

WKU 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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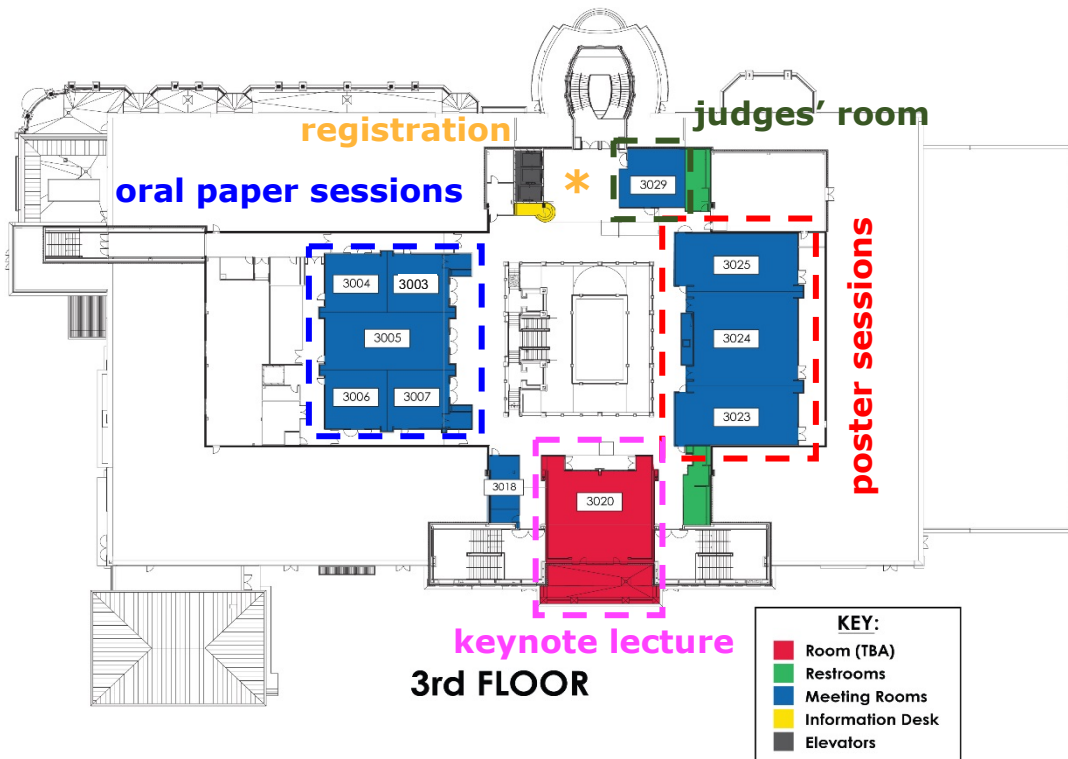
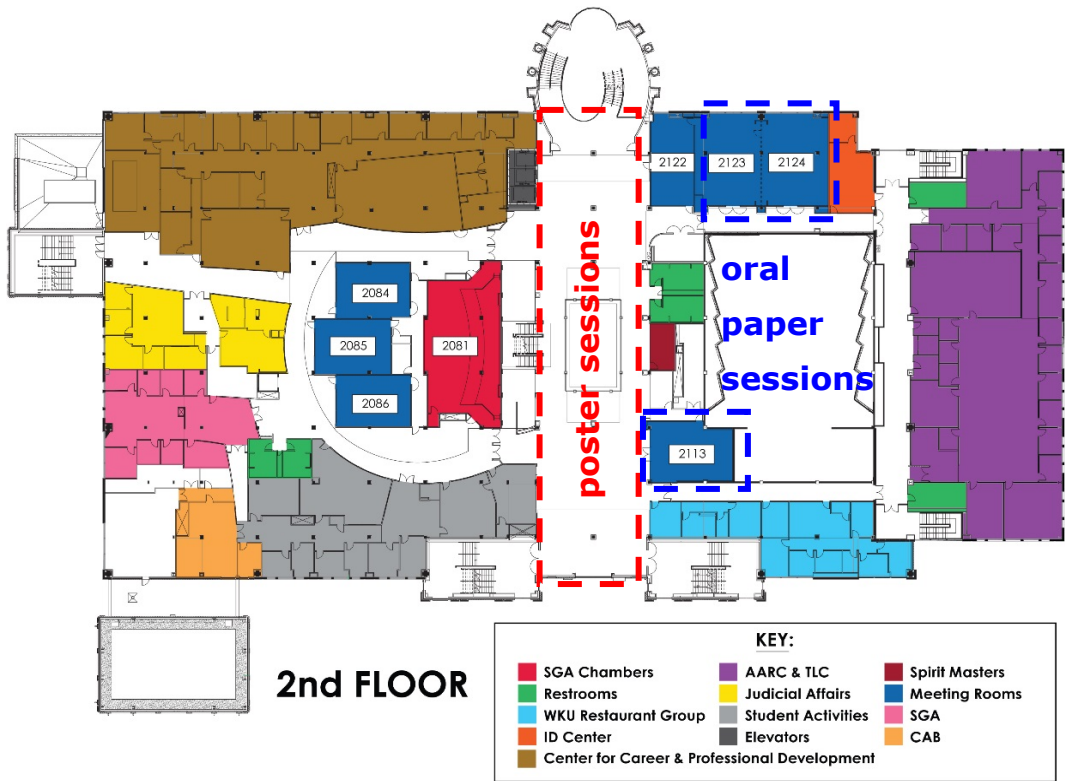
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CONFERENCE SCHEDULE

