

# REACH | WEEK

RESEARCH EXPERIENCES AND CREATIVE HEIGHTS

MARCH 19-24, 2012

## 42nd Annual Student Research Conference

Saturday, March 24, 2012 | Gary A. Ransdell Hall  
Western Kentucky University | Bowling Green, Kentucky



WKU

# CONFERENCE SCHEDULE

- 7:30-8:30 am**      **Student Registration and Information Tables**  
Lobby/Atrium  
Breakfast Buffet Provided
- 8:30-10:00 am**      **Concurrent Paper Sessions I**  
Rooms 1002, 1003, 1089, 1091, 2002, 2003, 2005, 2006, 2008, 2009,  
2010, 2064, 3005
- 10:00-10:15 am**      **Break and Information Tables**  
Lobby/Atrium
- 10:15-11:45 am**      **Concurrent Paper Sessions II**  
Rooms 1002, 1003, 1089, 1091, 2002, 2003, 2005, 2006, 2008, 2009,  
2010, 3005
- 11:45-12:30 pm**      **Lunch Buffet**  
Lobby/Atrium
- 12:30-1:30 pm**      **Conference Spotlight on Creative Activity and Performance**  
Room 2064  
Introductory Remarks by Dr. Farley Norman and President Gary Ransdell
- 1:30-1:45 pm**      **Break and Information Tables**  
Lobby/Atrium
- 1:45-4:00 pm**      **Concurrent Paper Sessions III**  
Rooms 2009, 2010
- 1:45-4:00 pm**      **Concurrent Poster Sessions**  
Rooms 1002, 1003, 1089, 1091, 2002, 2003, 2005, 2006, 2008
- 4:00-4:30 pm**      **Break and Information Tables**  
Lobby/Atrium  
Refreshments Provided
- 4:30-6:00 pm**      **Sigma Xi Speaker Dr. W. Tad Pfeffer and Awards Ceremony**  
Room 1074  
Introductory Remarks by Dr. Gordon Baylis
- 6:00-6:30 pm**      **Closing Reception**  
Lobby/Atrium  
Refreshments Provided

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**Abstracts are available at [www.wku.edu/studentresearch](http://www.wku.edu/studentresearch)**



WESTERN KENTUCKY UNIVERSITY  
IS AN INSTITUTIONAL MEMBER OF THE  
COUNCIL ON UNDERGRADUATE RESEARCH  
*Learning Through Research*

# INTRODUCTION

The WKU Student Research Conference showcases the scholarly activities of graduate and undergraduate students of diverse disciplines from across main and regional campuses. An annual tradition since 1970, the conference has provided opportunities for thousands of students to present talks, performances, posters, exhibits, and displays on their research and creative endeavors.

WKU has a rich history of scholarly engagement of students. Scholarly activity has been defined as 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.

Between 1970 and 2002, the WKU chapter of Sigma Xi, which is an international research society, organized and funded the WKU Student Research Conference. 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 comprised of representatives of each college, the University Honors Program, and Sigma Xi organized the 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 other university units.

This year begins a new phase in the history of the conference. With support from the Office of the Provost and the Office of Research, the Student Research Council developed a weeklong celebration of student scholarship. REACH (Research Experiences and Creative Heights) Week spanned March 17-24 and featured a keynote address by archaeologist and author Dr. Brian Fagan, as well as research showcases hosted by nine colleges and programs. The conference is the culminating activity of REACH Week.

\* 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](http://www.adec.edu/clemson/papers/weiser.html)

# — CONFERENCE HIGHLIGHTS —

With 269 presentations, the 42<sup>nd</sup> Annual WKU Student Research Conference is, by far, the biggest in the event's history. There are 146 papers, 111 posters/exhibits, six performances/videos, and six spotlight presentations. A total of 184 undergraduate students and 85 graduate students are primary authors this year, and an additional 151 students are co-authors.

This year's conference features a presentation by a student of the new Educational Leadership doctoral program (Ed.D.) in the Department of Educational Administration, Leadership, and Research. Wesley Waddle is presenting a paper entitled "An Analysis of Factors Impacting K-12 Technology-Infused Lesson Design."

Among the undergraduate participants in the conference are 69 Honors College students. In addition, 32 of the undergraduate participants are students in the Carol Martin Gatton Academy of Mathematics and Science in Kentucky. Since its creation in 2008, a total of 102 Gatton Academy students have presented at the conference. Honors College students are indicated with an asterisk (\*) symbol in the session schedule, and Gatton Academy students are indicated with a caret (^) symbol.

A total of 154 faculty members served as mentors, providing expert instruction and guidance to our student researchers and artists. Student participants represent 33 departments and programs from all colleges, as listed below.

- Agriculture
- Architectural and Manufacturing Sciences
- Art
- Biology
- Business
- Chemistry
- Communication
- Communication Disorders
- Computer Science
- Consumer and Family Sciences
- Economics
- Educational Administration, Leadership, and Research
- Engineering
- English
- Folk Studies and Anthropology
- Gender and Women's Studies
- Geography and Geology
- History
- Interdisciplinary Studies
- Management
- Mathematics
- Modern Languages
- Music
- Nursing
- Philosophy and Religion
- Physics and Astronomy
- Political Science
- Popular Culture Studies
- Psychology
- Public Health
- Social Work
- Sociology
- Theatre and Dance

# STUDENT SPOTLIGHT

This year the Student Research Council is pleased to spotlight the creative works of six undergraduate students from Potter College of Arts and Letters. The performances and presentations will be held in GRH 2064 and are open to the entire campus community; this is a swiipeable event for WKU students. WKU President Gary Ransdell will make introductory remarks.

## **Solo Performance Pieces**

Two students from the Department of Theatre and Dance will perform short one-act plays that they wrote and staged. The students prepared these original performance pieces based on their research on historical figures. Their faculty mentor is Dr. Michelle Dvoskin.

### **Lusie Cuskey, “Finding the Words”**

A performance artist looking for the story of her life meets a world-shaking activist with a lifetime of stories through the pages of history. In "Finding the Words," artist and scholar Lusie Cuskey battles the Google, shuns shotguns in suburbia, and takes to the trails Judy Freespirit began blazing decades ago in a celebration of possibility as she embarks on an epic adventure from the people she's been to the person she wants to be.

### **Vicky Siegrist, “The Ties That Bind”**

This performance examines the mystery of friendship, drawing lines across history between the relationship of Zelda and F. Scott Fitzgerald and the friend-ships of a contemporary young woman. Combining fact and fiction and drawing on memoirs, biographies, novels, and personal experience, “The Ties that Bind” examines the complexities, pain, and beauty of our most cherished friendships and relationships.

## **Creative Readings**

Four students from the Department of English will read short, creative works. Their original pieces include poetry, fiction, and creative non-fiction. Their faculty mentors are indicated below.

### **Brittany Cheak, “Cord Stretched Tight” and “Daddy’s Answer to Everything”**

Brittany will read two original poems. A junior majoring in Creative Writing with a minor in Gender and Women’s Studies, Brittany received first place in the 2011 Jim Wayne Miller contest and she has been published in *Still*. She won a scholarship to participate in WKU’s creative writing workshop with Maurice Manning. Brittany’s faculty mentor is Dr. Mary Ellen Miller.

**Samantha Starr, “Listen Closely”**

Samantha will read from her original fiction short story. This junior from Elizabeth-town is majoring in Creative Writing with a minor in Gender and Women’s Studies. Samantha is an office worker extraordinaire in the Department of English. Her faculty mentor is Dr. David Bell.

**Seanna Wilhelm, “Claustrophobia” and “Fade Away”**

Seanna will read two original poems. She is majoring in English (professional writing concentration) with minors in Creative Writing and Gender and Women’s Studies. Seanna received second place in the 2010 Jim Wayne Miller contest and has been published in *Zephyrus*. Her faculty mentor is Dr. Tom Hunley.

**Tracy Jo Ingram, “How to Manage at Your First Pretentious Poetry Award Ceremony”**

Tracy will read from her original creative nonfiction work. A junior majoring in English Literature with minors in Creative Writing and Gender and Women’s Studies, Tracy recently studied at Harlaxton College in England. This summer she will make a third trip to Israel and Palestine, where she serves as team captain of an international service-learning program. Tracy’s faculty mentor is Dr. Dale Rigby.

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## CONFERENCE SPEAKER

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**Dr. William Tad Pfeffer** is a professor in the Geotechnical Engineering and Geomechanics Group of the Department of Civil, Environmental, and Architectural Engineering at the University of Colorado at Boulder. He holds baccalaureate and Master’s degrees in geology from the University of Vermont and the University of Maine, respectively, and his Ph.D. in geophysics is from the University of Washington. Dr. Pfeffer’s expertise is in glacier dynamics, heat and mass transfer in snow, ice and porous media, mechanics and thermodynamics of continuous media, fluid dynamics, and experimental methods in snow hydrology. In December 2011 PBS featured Dr. Pfeffer’s research on the rapid melting of arctic glaciers in a Nova special “Extreme Ice.” Among other publications, he has several articles on the relationship between glaciers and global sea level in the prestigious journal *Science*.



