REACH 2019
Research Experiences and Creative Heights

49th Annual
Student Research Conference

Saturday
March 23, 2019
Downing Student Union

Western Kentucky University
Bowling Green, KY
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CONFERENCE SCHEDULE

7:30 am – 2:30 pm  **Student and Judge Registration**
Third Floor Lobby
*ongoing throughout the day*
*register at least 30 minutes before session*

8:15 am – 9:45 am  **Concurrent Morning Sessions  pages 12-17**
Sessions 1-8  Oral Papers and Performances
Rooms  2113, 2123, 2124, 3003 – 3007
Sessions 9-17  Posters
Rooms  3024, Second Floor Atrium

9:45 am – 10:00 am  **Morning Break**

10:00 am – 11:15 am  **Conference Keynote Lecture**
Dr. Johanna Kovarik
"Lights in the Darkness: Stories from the Underground"
Room 3020

11:15 am – 12:45 pm  **Lunch Break**
*presenters, co-presenters, and judges receive free lunch ticket with name badge at Fresh Food Company entrance*

12:45 pm – 2:15 pm  **Concurrent Afternoon Sessions I  pages 17-23**
Sessions 18-25  Oral Papers and Performances
Rooms  2113, 2123, 2124, 3003 – 3007
Sessions 26-34  Posters
Rooms  3024, Second Floor Atrium

2:15 pm – 2:30 pm  **Afternoon Break**

2:30 pm – 4:00 pm  **Concurrent Afternoon Sessions II  pages 23-29**
Sessions 35-42  Oral Papers and Performances
Rooms  2113, 2123, 2124, 3003 – 3007
Sessions 43-51  Posters
Rooms  3024, Second Floor Atrium
DSU FLOOR PLANS

2nd FLOOR

3rd FLOOR

KEY:
- SGA Chambers
- Restrooms
- AARC & TLC
- Judicial Affairs
- WKU Restaurant Group
- Student Activities
- ID Center
- Elevators
- Center for Career & Professional Development

poster sessions
oral paper sessions
keynote lecture
registration
judges' room
Beneath layers of rock, caves and karst systems hide away some of the most productive groundwater on earth and are an amazing repository of fossils, archaeological artifacts, and unique minerals. A growing number of scientists are heading underground to study caves, and it all begins by letting the geology of the cave speak to us through mapping these hidden environments. As the data hidden away in caves have the power to impact science across the board, so do the unique stories and perspectives other people have to share. To truly understand others and to work collaboratively, we must leave space for their story to emerge without influencing it with our bias. Equally important is defining our own narrative, even when people would define it for us. Learn more about what caves can teach us and travel around the subterranean world with Dr. Johanna Kovarik as she brings her own research story to light through images of these fantastic places.

Dr. Johanna Kovarik has studied caves and karst watersheds since she got her first job with the National Park Service in New Mexico in 2003. She earned her Master's degree in Geoscience from Western Kentucky University and her Ph.D. from the University of South Florida. Her research work is primarily in land use and watershed dynamics, groundwater vulnerability, and natural resource management. She has joined grant-funded cave expeditions around the world as a geoscientist. Dr. Kovarik served for the past seven years as the National Cave and Karst Program Lead for the U.S. Forest Service, moving into this role from her work as a geologist and hydrologist on the Tongass National Forest in southeast Alaska. In 2015 she was awarded the National Rise to the Future: Friend of Fish and Watershed Award from the U.S. Forest Service for her national and international work with karst watersheds, and she is a Fellow of the National Speleological Society.
The WKU Student Research Conference showcases scholarly activities of graduate and undergraduate students of diverse disciplines from across the main and regional campuses. An annual tradition since 1970, the conference has provided opportunities for thousands of students to present papers, performances, posters, exhibits, and displays on their research and creative endeavors.

Scholarly activity is original and creative work that is shared with colleagues and the general public. Research is a form of scholarly activity that involves the discovery of new knowledge. Other forms of scholarship include the development of new technologies, methods, materials or uses; the integration of knowledge that leads to new understanding; and artistry that creates new insights and interpretations. As demonstrated by the Student Research Conference, students significantly enrich their academic experiences at WKU by engaging in scholarly activity.

WKU has a long history of promoting student research and creative activity. Between 1970 and 2002, the WKU Chapter of Sigma Xi organized and funded the WKU Student Research Conference. Sigma Xi is a national research honor society of scientists and engineers that recognizes scientific achievement. The society is a diverse organization of members and chapters dedicated to companionship in science and engineering and advancement of knowledge through research, teaching, and service. For the next three years, the conference was jointly sponsored and organized by Sigma Xi and the University Honors Program. In 2006, WKU hosted a weekend-long celebration of student scholarship that included the Potter College Undergraduate Conference on Friday and the annual WKU Student Research Conference on Saturday, the latter again sponsored by Sigma Xi and the University Honors Program. The following year, a special committee composed of representatives of each college, the University Honors Program, and Sigma Xi organized a single conference. In 2006-2007 Sigma Xi and the Office of the Provost provided financial support for the conference.

In 2008 Provost Barbara Burch created the Student Research Council, a university-wide committee charged with promoting student scholarly activity on campus and organizing the annual student conference. Since that year, the Student Research Council has organized the annual Student Research Conference, with financial support provided by the WKU Chapter of Sigma Xi, the Office of the Provost, the Office of Research and Creative Activity, and other university units. With support from the Office of the Provost and the Office of Research, in 2012 the Student Research Council developed a weeklong celebration of student scholarship called REACH (Research Experiences and Creative Heights) Week. Currently REACH is coordinated by the Office of Research and Creative Activity and spans the entire spring semester, highlighting student and faculty scholarship at events hosted by WKU colleges and units. The 49th Annual Student Research Conference is a major university-wide event of REACH.

The 49th Annual WKU Student Research Conference proudly showcases 294 research projects and creative works. There are 158 posters and exhibits, 131 oral papers, four performances, and one video. A total of 375 students are presenters and co-presenters at the conference, including 294 undergraduate students, 77 master’s students, and four doctoral students. An index of presenters is provided at the end of this program. In addition, 106 graduate and undergraduate students are listed as co-authors on the papers, posters, and performances presented this year.

The interdisciplinary nature of the conference is evident in the broad range of subject areas covered in the presentations. Student participants represent diverse disciplines from 38 schools, departments, programs, and institutes in all colleges.

Agriculture  
Art  
Astrophysics  
Biochemistry  
Biology  
Business Sciences  
Chemistry  
Communication  
Communication Sciences and Disorders  
Computer Information Systems  
Computer Information Technology  
Counseling and Student Affairs  
Economics  
Engineering and Applied Sciences  
English  
Family and Consumer Sciences  
Finance  
Folk Studies and Anthropology  
Geography and Geology  

Health Sciences  
History  
Interdisciplinary Studies  
Journalism and Broadcasting  
Kinesiology, Recreation and Sport  
Mathematics  
Music  
Philosophy and Religion  
Physical Therapy  
Teacher Education  
Physics and Astronomy  
Political Science  
Psychological Sciences  
Psychology  
Public Health  
Social Work  
Special Instructional Programs  
Teacher Education  
Theatre and Dance
The research and creative projects presented at the conference are organized into graduate sessions and undergraduate sessions with six students (with a few exceptions) in each session. Students are grouped into sessions based on the subject areas of their projects: natural sciences, social sciences and education, health and human services, arts and humanities, business, and interdisciplinary studies.

WKU faculty, professional staff, and retired faculty and staff serve as judges to evaluate student presentations at the conference. The judges select one winner from each of the sessions listed in this program. Session winners will be announced on the Student Research Council website at www.wku.edu/studentresearch by Monday, March 25. Winners will receive award certificates via their mentors, and all student presenters will receive judges’ feedback via their mentors after the conference.

On behalf of the entire campus community, the WKU Student Research Council extends appreciation and congratulations to the hundreds of students participating in the conference. We applaud your talent, creativity, dedication, and commitment to making the most of your educational experience at WKU. Your passion for learning and academic excellence, as well as your motivation to overcome challenges, not only distinguishes you from your peers but also serves as an inspiration to others. We are proud of your accomplishments, and you should be too.

