ohio Northern University)
Research Advisors: Douglas Dowland (Ohio Northern University), Lisa Robeson (Ohio Northern University)

Mary Elizabeth Braddon's Victorian novel Lady Audley's Secret tells the story of Robert Audley and how he exposes the dark secrets of his new step-mother, Lucy Audley, who has just married Sir Michael, inheriting the wealth of Audley Court. In the novel, Lucy is perceived as a devilish woman that is eventually sent to the mad house by Robert, who accuses Lucy of killing his best friend, George Talboys. Robert is unaware that George Talboys is Lucy’s former husband that left her when she was pregnant and dirt-poor. This essay analyzes how Lucy Audley wasn’t actually mad, and that her aggressive determination to be a financially successful woman was not acceptable to a Victorian society at the time. Lucy attempts to prove that women can overcome poverty and live lavishly, yet she would not be accepted by high-class men and women at the time. While analyzing female interactions in the nineteenth-century, misogyny, and the mentality of the bourgeoisie, it is clear that Lucy Audley was never insane, and she is institutionalized because she does not conform with the standards society has expected of her.

“Using Intelligent Algorithms to Advance Mechanical Design Methods”
Poster 32, 11-11 a.m., Ballroom
Presenter: Cyler Caldwell (Ohio Northern University)
Research Advisor: Lawrence Funke (Ohio Northern University)

Genetic algorithms can be advantageous for mechanical design by searching a large design space and converging to practical solutions. Searching a large design space allows for many solutions to be found that may appear distinct, but have no appreciable differences in practice. In this research, a neural network is used to categorize the design solutions produced by a genetic algorithm so they can be examined more clearly. The solutions investigated herein pertain to a morphing mechanism problem in which the optimal solution would match a desired set of shapes while requiring negligible force/moment to move the mechanism. The clustering application in the MATLAB Neural Network Toolbox is used to reorganize and group similar designs. The clustering application uses unsupervised learning, meaning the user does not need to provide an associated category for a given design in order to train the neural network. This is advantageous for the application of categorizing the solutions found by the genetic algorithm since the number of distinct solution categories is unknown. The neural network enables the solutions from the genetic algorithm to be classified into appropriate categories so that the user can identify the actual number of practical solutions.
**“USPSTF Recommendations and the Community Pharmacist: Current Opportunities to Improve Population Health”**

Paper 4, 10:45 a.m., Wishing Well  
Presenter: Scott J. Alexander (Ohio Northern University)  
Research Advisor: Natalie A. DiPietro Mager (Ohio Northern University)

**Objective:** The Health Policy Institute of Ohio reports that Ohio ranks highly in terms of access to care, but second to last in population health. Community pharmacists can close this gap through the provision of preventive care services. The primary objective of this study was to assess whether Ohio community pharmacists currently provide or educate patients on evidence-based preventive medicine recommendations from the U.S. Preventive Services Task Force (USPSTF).

**Methods:** A random sample of 500 community pharmacists licensed in Ohio received a Qualtrics survey via email assessing current practice and perspectives on USPSTF recommended services. Reminders were sent every 3-4 days; data collection continued for a month. The study was IRB-approved.

**Results:** Ninety-three responses were included in the final analysis (19% response rate). Sixty-four percent of respondents were female; 52% held a PharmD. Only 21% of respondents were familiar with the USPSTF. However, many respondents were providing the majority of their services in their pharmacy; the most common were blood pressure screening (52%) and tobacco cessation (41%). Few pharmacists reported providing referrals for certain services, such as cancer screenings. Those not currently providing or referring for USPSTF services showed interest in developing such services.

**Discussion/Conclusion:** No known studies that explore the community pharmacists’ provision of USPSTF recommended services. Respondents provided or referred patients for some USPSTF recommended services; those who currently did not were interested in finding ways to do so. As many respondents reported being unfamiliar with USPSTF recommendations, the opportunity to educate pharmacists on these recommendations and increase their perseverance exists.