Dr. Pfeffer’s presentation is entitled **Future Sea Level: Where Do We Go from Here?** Sea level rise is among the most tangible and potentially costly global changes facing society in the near future. Projections of future sea level rise, based on numerical models, extrapolations of present-day observations of rates of change, and analogies with changes inferred from the paleoclimate record, produce a wide range of future

outcomes and contain significant uncertainties that most likely do not capture all of the important unknowns. The ability of the scientific community to project sea level is advancing rapidly, but is still very limited; at the same time, societal needs for clear and dependable near-term forecasts of future sea level are increasing, while political forces are at work to undermine the credibility of the scientific study of sea level rise and the reality of environmental change generally.

Much of the uncertainty in future sea level rise lies in the determination of glacier and ice sheet contributions through melting of ice and through the discharge of icebergs directly into the ocean. Dr. Pfeffer's talk focuses on the glaciological aspects of future sea level rise. He reviews the current state of glaciological contributions to sea level change into the 21<sup>st</sup> century and beyond, with particular emphasis on the evaluation of uncertainty in projections. He explores some means of constraining uncertainty, including statistical methods and simple schemes for establishing limiting conditions. Finally, Dr. Pfeffer considers the study of sea level rise, and climate science more generally, in the political and social area in which it has been obliged to operate, and discusses some of the ways that political discourse interacts with, and confounds, scientific discourse.

Dr. Pfeffer's presentation is open to the entire campus community and is a swipearable event for WKU students. It is sponsored by the WKU chapter of Sigma Xi.

## **AWARDS CEREMONY**

WKU faculty and professional staff will judge student presentations, performances, posters, and exhibits at the conference. The judges will select one winner from each of the 41 sessions listed on pages 11-27 in this program.

**Conference session winners** will be announced and acknowledged after Dr. Pfeffer's Sigma Xi presentation in the late afternoon. All students who presented papers and posters at the conference, as well as family members, friends, faculty mentors, and administrators, are invited to attend.

A special feature of the Awards Ceremony is recognition of **Dr. Valgene L. Dunham**, Distinguished Professor Emeritus at Coastal Carolina University and former faculty member at Western Kentucky University. During his tenure at WKU, Dr. Dunham was instrumental in creating opportunities for undergraduate research in the Department of Biology. Though we have come to take it for granted, as demonstrated by the hundreds of students participating in this year's conference, at that time it was very unusual for undergraduate students at WKU to engage in research, much less to receive course credit for doing so. Dr. Dunham, however, had a passion for integrating independent student research experiences into the science curriculum.



Dr. Dunham truly believed that a research experience was pedagogical. In the late 1980s, this was a revolutionary viewpoint. His resilient push to incorporate a strong undergraduate research program into the molecular sciences is one of the main reasons why WKU is known for providing students with the critical-thinking and technical skills necessary to enter highly competitive graduate programs at Yale, John Hopkins, Berkeley, Vanderbilt, and other research institutions. Dr. Dunham's pioneering dedication to undergraduate research in biology helped to lay the foundation for similar opportunities across the WKU campus.

Receptions with light refreshments will be held before and after the Sigma Xi speaker and awards ceremony.

## — INFORMATION TABLES —

Representatives from a variety of campus offices and organizations will be hosting informational tables in the Lobby/Atrium during the WKU Student Research Conference. Students are encouraged to visit the information tables throughout the day.

**Study Away** provides off-campus for-credit learning opportunities. Focusing on partnerships in creative learning, Study Away extends the classroom beyond the campus borders to increase a sense of citizenship and enhance American cultural understanding. A premiere part of Study Away is the National Student Exchange, in which students spend a semester or an academic year at one of over 183 campuses throughout the United States, Guam, Puerto Rico, and the U.S. Virgin Islands. Pay WKU tuition, while taking courses that may complement your WKU degree. **Contact** Jerry Barnaby at [study.away@wku.edu](mailto:study.away@wku.edu) or visit [www.wku.edu/studyaway](http://www.wku.edu/studyaway)

The **Kentucky Institute for International Studies (KIIS)** provides WKU students across the academic spectrum with study abroad opportunities in Europe, Africa, Asia, Canada, and Latin America. KIIS is recognized as a leader in international education and is one of the most cost-effective study abroad organizations in the United States. KIIS programs are faculty-led and all course credit is issued by WKU. Undergraduate, graduate, honors, and non-degree seeking students are welcome to apply. WKU faculty are invited to teach abroad with KIIS. Visit [www.kiis.org](http://www.kiis.org) for scholarship, application, and program information. **Contact** Dr. John Dizgun at [kiis@wku.edu](mailto:kiis@wku.edu) and 270-745-4416

The **Office of Graduate Studies and Research** provides information regarding graduate programs available at WKU. Once admitted to a graduate degree program, students may apply for research grants to help support their research. If interested in graduate program opportunities at WKU, including admission requirements, please be sure to stop by our table. **Contact** Crissy Priddy at [crissy.priddy@wku.edu](mailto:crissy.priddy@wku.edu)

**Sigma Xi**, a national scientific research society of scientists and engineers, is an honor society that recognizes scientific achievement. The society is a diverse organization of members and chapters dedicated to companionship in science and engineering and to the advancement of knowledge through research, service, and teaching. Stop by the Sigma Xi table to learn more about joining and the various programs the society offers. **Contact** Dr. Ajay Srivastava at [ajay.srivastava@wku.edu](mailto:ajay.srivastava@wku.edu)

The intellectual environment of the **Honors College** is designed for undergraduate students interested in a highly selective private school experience surrounded by the resources of a robust state university. The Honors in the Major program may be of particular interest to current students seeking an honors experience. **Contact** Eileen Ryan at [eileen.ryan@wku.edu](mailto:eileen.ryan@wku.edu) or Lindsey Westerfield at [lindsey.westerfield@wku.edu](mailto:lindsey.westerfield@wku.edu)

The **Office of Scholar Development (OSD)** supports WKU students throughout the process of finding and applying for nationally competitive scholarships, research opportunities, internships, and a variety of post-graduation opportunities. Whether you are looking for funding for a specific project or just curious about potential national and international scholarship opportunities, OSD can help. **Contact** Dr. Audra Jennings at [osd@wku.edu](mailto:osd@wku.edu)

The WKU **ALIVE Center for Community Partnerships** and the **Institute for Citizenship & Social Responsibility** are seeking graduate assistants for the Hill House program. Hill House is a graduate-level community development and research program at WKU that provides the opportunity for students to live at and work from a house bordering campus on projects that address local issues. If you are considering a graduate program at WKU in the fall and have an interest in learning how you can utilize your academic coursework to create impact in the community of Bowling Green, be sure to stop by our table for more information on this unique opportunity! **Contact** Nadia DeLeon at 270-782-0966 and [nadia.deleon@wku.edu](mailto:nadia.deleon@wku.edu) or Terry Shoemaker at 270-745-3217 and [terry.shoemaker@wku.edu](mailto:terry.shoemaker@wku.edu)

**TopSCHOLAR®** is a university-wide, centralized digital repository dedicated to scholarly research, creative activity, and other full-text learning resources that merit enduring and archival value, permanent and open access. WKU faculty, staff, and faculty-sponsored students are encouraged to publish in TopSCHOLAR®. The Student Research Conference will have a strong presence in TopSCHOLAR®. Go to [digitalcommons.wku.edu](http://digitalcommons.wku.edu) or just “Google” TopSCHOLAR®! **Contact** Connie Foster at [connie.foster@wku.edu](mailto:connie.foster@wku.edu)

# ACKNOWLEDGEMENTS

On behalf of the entire campus community, the members of the WKU Student Research Council extend appreciation and congratulations to the hundreds of students who participated 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 meet and overcome challenges, not only distinguishes you from your peers, it serves as an inspiration to others. We are proud of your accomplishments, and you should be, too.

Faculty members who served as mentors to students are indicated parenthetically throughout the conference schedule and abstracts. We commend the faculty mentors for their support of student scholarly activities and for their assistance in preparing students for the conference.

WKU faculty/staff serving as conference session judges are Cathy Abell, Khaldoun Almously, Keith Andrew, Shahnaz Aly, Ferhan Atici, Therese Baker, Gordon Baylis, Leslie Baylis, Thomas Bell, Lauren Bland, Dana Bradley, Amy Brausch, Nicole Breazeale, Bryan Carson, Krisstal Clayton, Margaret Curtis, Rajalingam Dakshinamurthy, Tucker Davis, Laura DeLancey, Patricia Desrosiers, Matthew Dettman, Carl Dick, Scott Dobler, Vladimir Dobrokhoto, Kinchel Doerner, Mark Doggett, Laura Dotson, Lisa Duffin, Amanda Ervin, Kari Everett, Xingang Fan, Shilo Felton, Ann Ferrell, Matt Foraker, James Fulkerson, Cecile Garmon, Becky Gilfillen, Erin Greunke, Margaret Gripshover, Steve Haggbloom, Lance Hahn, Jennifer Hanley, Gail Hiles, Margaret Hook, Cynthia Houston, Emmanuel Iyiegbuniwe, Trish Jagggers, Molly Kerby, Jae Kim, Rachel Kinder, Kate King, Thomas Kingery, Gail Kirby, Alison Langdon, Ingrid Lilly, Jeremy Maddox, Kelly Madole, Nancy Mager, Sara McCaslin, Laura McGee, Gordon McKerral, Rosemary Meszaros, Akihiko Michimi, Andrew Mienaltowski, Zubair Mohamed, Chris Nagy, Amy Nemon, Leslie North, Sara Northerner, Anne Onyekwuluje, Nielsen Pereira, Tina Peterson, Jason Polk, Attila Por, Hemali Rathnayake, Stephen Rey, Claire Rinehart, Tim Ritter, Ian Schnee, Karen Schneider, Richard Schugart, Bruce Schulte, David Serafini, Jonghee Shim, Michael Smith, Larry Snyder, Roxanne Spencer, Martin Stone, Dick Taylor, Michelle Trawick, Mercedes deUriarte, Carol Watwood, Adam West, Aaron Wichman, Todd Willian, Jennifer Wright, Rong Yang, and Jie Zhang. We greatly appreciate the support of the faculty/staff judges.