WKU faculty and staff who have supervised the students on their research and creative projects are referred to as “mentors” and are identified parenthetically in the detailed session listings on pages 12–29. A total of 145 faculty and staff served as mentors on the projects presented at this year’s conference. We commend the mentors for their support of student scholarly activities and for their assistance in preparing students for the conference.

Listed below are the 96 WKU faculty, staff, and retired faculty and staff who served as judges at this year’s conference. We greatly appreciate the assistance of the judges and thank them for volunteering. Many are veteran judges who have supported the conference for years or decades.

Shahnaz Aly
Farhad Ashrafzadeh
Melanie Autin
Simran Banga
Julie Lyn Barber
Leslie Baylis
Mark Berry
Kevin Bilyk
Lauren Bland
Katrina Burch
Manohar Chidurala
Eric Conte
Jason Crandall
Elisabeth Curtis-Howe
Xiuhua Ding
Sarah J. Edwards  Kumi Ishii  Anna Patsfall
Ali Oguz Er  Jonathan Jeffrey  Roberta Pope
Tim Evans  Patricia Kambesis  Attila Por
Yuan Fang  John Kasumba  Eric Rappin
Ann K. Ferrell  Susan Keesey  Melanie Richter
Autumn Forschler  Molly Kerby  Claire Rinehart
Jim Fulkerson  John Khouryieh  Naomi Rowland
Simon P. Funge  Jae Kim  Mark Schafer
Karen Furgal  Rodney King  Megan Schargorodski
Jeffrey Galloway  Cheryl Kirby-Stokes  Kevin Schmaltz
Marilyn Gardner  Elisabeth Knight  Niles Sharme
Cecile Garmon  David Lee  Rich Shumate
Jennifer Gill  Caryn Lindsay  Kandy Smith
Sherry Godbey  Trish Lindsey Jaggers  Michael Smith
Thomas Gross  John Loughrin  Cheryl Stevens
Chris Groves  Gayle Mallinger  Trini Stickle
Dominique Gumirakiza  O. E. Mansour  Jenni Teeters
Sanju Gupta  Sara McCaslin  Tim Thornberry
Kirolos Haleem  April McCauley  Rachel Tinius
Whitney Harper  Allie McCready  Huanjing Wang
Anne Heintzman  Andy Mienaltowski  Carol Watwood
Sarah Herrick  Yaser Mowafi  Adam R. West
Gail Hiles  Matthew Nee  Aaron Wichman
Lawrence Hill  Leslie North  Blairanne Williams
Jean-Luc Houle  Morteza Nurchesmeh  Matt Woodward
Ted Hovet  Ahmet Ozkan Ozer  Rong Yang
Sandra Hughes  Anthony Paganelli  Sonia Young

Funding for the 49th Annual WKU Student Research Conference and other REACH activities was provided by the Office of the Provost and Vice President for Academic Affairs and the Office of Research and Creative Activity.

The WKU Graduate School provides grants to graduate students to support scholarship that promotes inquiry and contributions to knowledge. A number of the graduate students presenting today were assisted by funding from the Graduate School.

A variety of funding opportunities are available to assist undergraduate students with their scholarship. In 2012 the Office of the Provost and Vice President for Academic Affairs and the Office of Research and Creative Activity initiated an internal funding program for undergraduate students called Faculty-Undergraduate Student Engagement (FUSE) grants. FUSE grants are designed to support students’ intellectual development by fostering active engagement in the areas of research, creative and scholarly activities, and/or artistic performances. A total of 664 undergraduate students have received FUSE grants since the inception of the program, many of whom are among the conference participants this year.
Ryann Gregory from the Office of Research and Creative Activity provided countless hours of logistical planning and expertise that were crucial to coordinating the conference.

Alicia Carter, Amy Bingham DeCesare, Bryan Lemon, Clinton Lewis, Corie Morell-Martin, Tommy Newton, Bob Skipper, and other members of the WKU Office of Public Affairs staff provided vital assistance with electronic advertising, press and social media releases, photography, conference artwork design, and a View from the Hill video segment. We appreciate the support of Will Hoagland at the College Heights Herald.

Diana Keeling provided expert database support to the Student Research Council.

WKU faculty members Simran Banga, Rodney King, Matthew Nee, and Enakshi Roy delivered informative professional development workshops for students in advance of the conference.

The Downing Student Union staff at WKU provided logistical support for the conference. WKU Dining prepared lunch in the Fresh Food Company, and WKU Catering provided refreshment support in our judges’ deliberation room.

The WKU Student Research Council organizes the annual conference. Council members represent the following campus units: academic colleges, Honors College, Graduate School, University Libraries, University Senate, Gatton Academy, Sigma Xi, Student Government Association (SGA), and Office of Research and Creative Activity. Members in 2018-2019 are Darlene Applegate (co-chair), Simran Banga, Cheryl Davis, Uma Doraiswamy (co-chair), Scott Gordon, Ryanne Gregory, Xiaoxia “Silvie” Huang, Ismail Civelek, Christopher Keller, Morteza Nurcheshmeh, Nyla M. Rogers, Enakshi Roy, Brigid Stakelum, Derick B. Strode, and Rachel Tinius. For more information about the Council, visit www.wku.edu/studentresearch. The Council sincerely appreciates the students, faculty, staff, and community members who contributed to the great success of this interdisciplinary conference, as well as the friends and family members who attended the event.

**Explanation of Presentation Listings**

The program includes details for each presentation in the following order: presenter, co-presenters (as applicable), co-authors (as applicable), the session title, and the mentor for a project. Each WKU student was permitted to serve as the primary presenter on one presentation at the conference. Up to three co-presenters and up to six co-authors could also be listed. The sample below illustrates the format.

**Sample**

**Presenter Last Name, First Name; Co-Presenter Last Name, First Name; Co-Author Last Name, First Name; “Title of a Great Presentation” (Mentor First Name Last Name)**
CONCURRENT MORNING SESSIONS
8:15 – 9:45 am

Session 1  Room 3003, Graduate Papers, Arts and Humanities
Judges  Cecile Garmon (moderator), David Lee

8:15  Little, Hunter "Composing Proactive Approaches: Discussing Student Mental Health in Composition Classrooms" (Daniel Liddle)
8:30  Kendrick, Samuel "Photographic Manipulation in Bible Land Atlases" (Ann Ferrell)
8:45  Baxter, Morgan "America's Pursuit of a Master Race" (Jennifer Hanley)
9:00  Break
9:15  Spalding, Helen "The Valley of the Fallen: The Intersection of Religion and Nationalism in a Spanish Civil War Monument, 1939-1980" (Tamara Van Dyken)
9:30  Bowles, Hunter "The Evolution of Combat Medicine" (Katherine Hudepohl)

Session 2  Room 3004, Graduate Papers, Natural Sciences
Judges  Cheryl Stevens (moderator), Chris Groves

8:15  McCaslin, Lauren; Schulte, Bruce "Documenting Marine Mammal Behavior and Evaluating the Benefits and Consequences of Viewing Marine Mammals in Southcentral Alaska" (Bruce Schulte)
8:30  Appala, Keerthi; Conte, Eric; Kasumba, John; Carlisle, Anne; Agga, Getahun E; Loughrin, John "Quantification of Tylosin Antibiotics and Antibiotic Resistance Genes in Cattle Waste" (Eric Conte)
8:45  Fox, Jason "An Index-Based Assessment of Tourism Development Impacts on Cold-Climate Hydrologically-Dominant Landscapes" (Leslie North)
9:00  Nixon, Jedidiah "Cryptic Speciation in the Pseudanophthalmus pubescens Species Group (Coleoptera: Carabidae: Trechiinae)" (Keith Philips)
9:15  Mendis, Ruchini "Sensitivity Analysis for Tumor Growth Model" (Ngoc Nguyen)

Session 3  Room 3005, Graduate Papers, Natural Sciences
Judges  Kevin Schmaltz (moderator), Blairanne Williams