**“Utilizing Virtual Reality Gaming as an Alternative to Mild Intensity Cardiovascular Exercise: Scared to Health by Being Scared to Death”**

Poster 15, 11:15 a.m.-12:15 p.m., Ballroom  
Presenters: Charis D. Kasler (Ohio Northern University), Alyia Hutman (Ohio Northern University), Josh Mohn (Ohio Northern University), Kiera L. Robinson (Ohio Northern University), Stephanie M. Walton (Ohio Northern University)  
Research Advisors: Vicki A. Motz (Ohio Northern University), Rema Suniga (Ohio Northern University)

According to a 2017 study, 58% of college students did not meet recommended weekly low-moderate exercise guidelines set by the World Health Organization (American College Association, 2017). Virtual reality gaming has been suggested as an alternative source of cardiovascular stimulus for those who do not meet weekly guidelines (Dongrae et al., 2017). This study examined the effects of a high stress virtual reality game, Dreadhalls, and a low stress virtual reality game, Coca, on HR and blood pressure of players and whether or not the activity met the WHO standard of metabolic equivalent of task (MET) based on age, weight and HR. Averages of MET and blood pressure of 14 students, age 21.2±1.1 years, were determined at base time and at five minute intervals during 25 minutes of playing either Coca or Dreadhalls. No significant change in heart rate, MET, and blood pressure was observed during play of Coca or Dreadhalls. (p=0.22, p=0.47 by paired t-test respectively). During neither game did players have sufficient HR to meet WHO standards for low-moderate exercise.

**“Variable Activation Functions in Neuroevolution”**

Poster 35, 10-11 a.m., Ballroom  
Presenter: Derek Michael Smith (Ohio Northern University)  
Research Advisor: Heath J. LeBlanc (Ohio Northern University)

Neural networks are seeing widespread deployment in applications such as autonomous driving, voice-driven user interfaces, and control of complex systems. With recent advancements in convolutional neural networks and deep learning, neural networks research has seen a resurgence. In traditional neural networks, a single activation function, which sets the triggering behavior of the artificial neuron, is fixed for each layer of neurons prior to training. Normally, supervised learning is used. An algorithm trains the network to a specific data set of input-output pairings, such as images and labels. All training algorithms attempt to optimize the neural network to the training set by adjusting connection weights between neurons. Proposed is the Variable Activation Function Neural Network (VAFNN), an architecture where activation functions are varied on a per-neuron basis as part of the optimization process. This method has the potential to model similar behavior as deep neural networks with fewer layers, therefore making the network more efficient. In addition is the possibility of using activation functions that need not be monotonic, continuous, or differentiable. This is made possible by Neuroevolution, a Darwinism-inspired for optimizing network parameters. The results of VAFNN are compared to the traditional fixed activation function approach on specific problems.

**“VEX Robot”**

Poster 30, 10-11 a.m., Ballroom  
Presenters: Conner W. Karg (Ohio Northern University), Andrew Grose (Ohio Northern University)  
Research Advisor: Richard Miller (Ohio Northern University)

Andrew and I will be competing in the VEX Robotics competition in Atlanta Georgia April 12th through the 14th. Andrew and I have been working on our robot for this competition since October. We have conducted research and came up with multiple designs for our robot throughout the first semester. We finalized our design and began building the first week of the spring semester. Our robot is 23 inches long and 18 inches wide, which is within the tolerance that the VEX rules state. The goal of this year’s competition is to have a robot that can pick up and stack cones in designated areas marked in the field. There are 3 parts to this competition, the notebook that documents all of our research, designs, and equations used, then there is the autonomous portion, which is where we program the robot to pick up as many cones as possible within 45 seconds. Finally we have the opportunity to control the robot and pick up as many as possible with a remote control to navigate the robot. The judges will score each team in each category and whoever has the most points wins the overall competition.