Funding for the 42<sup>nd</sup> Annual WKU Student Research Conference and other REACH Week activities was provided by the Office of the Provost and Vice President for Academic Affairs, the Office of Research, and the WKU Chapter of Sigma Xi.

The Office of Public Affairs developed electronic advertising and provided photography services for REACH Week events and designed the conference program cover, conference room signs, and REACH Week posters and postcards. Special thanks to Tom Meacham and Alicia Carter. The REACH Week dinner was organized by Lucinda

Anderson, Leslie Baylis, Jill Blythe, Sonya Bjork, Kathryn Costello, Richard DuBose, Lois Hall, Tori Henninger, Amy Miller, and Lynn Minton. Darlene Applegate, Emily Nation, Farley Norman, and Ajay Srivastava arranged travel for REACH Week speakers. Honors Toppers and Office of Scholar Development Ambassadors assisted at the conference and other REACH Week activities.

The conference is organized by the WKU Student Research Council. Members of the Council are Darlene Applegate, Cathy Carey, Brittany Crowley, Audra Jennings, Rodney King, Andrew Mienaltowski, Christine Nagy, Donald Nims, Farley Norman (Chair), Carnetta Skipworth, Larry Snyder, Ajay Srivastava, and Derick Strode. For more information about the Council, visit [www.wku.edu/studentresearch](http://www.wku.edu/studentresearch).

## **PAPER SESSIONS I**

### **Graduate Paper Session 1: Business and Interdisciplinary**

**Room: GRH 1002**

**Judges: Dr. Michelle Trawick (moderator) and Mr. Tim Ritter**

- 8:30 **Vedangi Mahashabde** Cost Management Using Lean Strategy (Dr. Mark Doggett)
- 8:45 **John Stephens and Heather Nett** Kentucky Incentive Programs (Dr. William Davis)
- 9:00 **Mark Wegener and Tom Morris** Substitution Effects on the Optimal Retail Assortment (Dr. Zubair Mohamed)
- 9:15 **James Miller** Economic Cultures of Gales Point Manatee (Dr. Molly Kerby)
- 9:30 **Damian Wirth, Brandi West, Erin Desmarais, Kathy Wilson, and Danilo Amoretty** Extended Drive-Thru Staffing (Dr. Zubair Mohamed)

### **Graduate Paper Session 2: Social Sciences/Services**

**Room: GRH 1003**

**Judges: Dr. Lauren Bland (moderator), Mr. Stephen Rey, and Dr. Tina Peterson**

- 8:30 **Jocelyn Baldor, Sandra Starks, and Vella Mae Travis** Reinventing Outreach: A Service Delivery Model for Rural Mental Health Needs (Dr. Sandra Starks)
- 8:45 **Ryan Cummings** Cross-Cultural Forgiveness: Explaining Decisional and Emotional Forgiveness Via Face Negotiation Theory (Ms. Sabine Chai)
- 9:00 **Jessica Holmin** Aging and Weight Ratio Estimation (Dr. Farley Norman)
- 9:15 **Austin Klaine and Luhan Wang** Selected Public Sector Salaries: A Comparison of the United States and China (Dr. Victoria Gordon)
- 9:30 **Wesley Waddle** An Analysis of Factors Impacting K-12 Technology-Infused Lesson Design (Dr. William Schlinker)

### **Graduate Paper Session 3: Natural Sciences**

**Room: GRH 1089**

**Judges: Prof. Shanaz Aly (moderator) and Mr. Tucker Davis**

- 8:30 **Lakshmisri Vangala and Vivek Badwaik** Differential Behaviors of Osmolytes on the Stability of All Beta-Sheet Proteins (Dr. Rajalingam Dakshinamurthy)
- 8:45 **Gilman Ouellette and Jason Polk** Paleohydrology and Climate Change in the Eastern Caribbean from Barbadian Speleothems (Dr. Jason Polk)
- 9:00 **Sinem Karatas** Ordered Compactifications (Dr. Tom Richmond)
- 9:15 **Kamal Humagain** Measuring Land Use and Land Cover Change Using Satellite Imagery in Sagarmatha National Park, Nepal (Dr. John All)
- 9:30 **Brady Garabato and Jeremy Maddox** Theoretical Pre-Design of Optically Active Rare-Earth Polyoxometalate Systems (Dr. Jeremy Maddox)
- 9:45 **Marc Oakley** Artisan and Folklife Center Main Complex (Prof. Laura Dotson)

### **Graduate Paper Session 4: Natural Sciences**

**Room: GRH 1091**

**Judges: Dr. Xingang Fan (moderator) and Prof. Thomas Kingery**

- 8:30 **Sumbul Khan** Application of Lean Principles to Performance Measurement (Dr. Mark Doggett)
- 8:45 **Rachel Bowles** Comprehensive Analysis of Ostracode Morphology and Shell Chemistry to Better Understand Proxies for Paleosalinity (Dr. Fred Siewers)
- 9:00 **Amanda Campbell** Tracing the Evolution of Telomerase for an Ancestral Precursor to Define and Suggest Cancer Therapeutics (Dr. Chandrakanth Emani)
- 9:15 **Sruthi Bhushan Pitla and Guangming Xing** Organizational Search in Email Systems (Dr. Guangming Xing)
- 9:30 **Nicholas Lawhon** A Geospatial Statistical Correlation of Drainage Density and Surface Water Quality Impairment (Dr. Jason Polk)

### **Graduate Paper Session 5: Natural Sciences**

**Room: GRH 2002**

**Judges: Dr. Carl Dick (moderator) and Dr. Kari Everett**

- 8:30 **Pranav Chandra and Nilesh Sharma** Effect of Coconut Oil (*Cocos nucifera*) on Ulcerative Colitis in a Mouse Model (Dr. Nilesh Sharma)
- 8:45 **Nitin Kumar Pally** Porous 3-D Metal Organic Framework Using Copper Ion and Benzene Tricarboxylate as Building Blocks (Dr. Bangbo Yan)
- 9:00 **Alexander Larin, Vladimir Dobrokhotov, Landon Oakes, Dewayne Sowell, and Jessica Hall\*** Thermal and Optical Activation of Conductometric Sensors (Dr. Vladimir Dobrokhotov)
- 9:15 **Vinaykumar Nadipelly** Dynamic Scoping for a Browser-Based Access Control System (Dr. Guangming Xing)
- 9:30 **Tyler Clark** Continued Radicals and Cantor Sets (Dr. Tom Richmond)

### **Graduate Paper Session 6: Natural Sciences**

**Room: GRH 2003**

**Judges: Dr. Jeremy Maddox (moderator) and Ms. Amanda Ervin**

- 8:30 **Anvesh Reddy** Phosphorous Transport and Distribution in Kentucky Soils Prepared Using Various Manure Types (Dr. Stuart Burris)
- 8:45 **Melissa Cary** Making Music Sustainable: The Case of Marketing Summer Jamband Festivals in the United States, 2010 (Dr. Margaret "Peggy" Gripshover)
- 9:00 **Elizabeth Krantz** Sharpening the Boundaries of the Sequential Probability Ratio Test (Dr. Melanie Autin)
- 9:15 **Kelin Wang\*^ and William Orndorff** Greenhouse and Field Studies of Flue Gas Desulphurization Byproducts Amended Soil (Dr. Yan Cao)
- 9:30 **Julia Freeman** Single Nucleotide Polymorphisms Linked to Essential Hypertension in Kasigau, Kenya (Dr. Nancy Rice)
- 9:45 **Linda Baizel** Use of the Handheld Gamma-Ray Scintillometer for Correlation of Outcrops and Subsurface Mississippian and Pennsylvanian Rocks of Northern Warren County, Kentucky (Dr. Michael May)