8:15  Ren, Qizheng; Ashwini, Lokesh; Kukkala, Tejasvi "Web-Based Website Creator" (Michael Galloway)
8:30  Gartland, Beverly; Willis, Victoria; Maupin, Holly; Milliner, Autumn; Downing, Jennifer; Gill, Jennifer "Time Budgets in Horses during Continuous and Space-Restricted Rotational Grazing" (Jennifer Gill)
8:45  Bhavsar, Viral; Kasumba, John "Effect of Antibiotics on Methane Production from Anaerobic Digestion of Agricultural Waste" (Eric Conte)
9:00  Rooney, Brigit "Assessing the Relationship between Tourism and African Elephant (Loxodonta africana) Habitat Use in Zambezi National Park, Zimbabwe" (Bruce Schulte)
9:15  Abdidatarov, Bektur; Er, Ali Oguz; Loomis, Devon; Khenner, Mikhail; Saidjafarzoda, Ilhom "Nanosecond Pulsed Laser Deposition of Pb Thin Film on Si (111)" (Ali Oguz Er)
### Session 4  Room 3006, Undergraduate Papers, Arts and Humanities
**Judges**  Mark Berry (moderator), Ted Hovet, Anthony Paganelli

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<tr>
<td>8:15</td>
<td>Roberts, Elizabeth  &quot;Local Radio and Websites: How Radio Stations in the Tri-State Area Use Their Websites and Social Media to Engage Audiences&quot;  (Enakshi Roy)</td>
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<td>8:30</td>
<td>DePoy, Hannah  &quot;Canada’s Memorialization of Indigenous Residential Schools&quot;  (Marko Dumančić)</td>
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<td>8:45</td>
<td>Lyons, Sarah  &quot;Baby Domination: The Aid of Unrealistic Behavior and Subjectivity in Baby-Specific Films&quot;  (Gillian Knoll)</td>
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<td>9:00</td>
<td>Adkins, Emily  Payne, Holly  &quot;Helicopter Parenting as a Function of Family Conformity and Conversation&quot;  (Holly Payne)</td>
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<td>9:15</td>
<td>McCoy, Rachel  &quot;I’ve Imagined Death So Much It Feels Like a Memory: The Purpose of Death in Nineteenth Century British Poetry&quot;  (Rob Hale)</td>
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### Session 5  Room 3007, Undergraduate Papers, Arts and Humanities
**Judges**  Jean-Luc Houle (moderator), Gail Hiles

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<td>8:15</td>
<td>Briggs, Emma  &quot;The Utopic Balance between Adaptation and Tradition: Examining the Success of Amish and Mennonite Communities&quot;  (Anthony Harkins)</td>
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<td>8:30</td>
<td>Watson, Hayley  &quot;The Evolution of Fairy Tales&quot;  (Ted Hovet)</td>
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<td>8:45</td>
<td>Zambrano, Max  &quot;Analyzing Memoir’s Structure and Purpose in Life&quot;  (Ted Hovet)</td>
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<td>9:00</td>
<td>Wilham, Mary  &quot;The Contemporary Female Influence on Tap Choreography&quot;  (Amanda Clark)</td>
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<td>9:15</td>
<td>Downing, Shohei  &quot;Sin, Development, and Punishment: Understanding Hawthorne’s Unpardonable Sin&quot;  (Sandy Hughes)</td>
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<td>9:30</td>
<td>Chagnon, Elizabeth  &quot;Fragments and Frescoes: Contextualizing the Void in the Modern Art Museum&quot;  (Guy Jordan)</td>
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### Session 6  Room 2113, Undergraduate Papers, Interdisciplinary
**Judges**  Kumi Ishii (moderator), Sara McCaslin

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<td>8:15</td>
<td>Hughes, Joseph  &quot;GIS &amp; WKU Ogden Students: Where Are They and Why?&quot;  (Kevin Cary)</td>
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<td>8:30</td>
<td>Scanlon, Kyla  &quot;The Impact of Terrorism on Consumer Sentiment: Evidence from Twitter Data&quot;  (Lily Popova Zhuhadar)</td>
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<td>8:45</td>
<td>Tawasha, Isabella  &quot;Inconsistency and Inaccuracy of Sizing within the Fashion Industry&quot;  (Carrie Cox)</td>
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<td>9:00</td>
<td>Huber, Murray  &quot;Exploring the Community Integration and Involvement of Immigrant Children in the US through Jump Rope Camps&quot;  (Trini Stickle)</td>
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<td>9:15</td>
<td>Hill, Elizabeth  &quot;The Shakers: A Successful Utopian Society&quot;  (Sandra Hughes)</td>
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<td>9:30</td>
<td>Potter, Abby  &quot;Iconographic and Societal Layers in Bulgaria and Romania&quot;  (Elizabeth Gish)</td>
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### Session 7  Room 2123, Undergraduate Papers, Natural Sciences
**Judges**  Sanju Gupta (moderator), Matthew Nee

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<tr>
<td>8:15</td>
<td>Van Antwerp, Jennifer  &quot;Winter Storm Benji in Northern Georgia&quot;  (Joshua Durkee)</td>
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<td>8:30</td>
<td>Williams, Abigail; Polk, Jason; Kambesis, Patricia  &quot;Analysis of Cave Sediments in Cave Valley Cave, Nevada&quot;  (Patricia Kambesis)</td>
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8:45 Lynn, Gabriella; Huskey, Stephen; Gray, Keegan; Walters, Nicole; Gill, Jennifer "A New Model for Quantifying Hoof Pressure Distribution Using Fujifilm®" (Jennifer Gill)

9:00 Whitesel, Daniel "July 20, 2018 Severe Weather Event" (Joshua Durkee)

9:15 Wright, Benjamin; Coolbaugh, Collin; Alshammary, Rakan "Sensorless BLDC Motor Control" (Farhad Ashrafzadeh)

9:30 Alkharusi, Saud Omar "Outbreak of Tornado, April 2010" (Joshua Durkee)

Session 8 Room 2124, Undergraduate Papers, Social Sciences and Education
Judges Aaron Wichman (moderator), Caryn Lindsay, Susan Keesey

8:15 Porter, Jocelyn "The Effectiveness of Minority Party Legislative Strategies in Congress" (Jeffrey Budziak)

8:30 Williams IV, Roy "Second Language Acquisition Theory in the Real-World Language Classroom" (Elizabeth Winkler)

8:45 Goldman, Hannah "Ghanaian Music Education and Teaching Culture Authentically" (Matthew Herman)

9:00 Lowry, Kara "Factors That Promote Women Representation in State Legislatures" (Jeffrey Budziak)

9:15 Berg, Ethan "Enemy of Himself: Karl Marx's Role in Tarnishing His Legacy" (Jane Fife)

Session 9 Room 3024, Undergraduate Posters, Natural Sciences
Judges Eric Conte (moderator), Naomi Rowland, Roberta Pope

01A Lee, Jacob "Modeling the Rapid Flares Seen in Blazars" (Michael Carini)

02A Banaszak, Alexander; Gupta, Sanju "Graphene-Mediated Surface Enhanced Raman Spectroscopy for Detection of Biomolecules and Monitoring DNA Hybridization" (Sanju Gupta)

03A Moolani, Satya; Irihamye, Elvin "L-serine Reduces Reactive Oxygen Species Yield in Cisplatin Treated Zebrafish Utricles" (Michael Smith)

04A Dillingham, Megan; King, Rodney "Using Chromosomal Engineering to Investigate the Importance of a Conserved Cysteine Residue in E. coli RNA Polymerase" (Rodney King)

05A Congleton, Hannah; Bogard, Sophia; Khouryieh, Hanna "Influence of Environmental Conditions on the Stability of Emulsions Containing Droplets Stabilized by Whey Protein-Kappa-Carrageenan Complexes" (Hanna Khouryieh)

06A Schlabach, Kenneth; Ha, Dat Thinh; Moon-Soo, Kim "Specific Gene Detection and Quantification via Zinc Finger Protein and Quantum Dot Complex with Graphene Oxide Nanosheet" (Moon-Soo Kim)