**“Wayfinding on Bluffton University’s Campus”**

Paper 16, 1:30-2:30 p.m., Bear Cave  
Presenter: Joshua P. Eliola (Ohio Northern University)  
Research Advisor: William Britton Rowe (Ohio Northern University)

When choosing a college to attend for at least four years, one tends to judge a campus in two ways of imagery: abstract and scenicographic. 865 students attend Bluffton University. The the goal of this research is to find out if the effect of environmental form on wayfinding. Wayfinding is defined as spatial problem solving. Wayfinding is knowing where you are in an environment, knowing where your desired location is, and knowing how to get there from your current location. Bluffton University will be tested in both abstract (map-like) performance and scenicographic (photographic composition) performance. I will be visiting the campus to observe it and find things like signage and other environmental aspects to the way-finding of the campuses and complete a design audit. I will also be researching what makes good way-finding for a campus. I will also conduct a visual anthropology. I will evaluate whether or not the existing signage and wayfinding devices are adequate to enable people to easily find their way through the environment and effectively utilize it. My prediction is that Bluffton University’s wayfinding with be effective, but there will be areas where improvement will be needed.

**“Wayfinding on Ohio Northern University’s Campus”**

Paper 18, 1:30-2:30 p.m., Bear Cave  
Presenter: Allison Ditch (Ohio Northern University)
Wayfinding is extremely important when it comes to the success of navigating through places. Dictionary.com defines wayfinding as "signs, maps, and other graphic or audible methods used to convey location and directions to travelers." For first-time visitors and first-year college students, it is imperative for their ability to get places. The signage on buildings and around campus make a significant impact on the success of locating destinations. The signage around campus is not easy to find or it is too small to read from a distance. There is also no consistency of signage on the buildings. The research question that I will be answering is, "Is there a way to improve the wayfinding of campus?" The tactics I will be using during this research will be situational analysis, qualitative surveys, and visual anthropology. Data and conclusions for this research will be discussed in the presentation.

“Where’s the Money?: Ohio Campaign Contributions in Urban Areas”
Poster 16, 10-11 a.m., Ballroom
Presenter: Abigail Greene (Ohio Northern University)
Research Advisor: H. Wilson (Ohio Northern University)

The key to any successful political campaign relies on the ability of candidates to raise funds. This will prove especially important in November 2018, when Ohio Voters will head to the polls to elect new state officials. Given the fact that the Ohio Secretary of State office will revise voter districts in 2020, the race for Secretary of State in the upcoming election is especially crucial to the future of Ohio politics. In order to improve the odds of winning elections, politicians put significant funds and time into planning events that promise to gain access to voters and to receive campaign contributions. This research looks at the voter demographics and socioeconomic status of varying cities in Ohio to find the best location for a Secretary of State candidate to hold fundraising events.

“White House Website Design”
Paper 15, 12:20-1:20 p.m., Bear Cave
Presenter: Cheyenne Eldridge (Ohio Northern University)
Research Advisor: William Britton Rowe (Ohio Northern University)

Citizens need to be able to gather adequate information about their federal government. Our government is a democracy, meaning it is citizen run. In order for citizens to run the nation, they must have access to information in a way they understand and want to read. The current White House website is professional-looking and modern but, ultimately, lengthy and difficult to navigate. By making the website geared more towards the average person, interest and understanding in our government may increase. Doing this would involve providing clear and adequate sections. This would help to provide readable sections that would be responsive across multiple platforms. To improve the website, a communication audit that would track the changes of the website over time, user testing to evaluate a user's ability to navigate the website, and a gap analysis to understand how it compares to other websites would be used to measure the current inadequacies that must be changed.