### **Undergraduate Paper Session 1: Natural Sciences**

**Room: GRH 2005**

**Judges: Dr. Kinchel Doerner (moderator) and Ms. Amy Nemon**

- 8:30 **Victoria Gilkison\*, Elizabeth Malloy, Scott Grubbs, and Jennifer Yates** Stable Isotopic Analysis of the Upper Green River in Hart County, Kentucky (Dr. Albert Meier)
- 8:45 **Joseph Wilson, Benjamin Steinhaus, Joshua Crockett, Kevin Schmaltz, Joel Lenoir, and Chris Moore** Phase 3 of Design, Build and Test of a Bio-Diesel Facility (Dr. Kevin Schmaltz)
- 9:00 **Dillon Pender\*, Lakshmisri Vangala, and Vivek Badwaik** Green Synthesis and Characterization of Starch Gold Nanoparticles with Bactericidal and Catalytic Activity (Dr. Rajalingam Dakshinamurthy)
- 9:15 **Ethan Blandford** Depression and the 5-HTTLPR Gene (Dr. Chandrakanth Emani)
- 9:30 **John Wilson\* and Ivan Novikov** Sensitivity of Nuclear Cross Section Calculation in Glauber Theory to Parameters of Markov Chain Monte Carlo Integration (Dr. Ivan Novikov)
- 9:45 **Jason Howard and Andrew Wulff** Characterization of Copper Ore from the Ruth District, Ely, Nevada (Dr. Andrew Wulff)

### **Undergraduate Paper Session 2: Natural Sciences**

**Room: GRH 2006**

**Judges: Dr. Michael Smith (moderator) and Ms. Erin Greunke**

- 8:30 **Kyle Mattingly\*** Large, Long-Lived Convective Systems in Subtropical South America and Their Relationship with Atmospheric Teleconnections (Dr. Joshua Durkee)
- 8:45 **Leah Frazier\* and Ken Crawford** Stimulation of Cell Migration in Corneal Endothelial Cells (Dr. Ken Crawford)

- 9:00 **William Bickett<sup>^</sup>, Benjamin Rice<sup>^</sup>, and Phillip Womble** Measurement of Doppler Shift in Oxygen-16 (Dr. Phillip Womble)
- 9:15 **John Crandall and Andrew Wulff** Mineral Assemblage Characterization of Ores from the Quartz Hill Molybdenum Deposit, Alaska (Dr. Andrew Wulff)
- 9:30 **Clarice Esch\*** A Potential Solution to the Nitrogen Dilemma in Modern Agriculture (Dr. Martin Stone)
- 9:45 **Lindsay Williams\* and Nancy Rice** The Prevalence of Essential Hypertension in Kasigau, Kenya (Dr. Nancy Rice)

### **Undergraduate Paper Session 3: Humanities**

**Room: GRH 2008**

**Judges: Dr. Ingrid Lilly (moderator), Ms. Gail Hiles, and Dr. Larry Snyder**

- 8:30 **Joseph Hildesheim** Understanding the Prosthetics of Humanity (Prof. David Marquez)
- 8:45 **Kyle Young\*** Benjamin, Surrealism, and Translation: The Revolutionary Potential of Language (Dr. Adrian Switzer)
- 9:00 **Lindsey Mattingly** Lawyers, Jews, and Queers, Oh My: Exile in Tony Kushner's *Fantasia* (Dr. Nikolai Endres)
- 9:15 **Mark Reeves\*** The Rally of French Equatorial Africa to Charles De Gaulle, August 1940 (Dr. Eric Reed)
- 9:30 **Ashley Coulter\*** Pale in Comparison: Dissent within Alice Walker's *In Search of Our Mothers' Gardens* (Dr. Sandra Hughes)

### **Undergraduate Paper Session 4: Humanities**

**Room: GRH 2009**

**Judges: Dr. Cecile Garmon (moderator) and Prof. Rosemary Meszaros**

- 8:30 **Stefan Meadows** Naturally Artificial: The Art of Kubrick's Artifice in *Full Metal Jacket* (Dr. Karen Schneider)
- 8:45 **Katherine Ferriell\*** Kara Walker's *Silhouettes*: Exposing the Violence of Racial and Sexual Subjugation (Dr. Ingrid Cartwright)
- 9:00 **Allison Parks\*** Burnout and Compassion Fatigue in the Nursing Workforce (Dr. Kelly Reames)
- 9:15 **Erin Kenney** Rawls, Geuss, and Normative Philosophy (Dr. Michael Seidler)
- 9:30 **Cody Nimmo** Change: Altering How We Perceive an Environment through Sculpture (Prof. David Marquez)
- 9:45 **Audrey Gearhart\*** Daisy Miller and the Problem of Marxist Literary Interpretation (Dr. Kelly Reames)

### **Undergraduate Paper Session 5: Social Sciences/Services**

**Room: GRH 2010**

**Judges: Dr. Lisa Duffin (moderator), Dr. Patricia Desrosiers, and Ms. Nielsen Pereira**

- 8:30 **Eileen Forsythe\*** A Comparative Analysis of Judicial Selection Methods in Tennessee and Kentucky: Appointed vs. Elected (Dr. Brian Strow)
- 8:45 **Brittany Cheak** One Size Fits All: Media Portrayal of Women and the Movement for Change (Dr. Kate Hudepohl)

- 9:00 **Kaitlin Vonderschmitt\*** The Growing Use of Social Media in Political Campaigns: How to Use Facebook, Twitter, and Youtube to Create an Effective Social Media Political Campaign (Dr. Joel Turner)
- 9:15 **John “Jack” LeSieur, Kelly Lafferty, and Darlene Applegate** Cultural Resources at Kyrock, Kentucky: An Initial Assessment (Dr. Darlene Applegate)

### **Undergraduate Video/Performance Session 1: Humanities**

**Room: GRH 2064**

**Judges: Prof. Dick Taylor (moderator), Ms. Sara McCaslin, and Ms. Trish Jagers**

- 8:30 **Roshunda Brown** Ascendency (Prof. Clifton Brown)
- 8:45 **Mitchell Haley** React (Prof. Clifton Brown)
- 9:00 **Kyle MacDonald\*** Olympia, a Musical Composition for Wind Ensemble (Dr. Michael Kallstrom)
- 9:15 **Tiffany Guy\*** The Takeover (Prof. Amanda Clark)
- 9:30 **Kylene Stephens, Roshunda Brown, Heather Chenault, Carrie Farmer, Fiona Mowbray\*, Jade Primicias\*, and Karsyn Rohach** Tell Me About Yourself (Prof. Lisa Draskovich-Long)
- 9:45 **Jessica Williams\*** Rhythm of My Sole (Prof. Amanda Clark)

### **Undergraduate Paper Session 6: Natural Sciences**

**Room: GRH 3005**

**Judges: Drs. Claire Rinehart (moderator) and Sara Northerner**

- 8:30 **Hannah Pennington<sup>^</sup>, Richard Schugart, and Canaan Coppola** Quantifying Parameters for a Mathematical Model on the Interaction of Matrix Metalloproteinases and Their Inhibitors in a Wound (Dr. Richard Schugart)
- 8:45 **Suzanna Sadler\* and Louis Strolger** The Ages and Metallicities of Type Ia Supernova Host Galaxies from the Nearby Galaxies Supernova Search Program (Dr. Louis Strolger)
- 9:00 **Michael Hunter** Can the Health Risks of Genetically Modified Corn Be Reversed? (Dr. Chandrakanth Emani)
- 9:15 **Preston Dallas and Xingang Fan** Characteristics of Karst Areas on Precipitation Amounts (Dr. Xingang Fan)
- 9:30 **Brenna Tinsley\*, Scott Grubbs, and Albert Meier** The Ecological Roles of *Podostemum ceratophyllum* and Cladophora in the Habitat and Dietary Preferences of the Riverine Caddisfly *Hydropsyche simulans* (Dr. Scott Grubbs)
- 9:45 **Arrington, Elizabeth** Integrating Folk Concepts into Modern Architectural Form (Prof. Laura Dotson)



# PAPER SESSIONS II

## Graduate Paper Session 7: Natural Sciences

Room: GRH 1002

Judges: Drs. Thomas Bell (moderator) and Hemali Rathnayake

- 10:15 **Andrea Toll, Hillary Asberry\*, and Darwin Dahl** Racemization of Amino Acids in Teeth for the Determination of Age (Dr. Darwin Dahl)
- 10:30 **Luke Miles** Statistical Analysis to Determine Advanced Spaceborne Thermal Emission and Reflection Radiometer and Shuttle Radar Topography Mission Accuracy (Dr. John All)
- 10:45 **Sri Harsha Vege** Ensemble of Multiple Feature Selection Techniques (Dr. Huan-jing Wang)
- 11:00 **Jeremy London** Preliminary Characterization of Hydrocarbon Development in Paleovalleys of the Mississippian-Pennsylvanian Unconformity in the Illinois Basin (Dr. Michael May)
- 11:15 **Nihan Acar** A New Approach to Data Fitting in Time Dependent Cancer Therapeutic Study (Dr. Ferhan Atici)
- 11:30 **Ramya Kolli** Effect of Leaving Ligands of Platinum Complexes on Guanine Residue of DNA and Methionine Protein Residue (Dr. Kevin Williams)