Session 10 Room 3024, Undergraduate Posters, Natural Sciences
Judges John Loughrin (moderator), Cheryl Kirby-Stokes, Whitney Harper

07A Cecil, Wendy; Kim, Moon-Soo "Development of a Double-Stranded DNA Biosensor Using Engineered Zinc Finger Protein Pairs Linked to a Full β-Lactamase for Detecting Antibiotic Resistance Genes" (Moon-Soo Kim)

08A Stewart, Alexander "De Novo Prediction of the Tail and Capsid Structure of Mycobacteriophage MooMoo" (Claire Rinehart)
09A Ballard, Andrew; Khouryieh, Hanna "Evaluation of the Oxidative Stability of Oil-in-Water Emulsions Containing Whey Protein/Kappa-Carrageenan Complexes" (Hanna Khouryieh)
10A Moore, Emma; Ozer, Ahmet "Creating a Computational Tool to Simulate Vibration Control for Piezoelectric Devices" (Ahmet Ozer)
11A Ramisetti, Hasitha; Danturthi, Amara; Rowland, Naomi; King, Rodney "Comparison of Two Novel Microbioceriphages from Bowling Green, Krogelio and Xiomara" (Naomi Rowland)
12A Robinson, Taylor; Dobler, Jacob; Gupta, Sanju "Electrochemical Desulfurization of Molybdenum Disulfide (MoS2) Supported on Reduced Graphene Oxide (rGO) as Nanocatalysts for Efficient Hydrogen Evolution" (Sanju Gupta)

Session 11 Room 3024, Undergraduate Posters, Interdisciplinary
Judges April McCauley (moderator), Adam West

13A Abbott, Timothy "Creating Community within the Community" (Shahnaz Aly)
14A Therrien, Ilana; Morris, Kate "ARM Architecture Support for Virtualization" (Jeffrey Galloway)
15A Goodwin, Timothy; Alothman, Ahmed; Alyami, Majed; Smith, Courtney "Simulated Electrical Schematic of PLC" (Greg Arbuckle)
16A Gregory, Jennifer; Coker, Riyonna; Pedigo, Harry; Miller, Serenity "How Would Amending HB 40 Remove Barriers to Restoration of Rights?" (Whitney Harper)
17A Leverette, Tyrek "Muhammad Ali Boxing & Fitness Facility" (Shahnaz Aly)
18A Sage, Emily; Bell, Savannah; Gipson, Hunter; Cason, Brendan; Seged, Maor "2019 SoutheastCon Robotics Competition" (Mark Cambron)

Session 12 Second Floor Atrium, Undergraduate Posters, Interdisciplinary
Judges Melanie Autin (moderator), Jeffrey Galloway, Gayle Mallinger

19A Strunjas, Anna; Mishra, Ila; Ashley, Noah "Effects of Sleep Fragmentation and Chemical Sympathectomy on Microglial Cells" (Noah Ashley)
20A Miller, Lauren; Furgal, Karen; Tinius, Rachel; Rajendran, Nikitha; Edens, Kolbi; Yoho, Kristin "Modifiable Factors That Influence Infant Motor Development at 4 and 12 Months of Age" (Rachel Tinius)
21A Fugmann, Britt "Are Dietary Factors and Exercise Levels Related to Fertility Status" (Rachel Tinius)
22A Carter, Justin "Fostering an Appreciation for Nature through Design" (Shahnaz Aly)
23A Baunach, Seth; Agrawal, Pranay; Qiu, Jason "Developing a Mobile App" (Huanjing Wang)

Session 13 Second Floor Atrium, Undergrad Posters, Health & Human Services
Judges Xiuhau Ding (moderator), Sonia Young

25A Hawkins, Alayna; Haynes-Lawrence, Darbi "Anxiety amongst Second Year Honors Students" (Darbi Haynes-Lawrence)
26A McKay, Anna "Language Sampling with Early Adolescents with Specific Language Impairment" (Janice Smith)
27A Bybee, William; Compton, Hannah "Determining the Physical Effects of Sports on Teachers" (Amanda Salyer-Funk)
28A Dykes, Samantha; Salyer-Funk, Amanda; Crandall, Jason "Efficacy of a Game-Centered Program for Increasing Physical Activity in Children: A Pilot Study" (Amanda Salyer-Funk)
29A Eads, Kristen; Mishra, Ila "The Effects of Chronic Sleep Fragmentation and Chemical Sympathectomy on Microglial Activity" (Noah Ashley)
Session 14  Second Floor Atrium, Undergrad Posters, Arts and Humanities
Judges    Timothy Evans (moderator), Jonathan Jeffrey, Jason Crandall

31A  DiMeco, Chris "Lucky No. 8/8 大 財" (Matt Tullis)
32A  Molchan, Jennifer; Houle, Jean-Luc "Continuity and Change in Pastoral Lifeways in Mongolia" (Jean-Luc Houle)
33A  Lawrence, Emmalee "4WINGS Skateboards" (Matthew Tullis)
34A  Liddle, Bronwyn "Printmaking in the Community" (Marilee Salvator)
35A  Richards, Cameron "A Comparative Analysis of Fugal Composition from Baroque to 20th Century Modern" (Matthew Herman)

Session 15  Second Floor Atrium, Undergrad Posters, Social Sciences & Education
Judges    Allie McCreary (moderator), Kandy Smith

37A  Alrebeh, Ala "Qatif Oasis Hotel" (Shahnaz Aly)
38A  Ellis, Madison; Gatlin, Samantha; Zwakenberg, Autumn "Advancing the Study of Social Support in Trauma and PTSD: An Overview of a Novel Experimental Approach" (Matthew Woodward)
39A  Hooper, Jacob "Fall Creek Hotel" (Shahnaz Aly)
40A  Jones, Andrew "Ethnic Cultural Landscapes: German Breweries and Social Institutions from 1860 to 1920 in Covington, Kentucky" (Margaret Griphsover)
41A  Miller, Kendall "The Effectiveness of Juvenile Drug Courts on Reducing Recidivism: A Meta-Analysis of Research from 1993-2018" (Holli Drummond)
42A  Filiatreau, Rebecca; Kimble, Kelsey; Noel, Christina "Inclusive Special Education Practices in South Africa and the United States" (Christina Noel)

Session 16  Second Floor Atrium, Graduate Posters, Interdisciplinary
Judges    Yuan Fang (moderator), Shahnaz Aly, Marilyn Gardner

43A  Sheth, Arpan "Intrahepatic Cholestasis as High Risk in Pregnancy" (Xiuhua Ding)
44A  Hammond, Jenna "The Effectiveness of Mobile Eye-tracking to Enhance Guided Show Cave Experiences" (Leslie North)
45A  Coffey, Nicholas "The Characterization of Genes Annotated in the Genome of the Mycobacteriophage Moomoo" (Claire Rinehart)
46A  Veletanlic, Vanesa "Efficacy of Novel Platinum Compound 1,1-cyclobutanedicarboxylato(ethylenediamine)platinum(II) in Mammalian Cancer Cells" (Blairanne Williams)
47A  Ainembabazi, Lovence; Nee, Matthew "Incorporation of Metal Oxides into a Polymer Substrate as Buoyant Photocatalysts" (Matthew Nee)
48A  Antle, Austin "Synthesis of Core/Shell Semiconductor Nanoparticles in Ionic Liquids" (Lawrence Hill)
Session 17  Second Floor Atrium, Graduate Posters, Health and Human Services
Judges    Sherrie Godbey (moderator), Mark Schafer, Simon Funge

49A Lebryk, Eric; Sullivan, Jake; Cravens, Matthew; Young, Sonia "Interaction Effects of Whole Body Vibration and LSVT BIG® on Gait and Balance in Parkinson’s Disease" (Sonia Young)

50A Youngquist, Claire; McNeil, Erin; Raymer, Clint; Young, Sonia; Youngquist, Claire; McNeil, Erin; Raymer, Clint "Immediate Effects of Low Frequency Whole Body Vibration on Dynamic Balance in Individuals with Parkinson’s Disease" (Sonia Young)

51A Khatoon, Rukhaiya; Farrell, Colin; Gardner, Marilyn "Impacts of PTSD on Suicidal Ideation in EMS Workers" (Colin Farrell)