- 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



KEYNOTE SPEAKER AND LECTURE



Dr. Johanna Kovarik

**Lights in the Darkness:
Stories from the Underground**

10:00 – 11:15 am

DSU 3020

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.

CONFERENCE INTRODUCTION

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.

CONFERENCE HISTORY

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.

* Weiser, C. J. (1996, March 7) The Value System of a University: Rethinking Scholarship. Retrieved 30 November 2010 at www.adec.edu/clemson/papers/weiser.html.

CONFERENCE HIGHLIGHTS

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	Health Sciences
Art	History
Astrophysics	Interdisciplinary Studies
Biochemistry	Journalism and Broadcasting
Biology	Kinesiology, Recreation and Sport
Business Sciences	Mathematics
Chemistry	Music
Communication	Philosophy and Religion
Communication Sciences and Disorders	Physical Therapy
Computer Information Systems	Teacher Education
Computer Information Technology	Physics and Astronomy
Counseling and Student Affairs	Political Science
Economics	Psychological Sciences
Engineering and Applied Sciences	Psychology
English	Public Health
Family and Consumer Sciences	Social Work
Finance	Special Instructional Programs
Folk Studies and Anthropology	Teacher Education
Geography and Geology	Theatre and Dance

CONFERENCE ORGANIZATION AND SESSION WINNERS

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.

ACKNOWLEDGEMENTS

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 Keeseey	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	Nilesh Sharma
Cecile Garmon	David Lee	Rich Shumate
Jennifer Gill	Caryn Lindsay	Kandy Smith
Sherrie Godbey	Trish Lindsey Jagers	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 McCreary	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.

Ryanne 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

- 8:15 Roberts, Elizabeth** "Local Radio and Websites: How Radio Stations in the Tri-State Area Use Their Websites and Social Media to Engage Audiences" (Enakshi Roy)
- 8:30 DePoy, Hannah** "Canada's Memorialization of Indigenous Residential Schools" (Marko Dumančić)
- 8:45 Lyons, Sarah** "Baby Domination: The Aid of Unrealistic Behavior and Subjectivity in Baby-Specific Films" (Gillian Knoll)
- 9:00 Adkins, Emily; Payne, Holly** "Helicopter Parenting as a Function of Family Conformity and Conversation" (Holly Payne)
- 9:15 McCoy, Rachel** "I've Imagined Death So Much It Feels Like a Memory: The Purpose of Death in Nineteenth Century British Poetry" (Rob Hale)