## Graduate Paper Session 8: Natural Sciences

Room: GRH 1003

Judges: Drs. Margaret "Peggy" Gripshover (moderator) and Bruce Schulte

- 10:15 **Gopinath Rajadinakaran, Huifang Sun, Eric Rouchka, Claire Rinehart, and Michael Smith** Cell Proliferation and Apoptotic Pathways Regulated in Zebrafish Auditory Hair Cell Regeneration Using Next Generation Sequencing (Dr. Michael Smith)
- 10:30 **Sarah Arpin** Hydrogeology of the Haney Limestone, South-Central Kentucky (Dr. Chris Groves)
- 10:45 **Jason Young and Chad Snyder** Synthesis, Characterization, and Structure of Some Group VII Organometallics (Dr. Chad Snyder)
- 11:00 **Sunny Potay** Secret Sharing Scheme on Visual Cryptography (Dr. Mustafa Atici)
- 11:15 **Andrew Reeder** Development of a Base GIS Package for Reconnaissance and Site Selection in the Illinois Basin: Focusing on the Basal Pennsylvanian Unconformity in Parts of Kentucky (Dr. Michael May)
- 11:30 **Eric Vanover, Yan Huang, Chris Abebrese, Helen Thompson, Cathleen Webb, and Rui Zhang** Photochemical Production of Trans-dioxoruthenium(vi) Porphyrin Complexes (Dr. Rui Zhang)

### **Graduate Paper Session 9: Humanities**

**Room: GRH 1089**

**Judges: Prof. Gordon McKerral (moderator), Ms. Nancy Mager, and Mr. David Serafini**

- 10:15 **Kathy Douglas** Satire or Commentary: A Look at *Of All Creatures Women Be Best* (Dr. Alison Langdon)
- 10:30 **Rachel Hopkin** The Bottle Artist (Dr. Tim Evans)
- 10:45 **Kevin Dorth** Gallipoli and Kut-al-amara: A Comparative Analysis (Dr. Juan Romero)
- 11:00 **Addison James** The Effectiveness of Using the Kentucky Department of Education English Transitional Course Curriculum Framework to Improve ACT English Scores with College and Career Readiness Standards (Dr. Angela Jones)
- 11:15 **Sarah McCartt-Jackson** The Invasion of the Scarecrows and Community Aesthetic Perspectives (Dr. Tim Evans)

### **Graduate Paper Session 10: Natural Sciences**

**Room: GRH 1091**

**Judges: Drs. Rajalingam Dakshinamurthy (moderator) and Rong Yang**

- 10:15 **Soujanya Siddavaram Ananta and Qi Li** A Comparative Study of Contour Extraction of *Drosophila* Embryos (Prof. Qi Li)
- 10:30 **Yaowen Cui<sup>^</sup>** The Preparation of Copper-Based Oxygen Carriers Supported by Titanium Dioxide (Dr. Yan Cao)
- 10:45 **Mitchell Gaines, Ronnie Leeper, and Rezaul Mahmood** WRF Modeling of the January 29<sup>th</sup> and 30<sup>th</sup> 2008 Ohio Valley Squall Line (Dr. Rezaul Mahmood)
- 11:00 **Junyi Wang** Normal-Truncated Skewed Laplace Model in Stochastic Frontier Analysis (Prof. Ngoc Nguyen)
- 11:15 **Aldious Waite** The Possible Environmental Impact of Nanotechnology (Dr. Mark Doggett)

### **Graduate Paper Session 11: Humanities**

**Room: GRH 2002**

**Judges: Mr. Adam West (moderator) and Dr. Kahldoun Almously**

- 10:15 **Amber Slaven** Anime: Alteration and Invention to the Tale Tradition (Dr. Tim Evans)
- 10:30 **Jennifer Smith** America's Dark Shame: Japanese Internment During World War II (Dr. Jennifer Hanley)
- 10:45 **Gongbo Liang and Yang Liu** Chinese Architecture and Fortune Teller (Ms. Eileen Starr)
- 11:00 **Rebecca Wilson** Miracle on Any Street (Dr. Ann Ferrell)
- 11:15 **Katrina Wynn** The Art of Cake Decorating: An Examination of the Art of Callie Christian (Dr. Tim Evans)

### **Undergraduate Paper Session 7: Natural Sciences**

**Room: GRH 2003**

**Judges: Dr. Martin Stone (moderator) and Mr. Shilo Felton**

- 10:15 **Benjamin Rice<sup>^</sup>, William Bickett<sup>^</sup>, and Phillip Womble** Doppler Shift Measurement System (Dr. Phillip Womble)

- 10:30 **Zach Martin** Improving the Kentucky Mesonet Station (Dr. Mark Cambron)
- 10:45 **Noelle Spooner\*** Using Western Blot Analysis to Determine If Cryptochrome Expression Is Reduced in Various RNAi Strains of *Chlamydomonas reinhardtii* (Dr. Sigrid Jacobshagen)
- 11:00 **Brian Urbancic and Austin Boys\*** Evidence of Change in the Intensity of Wet and Dry Spells Impacting Kentucky (Dr. Stuart Foster)
- 11:15 **Rebecca Crouch\*** *Chutes and Ladders* with Markov Chains (Dr. Melanie Autin)
- 11:30 **Eva Gray-Jennings and Keith Philips** Dung Beetle Diversity of the Nimba Mountain Range, Guinea, West Africa: An Indicator Group for Ecosystem Health (Dr. Keith Philips)

### **Undergraduate Paper Session 8: Natural Sciences**

**Room: GRH 2005**

**Judges: Prof. Matthew Dettman (moderator) and Ms. Margaret Hook**

- 10:15 **Robert Powell and Ross Hoffman** Redesign of the Bowling Green City Hall Annex (Prof. Shahnaz Aly)
- 10:30 **Candice Durbin** TPH Increase Led to Decrease in Aggression among Inmates (Dr. Chandrakant Emani)
- 10:45 **George Carlton and Brittany Wells\*** Portable Electrical Car Charger (Dr. Stacy Wilson)
- 11:00 **Shelby Rader\*, Yan-Fen Li, and Aaron Celestian** Ion Selectivity Studies on Umbite (Dr. Aaron Celestian)
- 11:15 **Rebecca Brown^** Brightness Measurements of Two Seyfert Galaxies with the Robotically Controlled Telescope for STARE (Dr. Michael Carini)
- 11:30 **Randy Fulling, Ivan Navarro, Jeff Hawkins, and John Bowie\*** Designing a Remotely Controlled Robotic Platform (Dr. Stacy Wilson)

### **Undergraduate Paper Session 9: Humanities**

**Room: GRH 2006**

**Judges: Dr. Molly Kerby (moderator), Prof. Bryan Carson, and Dr. Laura McGee**

- 10:15 **Ryan Hunton** Aristotle's Soul in Plants and in Contemporary Science (Dr. Audrey Anton)
- 10:30 **Katie Knecht\*** *The Exchange: A Novella* (Dr. David LeNoir)
- 10:45 **Craig Lonas** Going "Nutssssss" on Twitter: Creating Fables in 140 Characters (Dr. Tim Evans)
- 11:00 **Anne Walsh\*** *Call Me Ishmael?* The Subject of Jackson Pollock's Portrait of H.M. (Dr. Guy Jordan)
- 11:15 **Kaylee Lambert** The Salem Hysteria: Then and Now (Dr. Mary Ellen Miller)
- 11:30 **William Inman** Distant Connections: The Paradoxical Effects of CMC on Interpersonal Communication (Ms. Kimberly Reynolds)

### **Undergraduate Paper Session 10: Humanities**

**Room: GRH 2008**

**Judges: Dr. Ian Schnee (moderator) and Ms. Jennifer Wright**

- 10:15 **Joseph Southworth** Tang Dynasty *Panwan*: Correlation of Intellectual and Law (Dr. Paul Fischer)
- 10:30 **Ashli Alford** A Savage Journey into the Life of Hunter S. Thompson (Dr. Ted Hovet)

- 10:45 **Nathan Bishop** Willis v. Walker: Good Faith Alone Is Not the Test (Dr. Patricia Minter)
- 11:00 **Shawna Felkins\*** Dualistic Views: Ambiguity in Nathaniel Hawthorne's Short Stories (Dr. Sandra Hughes)
- 11:15 **Heidi Smith** Minarets: A Changing Islamic Mystery (Dr. Ingrid Cartwright)

### **Undergraduate Paper Session 11: Humanities**

**Room:** GRH 2009

**Judges:** Drs. Karen Schneider (moderator) and Anne Onyekwuluje

- 10:15 **Robert Preston** The Utility of Followership (Dr. Kelly Reames)
- 10:30 **Jacob Fackler** You Can't Kill the Boogeyman (Dr. Anthony Harkins)
- 10:45 **Matthew Whitman\*** A Change in Competition: Assessing the NFA-LD Community and Its Views on Topical Counterplans (Mr. Christopher Joffrion)
- 11:00 **Taylor Sang\*** Crusader for Transparency (Dr. Sandra Hughes)
- 11:15 **Amber Stack** Amulets: A Must-Have for Every Ancient Egyptian (Dr. Ingrid Cartwright)