52A canceled

53A Ibrahim, Abdulgafar; Michelle, Reece; Williams, Mkanta; Khatoon, Rukhaiya; Pope, Darnez; Thakur, Niyati; Tadakaluru, Apoorva "Personal Hygiene and the Implications to Health Service among Refugees in the USA" (Michelle Reece)

54A Ogbonnaya, Chisom "Pedestrian Detection and Tracking - a People Counting Based Application Using Embedded Opencv" (Michael Galloway)

55A Joshi, Apeksha; Seelam, Sweety "Musculoskeletal Disorders: An Occupational Hazard among Dentists" (Grace Lartey)

CONCURRENT AFTERNOON SESSIONS I
12:45 – 2:15 pm

Session 18  Room 3003, Graduate Papers, Interdisciplinary
Judges    Anne Heintzman (moderator), Ahmet Ozkan Ozer

12:45 Kiser, Aaron "What to Do with Alak T’sarran: Storytelling and Mourning the Death of a Role-Game Player" (Ann Ferell)

1:00 An tonic, Maja "Female Combatants and Activists: Anti-Fascist Front of Women in Yugoslavia" (Marko Dumančić)


1:30 Lokesh, Ashwini "Comparison of Recommendation Systems" (Huanjing Wang)

1:45 Horace, Angelique; Griffiths, Austin; Gabbard, W. Jay "Completing the Conversation on Child Welfare Worker Retention: Administrators Perspectives on Workforce Retention" (Austin Griffiths)
Session 19  Room 3004, Graduate Papers, Natural Sciences
Judges    Farhad Ashrafzadeh (moderator), Michael Smith

12:45  Mattson, Adam; Gani, M. Royhan; Gani, Nahid "Evolution of the Louann Salt in the Northeastern Gulf of Mexico" (Royhan Gani)
1:00  Gearner, Olivia "The Enigmatic Evolution of the Bostrichoids (Coleoptera)" (Keith Philips)
1:30  Twidwell, Robert; Hahn, Lance "The Impact of a Therapist’s Use of Language in Computer-Mediated Communication" (Lance Hahn)
1:45  Riggle, Michael; Chebchoub, Fatima; Jaiswal, Dimple "Biocloud Load Balancing Algorithm" (Michael Galloway)

Session 20  Room 3005, Undergraduate Papers, Social Sciences & Education
Judges    Katrina Burch (moderator), Trini Stickle

12:45  Wells, Hannah "Family Literacy: A Framework" (Alison Youngblood)
1:00  Hedrick, Katherine "The Prosecution of Conflict-Related Sexual Violence in Post-War Bosnia and Herzegovina: An Analysis" (Marko Dumančić)
1:15  Collings, Colten; Duffin-Rexroat, Lisa "An Experimental Test of an Online Growth Mindset Intervention: Challenging College Students’ Beliefs about VAK Learning Styles" (Lisa Duffin-Rexroat)
1:30  Beck, Brooke; Brausch, Amy "Differences in Suicide Risk, Acquired Capability, and Distress Tolerance among Individuals with NSSI or Disordered Eating" (Amy Brausch)
1:45  Sheppard, Lauren "Teacher Intervention: Responding to Depression in Adolescents" (Jane Fife)

Session 21  Room 3006, Undergraduate Papers, Arts and Humanities
Judges    Sandra Hughes (moderator), Elisabeth Curtis-Howe, Trish Lindsey Jaggers

12:45  Schulte, Sarah "Sound and Emotion: The Use of Music in the Cinematic Experience" (Matthew Herman)
1:00  Beck, Victoria "The Similarities and Correlations between Mathematics and Tap Dance" (Amanda Clark)
1:15  Zaczek, Joshua "Argument through the Ages" (Kelly Reames)
1:30  McDowell, Seth "The History of Psychedelic Drugs Before United States Law" (Patricia Minter)
1:45  Sennett, Madison "Enclothed Cognition: How Clothing Can Affect Human Behavior" (Carrie Cox)
2:00  Buri, Anna "Livia: Reconstructing the Life of One of the Most Powerful Women in Ancient History through Film" (Richard Weigel)
Session 22  Room 3007, Undergraduate Papers, Interdisciplinary
Judges  Manohar Chidurala (moderator), Lawrence Hill

12:45 Bushon, Hannah "Scientology: The Cult of Religion" (Sandra Hughes)
1:00 Agrawal, Pranay "Parallelizing Monte-Carlo Tree Search for Dots and Boxes" (Uta Ziegler)
1:15 Davis, Devin "Electrohydraulic Forming" (Morteza Nurcheshmeh)
1:30 Ryan, Nathan; McKinney, Dallas; Cahill, Olivia "Using PPGIS in the Mapping and Analysis of WKU's Bike Racks, Stairs, and Walking Paths" (Kevin Cary)
1:45 Thomas, Jamie "Bioinformatics Services through Cloud Computing" (Jeffery Galloway)
2:00 Sauer, Robert "Scalable Containerized Security Training Environment" (Guangming Xing)

Session 23  Room 2113, Undergraduate Papers, Natural Sciences
Judges  Ali Er (moderator), Karen Furgal

12:45 Ellzey, Benjamin "May 25, 2016 Severe Weather Outbreak and Chapman Ks Ef-4" (Joshua Durkee)
1:00 Chan, Norman; Storrs, Ian; Tassel, Darby; Gondal, Anas "Sifting through the Dirt: An Analysis of Costa Rican Dung Beetle Activity Times" (Keith Philips)
1:15 Stevens, Bailey "An Analysis of the Severe Weather and Tornado-Producing Supercells in Syracuse, KS on May 18, 2018" (Joshua Durkee)
1:30 Davis, Christopher; Tang, Reuben "Evaluation of Mitigation Efforts Using Building Information Modeling (BIM) in Kentucky" (Fatemeh Orooji)
1:45 Meredith, Carson "Taking Action: A Case Study Analyzing the Deficiencies and Potential Sources of Improvement in the Severe Weather Warning System" (Joshua Durkee)
2:00 Suggs, Michael; Wulff, Andrew "An Analysis of Molybdenum Ores" (Andrew Wulff)

Session 24  Room 2123, Undergraduate Papers, Natural Sciences
Judges  Claire Rinehart (moderator), Nilesh Sharma

12:45 Wasilewski, Brandon "June 26, 2018 Eastern Tennessee Wind and Hail Event: A Synoptic-Based Case Study" (Joshua Durkee)
1:00 Davis, Andrew "Development and Application of a Density Dependent Leslie Matrix Population Model with Variable Population Distributions" (Bruce Kessler)
1:30 Hare, Margot; Yan, David; Vanzant, Elisha; Roebker, Helen "Observation and Analysis of Hummingbird Aggression at Flowers versus Feeders" (Martin Stone)
1:45 Hatter, Evan "Synoptic Analysis of the October 7, 2014 Kentucky Bluegrass Tornado Outbreak" (Joshua Durkee)
2:00 McCloyn, Crystal "Nashville Aquarium and Research Center" (Shahnaz Aly)
Session 25  Room 2124, Undergraduate Papers, Social Sciences & Education
Judges  Thomas Gross (moderator), Tim Thornberry

12:45 Gruber, Brittney "Science Fiction in Science Education" (David LeNoir)
1:00 break
1:15 Fugate, Samuel; Geiger, Romin; Martin, Hannah; Williams, Cynthia; Gregory, Jordan; Gopan, Gopika "Self Regulation: A Cross-Sectional Study of Preschool-Aged Children" (Elizabeth Lemerise)
1:30 Poland, John "Christian Socialism: How an English Theological Movement Led to the American Civil Rights Movement" (Anthony Harkins)
1:45 McCormick, Dillon "The Effect of Expanding the House of Representatives on Its Partisan Makeup" (Kelly Reames)
2:00 Thomas, Elizabeth "Language and the Courtroom: Linguistic Strategies of Lawyers in Trials" (Ashley Stinnett)

Session 26  Room 3024, Undergraduate Posters, Interdisciplinary
Judges  Jim Fulkerson (moderator), Jae Kim