Session 5 Room 3007, Undergraduate Papers, Arts and Humanities

Judges Jean-Luc Houle (moderator), Gail Hiles

- 8:15 Briggs, Emma** "The Utopic Balance between Adaptation and Tradition: Examining the Success of Amish and Mennonite Communities" (Anthony Harkins)
- 8:30 Watson, Hayley** "The Evolution of Fairy Tales" (Ted Hovet)
- 8:45 Zambrano, Max** "Analyzing Memoir's Structure and Purpose in Life" (Ted Hovet)
- 9:00 Wilham, Mary** "The Contemporary Female Influence on Tap Choreography" (Amanda Clark)
- 9:15 Downing, Shohei** "Sin, Development, and Punishment: Understanding Hawthorne's Unpardonable Sin" (Sandy Hughes)
- 9:30 Chagnon, Elizabeth** "Fragments and Frescoes: Contextualizing the Void in the Modern Art Museum" (Guy Jordan)

Session 6 Room 2113, Undergraduate Papers, Interdisciplinary

Judges Kumi Ishii (moderator), Sara McCaslin

- 8:15 Hughes, Joseph** "GIS & WKU Ogden Students: Where Are They and Why?" (Kevin Cary)
- 8:30 Scanlon, Kyla** "The Impact of Terrorism on Consumer Sentiment: Evidence from Twitter Data" (Lily Popova Zhuhadar)
- 8:45 Tawasha, Isabella** "Inconsistency and Inaccuracy of Sizing within the Fashion Industry" (Carrie Cox)
- 9:00 Huber, Murray** "Exploring the Community Integration and Involvement of Immigrant Children in the US through Jump Rope Camps" (Trini Stickle)
- 9:15 Hill, Elizabeth** "The Shakers: A Successful Utopian Society" (Sandra Hughes)
- 9:30 Potter, Abby** "Iconographic and Societal Layers in Bulgaria and Romania" (Elizabeth Gish)

Session 7 Room 2123, Undergraduate Papers, Natural Sciences

Judges Sanju Gupta (moderator), Matthew Nee

- 8:15 Van Antwerp, Jennifer** "Winter Storm Benji in Northern Georgia" (Joshua Durkee)
- 8:30 Williams, Abigail; Polk, Jason; Kambesis, Patricia** "Analysis of Cave Sediments in Cave Valley Cave, Nevada" (Patricia Kambesis)

- 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 Tinh; 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 Microbacteriophages 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 Xiuhaus 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 DiMeo, 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-cyclobutanedi-carboxylato(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 Ogonnaya, 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 Ferrell)
- 1:00 Antonic, Maja** "Female Combatants and Activists: Anti-Fascist Front of Women in Yugoslavia" (Marko Dumančić)
- 1:15 Abedinezhadmehrabadi, Zahra** "The Impact of Immigration on the Lives of Iranian Women: A Folklorist Approach" (Ann Ferrell)
- 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)
- 1:15 Lamb, Ryan**; Nee, Matthew "Monitoring Photolysis of Organic Pollutants Using Surface-Enhanced Raman Spectroscopy" (Matthew Nee)
- 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 Jagers

- 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)
1:15 Rogers, Luke "October 25-27, 2010 North American Mid-Latitude Cyclone: Reanalysis" (Joshua Durkee)
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 Ashrafzadeh)

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;** Winger, Steven "Effects of Multitasking on Self-Selected Pace and Distance while Walking" (Steven Winger)
- 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;** Dobrokhoto, Vladimir; Novikov, Ivan "Comprehensive Ultra-Sensitive Leak Analyzer for Prevention of Product Loss in Oil and Gas Industry" (Vladimir Dobrokhoto)
- 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)

Session 34 Second Floor Atrium, Graduate Posters, Interdisciplinary

Judges Kirolos Haleem (moderator), Yaser Mowafi

- 49B Shifflett, Thomas; Nisbet, Daniel; Saunders, Brady; Driver, Caleb; ; Young, Sonia** "Reliability of the Modified Clinical Test of Sensory Interaction on Balance Using a Virtual Balance Device" (Sonia Young)
- 50B De Logé, Desirée** "Tuning Effects of LefreQue Sound Bridges on Powell Flutes and Piccolos" (Heidi Alvarez)
- 51B Lemberg, Getter Marie; Wininger, Steven** "Impact of Texting While Cycling on Self-Selected Exercise Intensity" (Steven Wininger)
- 52B Penner, Matthew; Wichman, Aaron** "When the Facts Are Not Enough: Persuasion and Climate Change" (Aaron Wichman)
- 53B Henry, Shelby; Rollins, Casandra; Twidwell, Robert; Teeters, Jenni** "Trauma Type Differentially Impacts Alcohol Use Outcomes among College Students" (Jenni Teeters)
- 54B Blake, Deven; Meehan, Chloe; Hughes, Mallory; Anderson, Andrea; Putman, Heather; Copeland, Allyson** "The Effect of Lifetime Cognitive Activity on Later Life Cognitive Performance in Older Adults" (Matthew Shake)