### **Undergraduate Paper Session 12: Interdisciplinary**

**Room:** GRH 2010

**Judges:** Drs. Akihiko Michimi (moderator) and Steve Haggbloom

- 10:15 **Ryann McGuyer** Interdisciplinary Studies: How Can Different Methods/Techniques Help Exceptional Learners Learn More Efficiently? (Dr. Sara Northerner)
- 10:30 **Joseph Guinto** Asthma: A Breathtaking Ailment (Dr. Chandrakanth Emani)
- 10:45 **Billy Seng and Mark Cambron** Sensor Development (Dr. Mark Cambron)
- 11:00 **Armando Sanchez** Truth and Photography (Dr. Sara Northerner)
- 11:15 **Samuel Dong<sup>^</sup>** Development of a Cell Phone Forensics Tool (Dr. Phillip Womble)
- 11:30 **Darren Tinker\* and Stacy Wilson** SCADA Security: A Growing Threat (Dr. Stacy Wilson)

### **Undergraduate Paper Session 13: Social Sciences/Services**

**Room:** GRH 3005

**Judges:** Drs. Aaron Wichman (moderator) and Gail Kirby

- 10:15 **Brittany Morris** Superstitious Fan Behavior (Dr. Rick Grieve)
- 10:30 **Austin Warren\* and Darlene Applegate** Prehistoric Hilltop Enclosures in Kentucky (Dr. Darlene Applegate)
- 10:45 **Courtney Krebs\*** Commemorating the "Forgotten" Lebanese Civil War: The Motivations of Filmmakers When Determining the Question of Responsibility (Dr. Soleiman Kiasatpour)
- 11:00 **Shelby Overstreet\*, Amanda Cook\*, and Martha Day** STEM Career Switchers: Why Education? (Dr. Lisa Duffin)
- 11:15 **Calvin Logsdon** Digital Ouija Boards: A Sociological Survey of Social Networking and Bereavement (Dr. Stephen Groce)

# PAPER SESSIONS III

## Undergraduate Paper Session 14: Natural Sciences

Room: GRH 2009

Judges: Drs. Mark Doggett (moderator) and Mercedes deUriarte

- 1:45 **Jason Ludden\*** Utilizing the Method of Lines to Numerically Solve Partial Differential Equations (Dr. Richard Schugart)
- 2:00 **Benjamin Blankenship, Michael Goatley, and Christopher Byrne** Friction Testing on Touch-Screen Samples (Dr. Christopher Byrne)
- 2:15 **Steven Calhoun, Yan-Fen Li, and Bangbo Yan** Synthesis, Structure, and Characterization of Two Polyoxometalate-Photosensitizer Hybrid Materials (Dr. Bangbo Yan)
- 2:30 **Joseph Early** Homeoprotein NANOG (Dr. Chandrakanth Emani)
- 2:45 **Aaron Bell\* and Steven Gibson** Dust Infrared Emission in an H<sub>2</sub>-Forming, Perseus-Arm Cloud (Dr. Steven Gibson)
- 3:00 **Frank Weatherford, Robert Choate, and Kevin Schmaltz** A Centrifugal Pump Project: An Extracurricular Student Project (Prof. Robert Choate)
- 3:15 **Stuart Kenderes\* and Andrew Wulff** A Mineralogical, Textural, and Chemical Characterization of an Intrusion at White Mountain, Sunlight Basin, Wyoming (Dr. Andrew Wulff)

## Undergraduate Paper Session 15: Natural Sciences

Room: GRH 2010

Judges: Drs. Todd Willian (moderator) and Cynthia Houston

- 1:45 **Michael Horn** Characterizing the OPN1MW Gene Responsible for Red/Green Colorblindness (Dr. Chandrakanth Emani)
- 2:00 **Hussain Altammar, Joel Lenoir, and Kevin Schmaltz** Redesign of an Airflow Test Bench: An Independent Student Project (Prof. Robert Choate)
- 2:15 **Jordan Cottingham, Michael Powers, and Josh Willoughby** Henderson County, Kentucky Hydrocarbon Investigations: Identifying Potential Exploration Targets Via Construction of Remote Sensing, Fault and Structure Maps Using GIS (Dr. Michael May)
- 2:30 **John Bowie\*** Analysis of Nonlinear Differential Equations in Autoimmune Disease (Dr. Richard Schugart)
- 2:45 **Henry Uradu<sup>^</sup> and Keith Philips** The Winter-Active Dung Beetle Fauna of a Costa Rican Cloud Forest (Dr. Keith Phillips)
- 3:00 **James Berry, Stephen Claycomb, Jason Hall, and Adnan Alsadeh** Aluminum Shearing with a Circular Blade (Dr. Kevin Schmaltz)
- 3:15 **Ian Blaylock\*** Continentality and the Frost-Free Season (Dr. Stuart Foster)

# POSTER SESSIONS

## Graduate Poster Session 1: Natural Sciences

Room: GRH 1002

Judges: Drs. Becky Gilfillen (moderator) and Emmanuel Iyigbuniwe

- G01 **Begum Fouzia and Aaron Celestian** Heavy Metal Sequestration Using Gismondine (Dr. Aaron Celestian)
- G02 **Amanda Seaton and Rodney King** Defining the Essential Components of Bacteriophage HK639 Early Gene Expression (Dr. Rodney King)
- G03 **Yan-fen Li, Christopher Carmichael, Steven Calhoun, Nicholas Cottrell\*, and Bangbo Yan** A New Metal Organic Framework Containing Ruthenium Polypyridyl Complex (Dr. Bangbo Yan)
- G04 **Kellee McMillin, Todd Willian, Karamat Sistani, and Nathan Howell** Influence of Broiler Litter on Yield and Chemistry of Two French Hybrid Grape Varietals (Dr. Todd Willian)
- G05 **Swathi Nandala** Bulk Effects of Cisplatin Analogs on DNA Bases (Dr. Kevin Williams)
- G06 **Dan Sandor** Cultivar, Mowing Height, and Herbicide Effects on Bermudagrass (*Cynodon dactylon*) Suppression in Tall Fescue (*Schedonorus phoenix*) (Dr. Paul Woosley)

## Graduate Poster Session 2: Natural Sciences

Room: GRH 1002

Judges: Drs. Keith Andrew (moderator) and Amy Brausch

- G07 **Sindhu Tumati, Swarnalatha Somasani, and Keerthy Mandadi** Reduction of Heavy Metals from Drinking Water by Adsorption from Limestone with a Focus on Zinc, Copper, and Lead (Dr. Cathleen Webb)
- G08 **Jonathan Oglesby, Leslie North, Jason Polk, and Chris Groves** Using Infographics to Promote Public Awareness of the Water Cycle and the Worldwide Water Crisis (Dr. Jason Polk)
- G09 **Raj Kishore Vakiti, Begum Fouzia, Yan Cao, Wei-Ping Pan, and Bangbo Yan** Calcium and Rubidium Based Metal Organic Frameworks (Dr. Bangbo Yan)
- G10 **William Penick, Todd Willian, Becky Gilfillen, and Cris Scudder** Transplanter Modification and the Determination of Functionality in No-Till Dark Tobacco Production Environments (Dr. Todd Willian)
- G11 **Sana Shah, Jason Young, and Chad Snyder** Group VII Pyridazine Complexes: Synthesis, Structure, and Characterization (Dr. Chad Snyder)
- G12 **Shawn Smiley, Jitesh Tiwari, Kinchel Doerner, and Claire Rinehart** Genome Assembly and Syntenic Analysis of *Clostridium scatologenes* (Dr. Kinchel Doerner)

### **Graduate Poster Session 3: Social Sciences/Services**

**Room: GRH 1003**

**Judges: Drs. Christine Nagy (moderator) and Nicole Breazeale**

- G13 **Jennifer Scott** The Relationship between Rater Agreement, Behavioral Observability, and Overall Impressions (Dr. Anthony Paquin)
- G14 **Erika Dawkins, Venkata Damera, Gregory Ellis-Griffith, Tina Peterson, Akihiko Michimi, and Daniel Carter** Institute of Rural Health Development and Research: Community-Based Dental Care Delivery through Mobile Units in South-Central Kentucky (Dr. Akihiko Michimi)
- G15 **Adam Sondag and Steven Wining** A Quantitative Review of Self-Determination Theory Subtypes in Exercise Adherence (Dr. Steven Wining)
- G16 **Natalie Walker, Janice Smith, Joseph Etienne, Lauren Bland, and Richard Dressler** Public Knowledge of Autism (Ms. Janice Smith)
- G17 **Lauren Weathers** Attention, Support, and Face-to-Face Self-Disclosure as Predictors of Self-Disclosure on Facebook (Dr. Pitt Derryberry)
- G18 **Oporuiche Ibekwe and William Mkanta** Predictors of Hospitalizations among Women Seeking Substance Abuse Treatment in Kentucky (Dr. William Mkanta)
- G19 **Teresa Bricker** Cost Effectiveness of Interferon Gamma Release Assays vs. TST in Healthcare Workers (Dr. Beverly Siegrist)