01B Wilson, Paul "Danish Hygge in Virtual Reality" (Helen Sterk)
02B Graham, Anthony; Williams, Joseph "Revitalization: Creating New Architecture from Remnants" (Shahnaz Aly)
03B Williams, Joseph "Virtual Reality in Architectural Design" (Fatemeh Orooji)
04B Hamby, Zoie "Cowboy Ranch Vineyard" (Shahnaz Aly)
05B Zwa, Kyaw "Regal Franklin Stadium 44" (Shahnaz Aly)
06B Montgomery, Austin; Murphy, Matthew "Data Collection Process for Conducting Safety Evaluation of W-Beam Guardrails in Alabama" (Kirolos Haleem)

Session 27  Room 3024, Undergraduate Posters, Interdisciplinary
Judges  Autumn Forschler (moderator)

07B Murphy, Matthew; Montgomery, Austin "Data Collection Process for Conducting Safety Evaluation of Cable Barriers in Alabama" (Kirolos Haleem)
08B Robinson, Tyler "Revitalization in What Ways Can Architecture Change the World" (Shahnaz Aly)
09B O'Boyle, Patrick; White, Austin; Wyllie, Sierra "Survey of Cloud with V.I.C.E and Green Cloud Architectures" (Michael Galloway)
10B Bell, Savannah; Stevens, Ricky; Blair, Andrew "A Comparative Study of Computational Fluid Dynamics Tools for Simulation of Rotational Flow in Lawn Mowers" (Farhad Ashrafizewad)
11B Stephens, Graham "Investigating the Correlation between Depression and Word Usage" (Lance Hahn)
12B Liddle, Brendan "Safe Space: The Psychological Impact of the Built Environment" (Shahnaz Aly)
Session 28  Room 3024, Undergraduate Posters, Social Sciences & Education
Judges    Molly Kerby (moderator), Matt Woodward

13B  Jaynes, Korey  "Georgetown Alumni Center" (Shahnaz Aly)
14B  Seaver, Hannah; Wininger, Steven  "Effects of Multitasking on Self-Selected Pace and Distance while Walking" (Steven Wininger)
15B  Anderson, Andrea; Putnam, Heather; Copeland, Allyson;  Shake, Matthew  "The Effect of Mood on Mind Wandering" (Matthew Shake)
16B  Scott, Jamie; Parker, Olivia  "Mirror Mirror: A Look into Muscle Dysmorphia" (Frederick Grieve)
17B  Stivers, Abigail  "Scaffolding Students to Math Mindfulness" (Janet Tassell)
18B  Woodward, Kelsey; Elder, Sarah; McBride, Robert; Henry, Shelby; Teeters, Jenni  "Rates of Campus Sexual Assault among Minority Groups" (Jenni Teeters)

Session 29  Second Floor Atrium, Undergraduate Posters, Natural Sciences
Judges    Huanjing Wang (moderator), Dominique Gumirakiza

19B  Suarez, David  "Using Quantum Entanglement and Teleportation to Detect Stealth Objects by Radar" (Keith Andrew)
20B  Alcantar, Christian  "An Efficient and Chemoselective Oxidation of Organic Sulfides Catalyzed by Manganese Corroles with Iodobenzene Diacetate" (Rui Zhang)
21B  Chumbler, Isabel  "Mercury Bioaccumulation in Bats from Mammoth Cave National Park" (Cathleen Webb)
22B  Gondal, Anas; Salim, Hasan; Srivastava, Ajay  "A Genetic Screen for Proteins Involved in Asp Invasion" (Ajay Srivastava)
23B  Collins, Christopher  "Kinetics of a Degradable Antioxidant Polymer" (Lawrence Hill)
24B  Barnaby, Koji; Schlabach, Jessica; Nole, Emily  "The Impact of Platinum Compound Structure on Mammalian Cell Survival" (Blairanne Williams)

Session 30  Second Floor Atrium, Undergraduate Posters, Natural Sciences
Judges    John Khouryieh (moderator), Attila Por

25B  Irihamye, Ivy; Johnson, Jarrett  "Genealogical History and Admixture Proportion of Tiger Salamanders in Black Lake, Mono County, California" (Jarrett Johnson)
26B  Reddy, Rithik; Ateyeh, Abdullah  "Finding the Most Influential Factors in the Healing of Diabetic Foot Ulcers" (Richard Schugart)
27B  Conkin, Ethan  "Campus Crusade for Christ Community Center" (Shahnaz Aly)
28B  Brown, Gillian; King, Rodney  "Nanopore DNA Sequencing, a Novel Technology Applied to the Analysis of Newly Discovered Bacteriophages" (Rodney King)
29B  Bratcher, Fox; Zhang, Rui; Alcantar, Christian  "Synthetic and Catalytic Studies of Metalloporphyrin Complexes for Biomimetic Oxidations" (Rui Zhang)
30B  Al Khayyat, Sarah; King, Rodney  "Does the Suppression of Rho-Dependent Transcription Termination Affect Bacteriophage Plaque Morphology?" (Rodney King)
Session 31 Second Floor Atrium, Undergraduate Posters, Natural Sciences
Judges Rong Yang (moderator), Sarah Edwards

31B Holt, Morgan; King, Rodney "Does Tethering of the Large Subunits of Escherichia coli RNA Polymerase Affect the Growth of Bacteriophages HK022 and HK639" (Rodney King)

32B Hendrickson, Evan "Analysis of the Bioaccumulation of Methylmercury in the Organs and Tissues of a Bald Eagle" (Cathleen Webb)

33B Howard, Isaac; Wang, Ban; Deng, Yongming "Synthesis of Chiral Bis(imino)pyridine Ligands: Asymmetric Bis(imino)pyridine Iron Catalysis for Carbene Transfer Reactions" (Yongming Deng)

34B Klaine, Seth; Winchester, Mike "Oxidation Kinetics of Porphyrin-manganese(iv)-oxo Intermediates Generated by Chemical and Photochemical Methods" (Rui Zhang)

35B Littrell, Kelsey; Suter, Hannah; King, Rodney "Discovery and Comparison of Microbacterium Phages Mercy and Drippy" (Rodney King)

36B Alqahtani, Fahad "Museum of Diriyah" (Shahnaz Aly)

Session 32 Second Floor Atrium, Undergraduate Posters, Natural Sciences
Judges Jennifer Gill (moderator), Megan Schargorodski

37B Alotaibi, Saleh "Creating a Healthy Community" (Shahnaz Aly)

38B Vickers, Sarah; Carini, Michael "The Variability Timescales of the Binary Black Hole Blazar OJ 287" (Michael Carini)

39B Nguyen, Ngoc; Hill, Lawrence "Synthesis of a Degradable Initiator for Atom Transfer Radical Polymerization" (Lawrence Hill)

40B Pope, Jackson; Wang, Ban "Bis(imino)pyridine Iron Catalyzed Cyclopropanation Reaction of Diazo Compounds" (Yongming Deng)

41B Johnson, Matthew; King, Rodney; Rinehart, Claire; Al Khayyat, Sarah "Discovery, Purification, and Analysis of Microbacterium Phage Clancy" (Naomi Rowland)

42B Slaughter, Mariah "Determination of Madtom Shelter Preference" (Philip Lienesch)

Session 33 Second Floor Atrium, Undergraduate Posters, Natural Sciences
Judges Kevin Bilyk (moderator), Jenni Teeters

43B Chani, Aken; Reagor, JT; King, Rodney "Morphological and Genetic Diversity in Bacteriophages Isolated on the Same Bacterial Host" (Rodney King)

45B Scott, Morgan "Fighting Addiction through Design" (Shahnaz Aly)

46B Whalin, Symone; Dobrokhotov, Vladimir; Novikov, Ivan "Comprehensive Ultra-Sensitive Leak Analyzer for Prevention of Product Loss in Oil and Gas Industry" (Vladimir Dobrokhotov)

47B White, Austin; Galloway, Micheal; O'Boyle, Patrick; Wyllie, Sierra; Wrentmore, Rocco "Survey on the Impact of DDoS Attack on Docker Containers Compared to Virtual Machines" (Micheal Galloway)