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, Ajinkya 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; Kholikov, Khomidkhodzha; 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, Muhannad** "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; Belevkov, Ermek; Abdisararov, 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 if Urbanization Impacts on Urban Karst Groundwater" (Jason Polk)
- 12C Devarakonda, Koushik;** Cooper, Lauren; Belevkov, 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 Gearner, 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 Spiffy12" (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 (Ti₃C₂T_x) 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-piperzine)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)

- 29C Thompson, Amanda; Willis, Morgan** "Chemical Protection of Ascorbic Acid and Incorporation into a Monomer" (Lawrence Hill)
- 30C Smith, Jonathan** "A Description of the Axolotl Inner Ear" (Michael Smith)

Session 48 Second Floor Atrium, Undergraduate Posters, Interdisciplinary

Judges Autumn Forschler (moderator), Anne Heintzman

- 31C Hebenstiel, Lars** "Monte Carlo Modelling of Multiple Isotropic Scattering of Neutrons through Various Solids" (Eric Steinfelds)
- 32C Vowels, Lily;** Brackman, Thomas; Kambesis, Patricia; May, Mike; Meier, Albert "Effects of Subsurface Water Availability on Tree Growth in a Bottomland Plantation along the Green River" (Albert Meier)
- 33C Sims, Draven** "EBSCoR Student Internship for Journeyman Tool and Design, LLC" (Kevin Schmalz, Troy Robertson)
- 34C Bowlds, Anna** "Innovative Spaces Promoting Innovative Thought" (Shahnaz Aly)
- 35C Iglehart, Andrew** "Berkel Structural Failure" (Shane Palmquist)

Session 49 Second Floor Atrium, Undergraduate Posters, Social Sciences and Education

Judges Katrina Burch (moderator), Ann Ferrell

- 37C King, Shelby** "Attentional Capture Effects of Emotional Faces in Young Adults" (Andrew Mienaltowski)
- 38C Siewers, Anna;** Brausch, Amy "Non-Suicidal Self-Injury, Suicide Attempts, and Resilience in Ethnic and Sexual Minority Groups" (Amy Brausch)
- 39C Jackola, Kailee;** Redifer, Jenni; Stearns, Chloe "Impact of Remembering vs. Knowing in Strength of Belief in Neuromyths" (Jenni Redifer)
- 40C Miller, Kristen** "Mental Health Stigma in College Students by Academic Major" (Amy Brausch)
- 41C Alhudaithy, Sulaiman** "Design and Construction Building" (Shahnaz Aly)

Session 50 Second Floor Atrium, Undergraduate Posters, Social Sciences and Education

Judges Andrew Mienaltowski (moderator), Rich Schumate

- 43C Holt, Delaney** "Why Do You Want to Teach? Interpreting STEM Pre-Service Teachers' Motivations through a Semantic Lens" (Lisa Duffin)
- 44C King, Hannah; Young, Lauren** "Trait Anxiety and Procrastination Predict Surface Study Strategy Use" (Jenni Redifer)
- 45C Dukes, Jessica; Wheeler, Katie;** Luna, Catherine; Willoughby, Austin "Context Specificity in Predictive Learning: Comparing Visual and Auditory Contexts" (Sharon Mutter)
- 46C Vaughn, Samantha;** Collings, Colten "Studying the Perceived Outcomes of College Students Who Believe They Learn in Only One Way" (Lisa Duffin)
- 47C Fisk, Samuel;** Brausch, Amy "Suicidal Ideation in Young Adults with Autism Spectrum Disorder" (Amy Brausch)
- 48C Berry, Alyssa;** Derryberry, Pitt "Approaches to Parenting and Social Information Processing" (Pitt Derryberry)

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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