“White Racial Identity as Envisionment Building”
Poster 44, 10-11 a.m., Ballroom
Presenters: Penny Fiebiger (Ohio Northern University), Brock Hays (Ohio Northern University), Caitlin Silva (Ohio Northern University), Emily Wilson (Ohio Northern University)
Research Advisor: Diana K. Garlough (Ohio Northern University)

Pre-service teachers (PSTs) who have experienced P-12 schools in mostly White communities and want to teach in anti-racist ways, are often not sure how and what to teach. For these educators who seek to address questions associated with White dominance and diversity, we use the work of Howard (2016) who offers a healing process. The process is four fold and is framed by honesty, empathy, advocacy, and action. These PSTs are co-investigators with their faculty advisor, who seek to better understand White racial identity development, and bring to the forefront the experiences and perceptions of PSTs from their own perspectives, and to challenge assumptions. As such, the data sources used in this qualitative research study include a variety of written work by these PSTs. The constant comparative method of analyzing data was used to develop codes from themes found within the data. A phenomenological methodology allows for evolving decisions about data collection within the emergence of theory. Langer’s Envisionment Building Model (1990, 2011) provided the lens through which to interpret the data.

“Who Isn’t Getting a Statin?: Clinical Characteristics Associated with Appropriate Statin Prescribing”
Poster 19, 12:30-1:30 p.m., Ballroom
Presenter: Stephanie M. Walton (Ohio Northern University)
Research Advisor: Benjamin D. Aronson (Ohio Northern University)

Background: Statins are recommended for some individuals with diabetes due to the elevated risk for cardiovascular disease. Despite this, prescribing rates of statins for qualified patients with diabetes remains lower than desirable. Objective: The purpose of this study was to explore the clinical characteristics that influence appropriate prescribing of statins in patients with diabetes. Methods: Data are from a longitudinal community-based participatory research project study. This study recruited a sample of 194 American Indian adults recently diagnosed with type 2 diabetes from five reservation communities in the upper Midwest. Indian Health Service clinic staff collected data from patient charts including current medications, past medical history, and laboratory values. In addition, study participants were asked about medications, comorbid health conditions, and other demographic characteristics. Participants who meet guideline criteria for statin use will be identified. Logistic regression models will be used to determine the associations between clinical characteristics and appropriate statin prescribing. Results: Results of this study are currently in progress. Discussion: The findings from this study will identify the most influential clinical characteristics associated with appropriate statin prescribing. This can be used to identify interventions to improve statin prescribing.

“Working Hard to Remember: Academic Habits and Working Memory”
Poster 33, 12:30-1:30 p.m., Ballroom
Presenters: Clara A. Huffman (Ohio Northern University), Keely Wagner (Ohio Northern University), Kaitlyn Hurd (Ohio Northern University)
Research Advisor: Ann Johnson (Ohio Northern University)

Understanding the cognitive underpinnings of procrastination, a problem faced by many typically developing adults, may shed light on disorders in which this is a central feature of the presentation, such as Attention-Deficit/Hyperactivity Disorder (ADHD). In previous studies, we found that self-reported working memory related to self-reported procrastination behaviors (Johnson et al., 2015). In the current study, 103 college-aged participants completed spatial and verbal working memory tasks as well as self-report measures of procrastination and ADHD symptoms. We found that those reporting higher levels of ADHD symptoms displayed verbal working memory component capacity estimates opposite of those typically found in adolescents with ADHD (Gibson et al., 2010). We did not find any differences in capacity estimates of spatial working memory components related to ADHD or procrastination.
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In fall 2018 look for announcements of the 2019 Ohio Northern University Student Research Colloquium and the 2019 NWOH Undergraduate Symposium for Research and Scholarship at Bowling Green State University.
What Else to Do Today at ONU

Statue of the Rev. Dr. Martin Luther King Jr.

While on campus, please visit our newly unveiled statue of the Rev. Dr. Martin Luther King Jr. King spoke in Taft Gymnasium on Jan. 11, 1968. It was one of the last speeches he gave at a college or university before his assassination in Memphis, Tenn., on April 4.