48B Ward, Zoe "Ground Truth Observations of Blazars Observed with NASA's K2 Mission" (Michael Carini)
CONCURRENT AFTERNOON

SESSIONS II

2:30 – 4:00 pm

Session 35  Room 3003, Graduate Papers, Natural Sciences
Judges  Melanie Richter (moderator), Morteza Nurcheshmeh

2:30  Severs, Rachel "A Collaborative Perspectives Approach for Understanding Effective Care Coordination in Autism Spectrum Disorder" (Ronda Talley)

2:45  Hodinka, Brett; Ashley, Noah "Effect of Sleep Loss on Cognitive Function and Baseline Plasma Corticosterone Levels in an Arctic-Breeding Songbird, the Lapland Longspur (Calcarius lapponicus)" (Noah Ashley)

3:00  Indulkar, Ajinky Vishwas "Node Centrality in Graphs" (Rong Yang)

3:15  Kipper, Chelsey; Kambesis, Patricia; Polk, Jason "A Geochemical Comparison of Two Telogenetic Karst Springs During Reverse Flow, Mammoth Cave, Kentucky" (Patricia Kambesis)

3:30  Hodzic, Denis "Investigating How EF-24 and Cisplatin Affect Cancer, Renal, and Auditory Cells" (Michael Smith)

3:45  Whorrall, Kyle; Philips, Keith "Exploration of the Hidden Diversity of Spider Beetles (Coleoptera: Ptinidae) in Western South America" (Keith Philips)
Session 36 Room 3004, Graduate Papers, Natural Sciences  
Judges     Sara Edwards (moderator), Attila Por

2:30 **Minton, Alyssa** "Emotionally Evocative Context Influences Emotion Discrimination Performance" (Andrew Mienaltowski)
2:45 **Wheeler, Nicholas** "Effects of Alpha and Beta-Adrenergic Receptor Blockade upon Inflammatory Responses to Acute Sleep Fragmentation" (Noah Ashley)
3:00 **Belekov, Ermek; Lauren, Cooper; Kholidkhodzha; Devarakonda, Koushik** "Bacterial Deactivation by Using Graphene Quantum Dot as an Effective Photodynamic Therapy Agent" (Ali Er)
3:15 **Creech, Zachary** "Lithological Character and Sequence Stratigraphy of the Ste. Genevieve Limestone in Western Kentucky" (Michael May)
3:30 **Chebchoub, Fatima; Mikkilineni, Aswinidutt; Prince, Jared; Ogbonnaya, Chisom-Agacaleb** "Cloud-Based Replica of the WKU HPCC" (Michael Galloway)
3:45 **Ranjbar, Aref; Kapadia, Mayank; Srivastava, Ajay** "Characterization of a Basement Membrane Associated Protein Encoding Gene in Drosophila Melanogaster" (Ajay Srivastava)

Session 37 Room 3005, Undergraduate Papers, Arts and Humanities  
Judges     Julie Lyn Barber (moderator), David Lee

2:30 **Ziege, Nicole** "The Importance of Clothing in 1960s Protest Movements" (Rich Shumate)
2:45 **Daniels, Katie** "Melrose by Moonlight" (Walker Rutledge)
3:00 **Lutts, Abbey** "An Ever-Evolving Art Form: An Investigation of Contemporary Ballet in the 21st Century and the Future" (Anna Patsfall)
3:15 **Thornsberry, Brooke** "The Potato Chicken Game: Serious Music Pedagogy and the Benefits of Orff-Schulwerk" (Liza Kelly)
3:30 **Mayfield, Otway** "Unmasked: Coming Out into Existence" (Amelia Rollings)
3:45 **Rehmel, Celeste** "A Handful of Words" (David Bell)

Session 38 Room 3006, Undergraduate Papers, Natural Sciences  
Judges     Ali Er (moderator), Elisabeth Knight

2:30 **Stackhouse, Shakira** "Forecast Analysis of the Ozarks Flood of April 2017" (Joshua Durkee)
2:45 **Dolan, William** "Dice Mythbusters" (Warren Campbell)
3:00 **Aubry, Drew** "Understanding Student Thinking from 'Wrong' Answers" (Scott Bonham)
3:15 **Evans, JC** "Synoptic Analysis of February 24, 2018, Severe Weather Event" (Joshua Durkee)
3:30 **Bonds, Brandon** "Synoptic and Mesoscale Analysis of the November 6-7th, 2012 Nor'easter" (Joshua Durkee)

Session 39 Room 3007, Undergraduate Papers, Natural Sciences  
Judges     Eric Rappin (moderator), Anna Patsfall

2:30 **Bowen, John** "Theory-to-Practice Applied-Learning Model as It Pertains to Emergency Management Skill Development" (Josh Durkee)
2:45 **Cooper, Lauren; Ilhom, Saidjafarzoda; Belekov, Ermek; Er, Ali** "Hydrogen Production from Aluminum Powder Using Nanosecond Laser Pulses" (Ali Er)
3:00 Wine, Matthew "August 2018 Flooding in Dane County, Wi" (Joshua Durkee)
3:15 Dodeja, Krishna; Byrd, Lindsey; Brady, Joseph; Alshaikhjafar, Muhammad "A Design Approach to Separated Heat and Light Sources in a Brooder House" (Julie Ellis)
3:30 Martin, Daniel "Meteorological Analysis of the 2009 Louisville Flash Flood" (Joshua Durkee)
3:45 Leggas, Timothy; Cannon, Isaac; Kitchen, Samantha; Hilliard, Emily "Herbaceous Understory Biodiversity in Various Successive States of the Costa Rican Cloud Forest" (Martin Stone)

Session 40 Room 2113, Undergraduate Papers, Natural Sciences
Judges Ahmet Ozkan Ozer (moderator), Karen Furgal

2:30 Cahill, Olivia "An Analysis of the Predictability of the Severe Storm and Subsequent Concert Stage Collapse at the Indiana State Fair on August 13, 2011" (Joshua Durkee)
2:45 Curtis, Levi "Discrete Variable Representation of the Reduced Density Matrix for Molecular Relaxation Dynamics" (Jeremy Maddox)
3:00 Meador, Aaron "June 5-6, 2018 South Dakota Wind and Hail Event" (Joshua Durkee)
3:15 Garrison, Jessica; Wulff, Andrew "Paleoclimate Model of Clay Minerals and Sediments from Lake Tecopa, California" (Andrew Wulff)

Session 41 Room 2123, Undergraduate Papers, Natural Sciences
Judges Carol Watwood (moderator), Jim Fulkerson

2:30 Christoph, Jed "Diagnosing the Large-Scale Synoptic Patterns of the February 28-March 1, 2017 Tornado Outbreak" (Joshua Durkee)
2:45 Reagor, JT; Fields, Edwin; Henneberg, Licia; Pierce, Meghan "A Comparative Analysis of the Carbon Sequestration of Trees in Naturally Regenerated versus Planted Cloud Forest Plots" (Martin Stone)
3:00 Garnelo, Israel "Synoptic Analysis of the January 3-5, 2018 North American Blizzard" (Joshua Durkee)
3:15 Jackson, Colleen; Cecil, Wendy; Kim, Kibum; Ko, Kisung; Kim, Moon-Soo "Diagnostic Applications of Double-Stranded DNA Detection Utilizing Tale Proteins Expressed in Plants" (Moon-Soo Kim)
3:30 Padgett, Christopher "A Synoptic Analysis of July 19, 2018, Marshalltown, Iowa EF-3 Tornado" (Joshua Durkee)

Session 42 Room 2124, Undergraduate Papers, Organized Session: Contemporary Challenges in Political Science
Judges Molly Kerby (moderator), Tim Thornberry

2:30 Eliassen, Isabel "On the Other Side of the Closet: The Acceptance of Homosexuality in Taiwan" (Timothy Rich)
2:45 Havens, Harlee "The Effect of Knowledge on Attitudes towards the US Supreme Court" (Jeffrey Budziak)
3:00 Stone, Kelly "Debt Accumulation and Economic Growth in Emerging Market Economies: Is Debt Promoting or Hindering Growth?" (Shannon Vaughan)