### **Graduate Poster Session 4: Social Sciences/Services**

**Room: GRH 1003**

**Judges: Prof. Roxanne Spencer (moderator), Mrs. Jae Kim, and Prof. Carol Watwood**

- G20 **Ikechukwu Ibekwe and Emmanuel Iyiegbuniwe** Noise Exposure Assessment of WKU Police Officers during Rifle and Shotgun Qualifications at an Outdoor Firing Range (Dr. Emmanuel Iyiegbuniwe)
- G21 **Eric Raap, Allison Steen, and Qin Zhao** Standard Anchoring: Thoughtful or Non-Thoughtful? (Dr. Qin Zhao)
- G22 **Kaushal Shah, Alka Bhattarai, and Christine Nagy** Using Communication Techniques to Promote the Diabetes Self-Management Program in Bowling Green, Kentucky (Dr. Christine Nagy)
- G23 **Carrie Guggenmos** Teleological Reasoning in Adults: Believing in the Purpose of Events (Dr. Kelly Madole)
- G24 **Venkata Damera, Erika Dawkins, Gregory Ellis-Griffith, Tina Peterson, and Akihiko Michimi** Institute of Rural Health Development and Research: Community-Based Healthcare Delivery through Mobile Units in South-Central Kentucky (Dr. Akihiko Michimi)
- G25 **Josh Moncrief** Thinking of Home and the Effects of Willpower (Dr. Aaron Wichman)

### **Undergraduate Poster Session 1: Business and Interdisciplinary**

**Room: GRH 1089**

**Judges: Dr. Zubair Mohamed (moderator) and Mr. James Fulkerson**

- U01 **Jarrod Connally\*** Managerial Turnover in the English Premiership and the Subsequent Results (Dr. Dennis Wilson)
- U02 **Sarah Sheldon\* and Daniel Burton** Collegiality in the Workplace (Dr. Robert Hatfield)

- U03 **Leo Buser\*** Palliative Commitments (Dr. David LeNoir)  
U04 **Stephanie Hagan\* and Spencer Wright\*** Research Degrees of Separation (Dr. Cathleen Webb)

### **Undergraduate Poster Session 2: Humanities**

**Room: GRH 1089**

**Judges: Dr. Alison Langdon (moderator) and Ms. Margaret Curtis**

- U05 **Alan Schneller** Mylar Artists (Prof. Matthew Tullis)  
U06 **Joseph Hearne** Evolution of Identity Design (Prof. Matthew Tullis)  
U07 **Conor Lewis** Pushing Past Formalism (Prof. Kristina Arnold)  
U08 **Stephen Gray** Modern Video Game Designers (Prof. Matthew Tullis)  
U09 **Ann-Alan Callahan and Paige Roberts** Beading 'til They're Cured (Ms. Sheila Flener)  
U10 **Cheri Turner** Fantasy Illustrators (Prof. Matthew Tullis)  
U11 **Wendell Weathers II** Influential Tattoo Artist (Prof. Matthew Tullis)

### **Undergraduate Poster Session 3: Humanities**

**Room: GRH 1091**

**Judges: Dr. Jennifer Hanley (moderator) and Prof. Therese Baker**

- U12 **Rose Kohrman\*** Ascemic Artists: A Journey through the Unknown (Prof. Matthew Tullis)  
U13 **Matt Love** Intellectual Color: Three Artists Exploring Color as a Primary Method of Expressing Perception and Subjectivity (Prof. Matthew Tullis)  
U14 **Lindzey Roberts** Jewelry Designers (Prof. Matthew Tullis)  
U15 **Jesse Hazel** Humbling (Prof. Laurin Notheisen)  
U16 **Kelly Smith\*** Contemporary Middle Eastern Art and Design: An Exploration of Cultural Identity (Prof. Matthew Tullis)  
U17 **Andrew Roeder** The Design of the Graphic Novel (Prof. Matthew Tullis)

### **Undergraduate Poster Session 4: Humanities**

**Room: GRH 1091**

**Judges: Drs. Dana Bradley (moderator) and Ann Ferrell**

- U18 **Stephen Bean** Boardsport Art Scenes (Prof. Matthew Tullis)  
U19 **David Heffner** Great Expressionists of the 19<sup>th</sup> and 20<sup>th</sup> Centuries (Prof. Matthew Tullis)  
U20 **Danielle DePorter** Sephora (Ms. Kristina Goff)  
U21 **Noah Warren** Line Work across Different Mediums (Prof. Matthew Tullis)  
U22 **Wesley Miller\*** Secular Nativity in Print – Exploring Origin (Prof. Laurin Notheisen)  
U23 **Hannah Willhoite** Editors of Vogue: 1960's to Present (Prof. Matthew Tullis)  
U24 **Ashley Wirfel\*** Influential Designers of the Wedding Industry (Prof. Matthew Tullis)

### **Undergraduate Poster Session 5: Natural Sciences**

**Room: GRH 2002**

**Judges: Drs. Leslie Baylis (moderator) and Vladimir Dobrokhotov**

- U25 **Leslie Wilson^ and Hemali Rathnayake** Reactive Group Functionalized Silsesquioxane Nanoparticles for Drug Delivery Applications: Synthesis, Characterization and Particle Morphology (Dr. Hemali Rathnayake)



- U26 **Loyd Britt** Breeding a More Cold-Tolerant Ornamental (Dr. Martin Stone)
- U27 **Samantha Hawtrey<sup>^</sup> and Ajay Srivastava** Identification of Genetic Suppressors of a Scalloped Wing Mutation (Dr. Ajay Srivastava)
- U28 **Helen Thompson, Chad Willis<sup>\*</sup>, Lakshmisri Vangala, Dillon Pender<sup>\*</sup>, and Vivek Badwaik** Synthesis, Characterization and Anti-Bacterial Activity of  $\beta$ -lactam Antibiotic Capped Gold Nanoparticles (Dr. Rajalingam Dakshinamurthy)
- U29 **Akhil Ghanta<sup>^</sup>, Shane Masuda<sup>^</sup>, Duncan Wood<sup>^</sup>, and John Wilson<sup>\*</sup>** Dynamical Field Equations That Couple a Morris-Thorne Wormhole to an Expanding Cosmology (Dr. Keith Andrew)
- U30 **Meaghan Dunn<sup>^</sup> and Rodney King** The Discovery of AngeDeLaMorte, a Novel Mycobacteriophage (Dr. Rodney King)

### **Undergraduate Poster Session 6: Natural Sciences**

**Room: GRH 2002**

**Judges: Dr. Jason Polk (moderator) and Ms. Laura DeLancey**

- U31 **Elizabeth Gatten<sup>^</sup> and Rodney King** Isolation and Characterization of Bacteriophage Magnolia (Dr. Rodney King)
- U32 **Melinda Rucks and Aaron Celestian** The Characterization of Asbestos-Form Minerals in Thin Sections (Dr. Aaron Celestian)
- U33 **Monica Zachariah and Justin Wellum<sup>\*</sup>** Six Degrees to Kevin Bacon: Nobel Laureate Winners (Dr. Cathleen Webb)
- U34 **Layne Webb<sup>^</sup> and Lydia Brothers<sup>^</sup>** Elemental Analysis of Meteorites and Other Miscellaneous Materials Using the Large Chamber Scanning Electron Microscope at Western Kentucky University's NOVA Center (Dr. Edward Kintzel)
- U35 **Matthew Gonzalez<sup>^</sup>, Lakshmisri Vangala, Dillon Pender<sup>\*</sup>, and Chad Willis<sup>\*</sup>** Synthesis of Psychiatric Drug-Capped Gold Nanowires (Dr. Rajalingam Dakshinamurthy)
- U36 **Eric Stamper<sup>\*</sup>** Host Specificity of Ecuadorian Bat Flies (Diptera: Streblidae) (Dr. Carl Dick)

### **Undergraduate Poster Session 7: Natural Sciences**

**Room: GRH 2003**

**Judges: Prof. Leslie North (moderator) and Dr. Jonghee Shim**

- U37 **Meredith Doughty<sup>^</sup>, Rodney King, and Claire Rinehart** Isolation and Characterization of the Mycobacteriophage Ambition (Dr. Rodney King)
- U38 **Cynthia Tope<sup>\*</sup> and Kevin Williams** Reactions of the Amino Acid Cysteine with Analogs of the Anticancer Drug Cisplatin (Dr. Kevin Williams)
- U39 **Jeremy Wilson and Joseph Islas** Radon Migration and Intensity as a Function of Fault Proximity in the Region of Warren County Kentucky (Mr. Joseph Islas)
- U40 **Charlotte Humes<sup>^</sup>** Electronic Structure Calculations in the Presence of a Field (Dr. Matthew Nee)
- U41 **Chelsea Zingg and Chandrakanth Emani** Assessing the Role of *Moringa oleifera* as a Nutraceutical through Biotechnological Applications (Dr. Chandrakanth Emani)

- U42 **Lydia Brothers<sup>^</sup>** Standard Star Calibration of Supernova 2011fe at Varying Airmasses (Dr. Louis Strolger)
- U43 **Lori Lovell<sup>^</sup> and Ouida Meier** Land Use and *E. Coli* / Fecal Coliform Violations in the Upper Green Watershed (Dr. Ouida Meier)