Located between Taft Memorial and the Tilton Hall of Law, the statue was dedicated on April 17, 2018. The keynote address was given by Rev. Bernard LaFayette Jr., who worked alongside King and has devoted his life to King’s final instructions to him to “institutionalize and internationalize nonviolence.” LaFayette was a co-founder of the Student Nonviolent Coordinating Committee (SNCC). He was a leader of the Nashville movement lunch counter sit-ins and the freedom rides, and he directed the Alabama voter registration project in Selma. Other speakers included historian Christopher E. Manning, associate professor of history and assistant provost on academic diversity at Loyola University Chicago, and sculptor Tad McKillop, who created the King statue. McKillop also created the sculpture of Ohio Northern founder Henry Solomon Lehr on the front of campus.

Student Exhibitions and Performances
Friday, April 27, 2018

Art and Design Senior Capstone Exhibition
Elzay Gallery of Art, Wilson Art Center
10 a.m.-4:30 p.m.
Brandon Emert, graphic design
Cameron Gale, graphic design
Alexandra Johnson, graphic design
Shiori Kasuga, studio arts
Rachel Lynn Rusnak, graphic design
Samantha Sweeney, graphic design
William Wilson, studio arts

Advertising and Graphic Design Student Juried Exhibition
Stambaugh Gallery, Freed Center for the Performing Arts
12-5 p.m.
Tetsuharu Hashimoto, management, best of show

ONU Wind Orchestra Concert
Biggs Theatre, Freed Center for the Performing Arts
7:30 p.m.
Dr. Thomas Hunt, Director

Local Restaurants
All distances are from ONU’s McIntosh Center.

Ohio Northern University

★ Polar Espresso, Main Lobby, McIntosh Center
  • baked goods, Starbucks coffee and bottled drinks

★ The Dining Hall, McIntosh Center
  • home-cooked style dishes, fresh deli sandwiches, vegetarian options, pizza, desserts and more

★ WOW Café in the White Bear Inn, McIntosh Center
  • wings, wraps, sandwiches and snacks

A The Inn at Ohio Northern, 401 W College Ave
  • upscale, but relaxed
  • 489 feet

B Cosí at Northern, 534 S Main St
  • artisan sandwiches, soups and salads; their centuries-old flatbread recipe is made every 20 minutes
  • 0.3 mile

Village of Ada

c Taco Bell, 530 S Main St
  • national fast-food chain serving a variety of Tex-Mex foods, including tacos, burritos, quesadillas, nachos, other specialty items, and a variety of value menu items
  • 0.3 mile

d East of Chicago Pizza, 430 S Main St
  • a 6-state restaurant chain offering different styles of pizza, buffalo wings, breadsticks, and subs
  • 0.4 mile

e Subway, 424 S Main St
  • national fast-food chain serving submarine sandwiches (subs) and salads
  • 0.4 mile

f Padrone’s Pizza, 219 S Main St
  • northwest Ohio chain serving pizza, pasta, salads, soups, wraps, and more
  • 0.5 mile

g McDonald’s, 132 S Main St
  • national fast-food burgers and fries chain
  • 0.6 mile

h China King, 125 S Main St
  • traditional Chinese-American favorites from savory Mongolian beef to hot and fresh spring rolls
  • 0.6 mile

i Jalapeño’s Mexican Grill, 109 S Main St
  • burritos, bowls, tacos, quesadillas, salads, and nachos assembled before your eyes with your choice of ingredients
  • 0.6 mile

j S Brothers Pizza, 105 S Main St
  • pizza, pasta, wings, salads, sandwiches, and more
  • 0.6 mile

k Tavern 101, 101 S Main St
  • traditional Midwestern cuisine and grill favorites
  • 0.6 mile

l El Campo, 204 N Main St
  • family-owned; authentic Tex-Mex specialties like taquitos, carnitas, burritos, fajitas and enchiladas
  • 0.7 mile

m New China, 218 N Main St
  • traditional Chinese dishes such as wonton soup, chicken fried rice, and Kung Pao shrimp; warm, attentive service
  • 0.7 mile

n Viva Maria, 124 E Buckeye Ave
  • family-owned; delicious, made-from-scratch Italian specialties like lasagna, calzones and Philly cheesesteaks; huge portions for reasonable prices
  • 0.7 mile