3:15 Woggon, Erin "Gender, Region, and Perceptions of Candidates: Results from an Experimental Survey in Germany" (Timothy Rich)

3:30 Anderson, Brian "President Trump and Cross-Strait Relations" (Timothy Rich)

3:45 Ryan, Travis "Communication Goals of American Universities: A Social Media Content Analysis" (Scott Lasley)

4:00 Milden, Ian "Pirates of the Yellow Sea: Who They Are and Why They Engage in Piracy" (Timothy Rich)

Session 43 Room 3024, Undergraduate Posters, Natural Sciences
Judges Leslie Baylis (moderator), Rachel Tinius

01C Henson, Alex; Evans, Brendan; Gupta, Sanju "Engineered ‘Organic-Inorganic’ Nanocomposites Properties through Embedding of Smaller Nanoparticles in a Thermoset Polymer Matrix" (Sanju Gupta)

02C Thompson, Bailey; Thompson, Briley; Rinehart, Claire; Rowland, Naomi; Staples, Amanda "Discovering and Comparing Bacteriophages Cici and Malec" (Claire Rinehart)

03C Ottman, Claire; Sanford, Dylan; Saidjafarzoda, Ilhom; Kholikov, Khomidkhodza; Thomas, Zachary; Belekov, Ermek; Abdisatarov, Bektur "Scalable Patterning Using Laser-induced Shock Waves" (Ali Er)

04C Sellers, Emma "Energy Efficient Water Desalination – Challenges and Opportunities" (Farhad Ashrafzadeh)

05C Freeman, Lucas "The Effect of Dichloro(ethylenediamine)platinum(ii) Leaving Ligands on Mammalian Cell Death" (Brooke Williams)

06C Brewer, Steven "Terrestrial Autonomous Robots – A Comparative Study of Robotic Simulation Software between Matlab and Gazebo" (Farhad Ashrafzadeh)

Session 44 Room 3024, Undergraduate Posters, Natural Sciences
Judges Patricia Kambesis (moderator)

07C Life, Terrance "Development of an Advanced Research Platform for Aerial Autonomous Navigation" (Farhad Ashrafzadeh)

08C Clark, Cole "A Survey of Madtom Catfish in Areas with Varying Mussel Shell Density" (Philip Lienesch)

09C Madriaga, Lawrence; Novikov, Ivan; Nurcheshmeh, Morteza; Dobrokhotov, Vladimir "Identifying Deformation in Sem Images of Steel Samples Using Convolutional Neural Network" (Ivan Novikov)

10C Ruskowski, Keeley; Stone, Martin "Heavy Gravity Diminishes Plant Growth" (Martin Stone)

11C Mitchell, Lea; Kaiser, Rachel; Givan, Ethan; McClanahan, Kegan "Longitudinal Study of Jennings Creek, Bowling Green, Kentucky: A Case Study of Urbanization Impacts on Urban Karst Groundwater" (Jason Polk)

12C Devarakonda, Koushik; Cooper, Lauren; Belekov, Ermek; Kholikov, Khomidkhodza; Er, Ali "The Effects of Photo-Activated Graphene Quantum Dots on Bacterial Deactivation" (Ali Er)
Session 45  Room 3024, Undergraduate Posters, Natural Sciences
Judges    Megan Schargorodski (moderator), O. E. Mansour

13C Morgan, Elizabeth; Mahoney, Lorenzo; King, Rodney "The Discovery and Comparison of Two Novel Microbacteriophages, Fawn and Oznerol" (Rodney King)
14C Gearnar, Clarissa; Banga, Simran "Potential Use of Essential Oils as an Alternative Treatment for Bacterial and Fungal Skin Infections" (Simran Banga)
15C Whittle, Megan; Gani, Nahid "River Bed Analysis in the Mammoth Cave Area" (Nahid Gani)
16C Evans, Brendan; Henson, Alex; Gupta, Sanju "Graphene-Polymer Thin Film Composite Membranes as Efficient and Anti-Fouling Membranes for Water Purification" (Sanju Gupta)
17C Young, Jacob "Synthesis of a Water Soluble Platinum (ii) 1,10-phenanthroline Complex" (Kevin Williams)
18C Wyllie, Sierra "Meta-Heuristic Approaches to Dynamic Load Balancing" (Jeffrey Galloway)

Session 46  Second Floor Atrium, Undergraduate Posters, Natural Sciences
Judges    Leslie North (moderator), John Kasumba

19C Cooper, Natalie; Mullick, Maunil; King, Rodney "A Comparative Analysis of Newly Discovered Bacteriophages Groovydude and Spiuffy12" (Rodney King)
20C Portmann, Victor; Lamb, Ryan "Surface-enhanced Raman Spectroscopy with Gold-silver Core-shell Nanoparticles" (Matthew Nee)
21C Ringo, Wyatt; Gupta, Sanju "Scanning Electrochemical Microscopy of Transition Metal Carbides (Ti3C2Tx) MXenes Phases with Different Interlayer Spacing for Renewable Energy" (Sanju Gupta)
22C Hodge, Brandon "Legionella Proteins as a Molecular Evolution Model for Legionnaire Disease" (Simran Banga)
23C Wrentmore, Rocco "Impact of DDoS Attack on Different Resource-intensive Computing Tasks" (Jeffrey Galloway)
24C Sairajeev, Sasha; Williams, Kevin "Synthesis of Platinum Anticancer Compound Oxalato(1,4-dimethyl-piperazine)platinum(II)" (Kevin Williams)

Session 47  Second Floor Atrium, Undergraduate Posters, Natural Sciences
Judges    Rodney King (moderator), Simran Banga

25C Butler, Sarah "Bias of Voting Systems and How Far Can the Non-Transitivity of Random Variables Be Stretched" (Attila Por)
26C Dobler, Jacob; Robinson, Taylor; Gupta, Sanju "Hydrothermal Synthesis and Properties of Mesoporous Molybdenum Disulfide (MoS2) – Reduced Graphene Oxide Composites for Hydrogen Production" (Sanju Gupta)
27C Gray, Phoenix "Simulating Structural Fluctuations in Bound and Unbound Proteins" (Sarah Edwards)
28C Kayser, Rebekah; Shim, Jiyoung; Kim, Moon-Soo "DNA Binding Affinity of Engineered Zinc Finger Proteins" (Moon-Soo Kim)
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**Session 51**  Second Floor Atrium, Graduate Posters, Health & Human Services

**Judges**  Lauren Bland (moderator), Sarah Herrick

49C  **Gaither, Emily**; Funge, Simon; Griffiths, Austin "Giving Voice to Kentucky Foster Parents" (Simon Funge)

50C  **Tadakaluru, Apoorva**; Reece, Michelle; Mkanta, William; Alamri, Abeer; Pope, Darnez; Thakur, Niyati; Ibrahim, Abdulgafar "Providers’ Perspective on the Association between Acculturation and Substance Abuse Behavior among Refugees" (Michelle Reece)

51C  **VanMeter, Nicholas** "Placental RNA Concentration in Relation to Peripheral Blood Factors in Lean, Overweight, and Obese Women" (Rachel Tinius)

52C  **Yoho, Kristin**; Maples, Jill; Edens, Kolbi; Blankenship, Maire "Changes in Resting Metabolism from Pregnancy to Postpartum" (Rachel Tinius)

53C  **Thakur, Niyati**; Reece, Michelle; Mkanta, William; Tadakaluru, Apoorva; Ibrahim, Abdulgafar; Pope, Darnez; Alamri, Abeer "Oral Health Concerns in Refugees and Perceived Barriers to Care" (Michelle Reece)

54C  **Ginn, Brad**; Wolf, Cheryl "Values in the Workplace: Exploring Mental Health Professional Work Values, Job Settings, Satisfaction, and Burnout" (Cheryl Wolf)

55C  **Chaudhari, Mamata** "Racial Disparities and Impact of Teen Pregnancy in Kentucky” (Grace Lartey)
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