### **Undergraduate Poster Session 8: Natural Sciences**

**Room: GRH 2003**

**Judges: Dr. Attila Por (moderator) and Prof. Laura Dotson**

- U44 **Bethany Coffey\* and Michael Smith** Aggressive Acoustic Behavior in *Yasuhikotakia modesta*: Does the Lombard Effect Hold Water? (Dr. Michael Smith)
- U45 **Michael Powers and Aaron Celestian** Enhanced Nanoporous Minerals for Energy Processes (Dr. Aaron Celestian)
- U46 **Chad Willis\*, Vivek Badwaik, and Lakshmisri Vangala** Natural Reducing Agent Assisted Synthesis of Antibacterial Gold Nanoparticles (Dr. Rajalingam Dakshinamurthy)
- U47 **Daniel Dilger<sup>^</sup>, Samantha McKean<sup>^</sup>, and Luke Yap<sup>^</sup>** Grammar Analysis of the Ricky McCormick Murder Notes (Dr. Bruce Kessler)
- U48 **Sherry Helm, Divinia Allan, and Rodney King** Analysis of RNA Mediated Antitermination in *Erwinia tasmaniensis* Bacteriophage phiEt88 (Dr. Rodney King)
- U49 **David Brown<sup>^</sup>, Harista Irugulapathi, Fouzia Begum, and Hemali Rathnayake** Novel  $\hat{I}$ -Conjugated Organic Macromolecules for Electronic Devices (Dr. Hemali Rathnayake)
- U50 **Anna Zhidkova, Marshall Henson, Edward Kintzel, and Keith Andrew** Characterization and Comparison of Various Fiber Structures in a Cementitious Matrix Substrate at Stress Fracture Limits (Dr. Shane Palmquist)

### **Undergraduate Poster Session 9: Natural Sciences**

**Room: GRH 2005**

**Judges: Drs. Ferhan Atici (moderator), Gordon Baylis, and Scott Dobler**

- U51 **Andrea Eastes<sup>^</sup> and Erin Walch<sup>^</sup>** Nitric Oxide Synthase 3 Gene Regulation in Pulmonary Myofibroblasts (Dr. Nancy Rice)
- U52 **Alexandra Sunnenberg<sup>^</sup>, Rodney King, and Claire Rinehart** The Isolation and Purification of the Bacteriophage Intrinity (Dr. Rodney King)
- U53 **Buddy Price and Stuart Kenderes\*** A Petrographic Analysis of a Transgressive Limestone (Dr. Michael May)
- U54 **Romney Meek, Alexander Barzilov, and Ivan Novikov** Modeling of the Xenon Gamma Ray Scintillation Detector (Dr. Alexander Barzilov)
- U55 **Lindsey Burke<sup>^</sup>, Rodney King, and Claire Rinehart** Isolation and Characterization of Bacteriophage Lacuna (Dr. Rodney King)
- U56 **Paul Fleischmann<sup>^</sup>, Clarice Esch\*, and Jon Bailey<sup>^</sup>** Investigation of Gunnera-Nostoc Symbiosis in Costa

## **Undergraduate Poster Session 10: Natural Sciences**

**Room: GRH 2005**

**Judges: Drs. Richard Schugart (moderator) and Matthew Foraker**

- U57 **Jessica Hall\***, **Vladimir Dobrokhoto**v, **Landon Oakes**, **Dewayne Sowell**, and **Alexander Larin** Nanotechnology Solutions for Asymmetric Explosive Threat Prevention (Dr. Vladimir Dobrokhoto
- U58 **Zhibo Yuan\***, **Chris Abebrese**, **Yan Huang**, **Alice Pan**, and **Rui Zhang** Kinetic Studies of Oxygen Atom Transfer Reaction from Trans-dioxoruthenium(VI) Porphyrins to Sulfides (Dr. Rui Zhang)
- U59 **Charles Coomer\*** and **Rodney King** Bacteriophage Classification Via PCR Analysis: An Alternative to Complete Genome Sequencing (Dr. Rodney King)
- U60 **Cassandra Hornback** and **Aaron Celestian** Ion Exchange in the Nanoporous Mineral Gaidonnayite (Dr. Aaron Celestian)
- U61 **Keyana Boka\*** and **Steve Huskey** What's That Hooting Sound? A Survey of the Gross Anatomy of a Novel Sound-Producing Mechanism in Chameleons (Dr. Steve Huskey)
- U62 **Chris Carmichael**, **Yan-Fen Li**, and **Bangbo Yan** Synthesis and Structure of a Novel Layered Metalloporphyrin Coordination Polymer (Dr. Bangbo Yan)
- U63 **Nathan Barzee** Lumber Rack (Dr. Joel Lenoir)

## **Undergraduate Poster Session 11: Social Sciences/Services**

**Room: GRH 2006**

**Judges: Dr. Lance Hahn (moderator) and Ms. Krisstal Clayton**

- U64 **Tessa Seidler** A Test of Different Breastfeeding Promotional Messages (Dr. Aaron Wichman)
- U65 **Tabitha Binder**, **Bryna Price**, **Elizabeth Furrow**, **Monica Akello**, **Jerri McMillan**, **Shelby McElwain**, and **Brandi Binyon** How Gender Plays a Role in Attempts to Improve Physical Attractiveness (Dr. Gary Villereal)
- U66 **Joseph Eskridge** Pictograms and Petroglyphs: Documentation and Interpretation of a Rock Art Site in Edmonson County, Kentucky (Dr. Darlene Applegate)
- U67 **Crystal Boyle**, **Sheila Flener**, and **Ashton Korfhage** Uplifted (Ms. Sheila Flener)
- U68 **Brittany Crowley**, **Adrian Gregory**<sup>^</sup>, and **Steven Winger** Examination of Self-Regulation Constructs as Explanatory Variables for Attendance and Performance (Dr. Steven Winger)
- U69 **Lauren Edison**, **Caitlin Murphy**, **Emily Funk**, **Katie Hardiman**, **Taryn O'Shea**, and **Amanda White** Sleep and GPA (Dr. Gary Villereal)

## **Undergraduate Poster Session 12: Social Sciences/Services**

**Room: GRH 2006**

**Judges: Drs. Kelly Madole (moderator) and Jie Zhang**

- U70 **Cortney Scott** and **Thomas Kingery** Student Influences to Become an Agriculture Major at Western Kentucky University (Prof. Thomas Kingery)

- U71 **Robin Beatty, Donna McHenry, Tiffany Donahue, and Dusti Simmons** Traditional and Non-Traditional Students and GPA (Dr. Gary Villereal)
- U72 **Adrian Gregory<sup>^</sup>, Brittany Crowley, and Steven Wining** Evaluation of an Intervention to Improve Self-Regulated Learning in Pre-Service Teachers (Dr. Steven Wining)
- U73 **Cecelia Nugent** Serving Abroad: A Humbling Experience in Tanzania (Dr. William Mkanta)
- U74 **Amy Evans, Sondra Swihart, Megan Houtchen, and Sue Lindsey** Smoking Public vs. Private (Dr. Gary Villereal)
- U75 **Ashley Combs** Ulundi Agricultural Coalition (Ms. Kristina Goff)

**Undergraduate Poster Session 13: Social Sciences/Services**

**Room: GRH 2008**

**Judges: Drs. Cathy Abell (moderator) and Rachel Kinder**

- U76 **Hanna Preslar, Brandi Woods, Lauren Ashby, and Amber Young** GPA and Employment Status (Dr. Gary Villereal)
- U77 **Kristin Wallace** Sephora: Men: A Pop-up Marketing Concept (Ms. Kristina Goff)
- U78 **Karli Rutherford** Exonerations from the Death House: The Struggle Is Just Beginning (Dr. Kate King)
- U79 **Jennifer Thomas\*** Influence of European Union Policy on Capital Punishment in the United States (Dr. Roger Murphy)
- U80 **Natalie West\* and Duncan Wood<sup>^</sup>** Contextual Influences on Word Recognition (Dr. Lance Hahn)
- U81 **Jennifer Alsman, Crystal Glover, Teresa Mills, and Erica Meade** Correlation Between Reading Textbooks and Having a Higher GPA (Dr. Gary Villereal)

**Undergraduate Poster Session 14: Social Sciences/Services**

**Room: GRH 2008**

**Judges: Drs. Kate King (moderator) and Andrew Mienaltowski**

- U82 **Laura Hedges\*** Bakery to Mixed Use: Restoring Historic Structures to Today's Standards (Ms. Sheila Flener)
- U83 **Jennifer Johnson, James Hawn, and Norresha Taylor** Drinking and Driving (Dr. Gary Villereal)
- U84 **Caitlin Reyes** Hispanic Outreach in Bowling Green, Kentucky: Defining the Needs of the Hispanic Community (Dr. Sonia Lenk)
- U85 **Brette Wimpee, Mattie Rich, Lauren Herrington, and Tatiana Sahanic** Commuter vs. Resident GPA (Dr. Gary Villereal)
- U86 **Basil Back and Carrie Guggenmos** Social Identity Moderates Social Dominance Orientation (SDO) Effects: Women's Gender Identity and the Relationship between Group Status, SDO, and Self-Esteem (Dr. Aaron Wichman)
- U87 **Rebecca Katz\*** Passing the Salt: How Eating Together Creates Community (Dr. Paul Markham)

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