TWENTY-SECOND ANNUAL
Graduate Research Symposium

Sponsored By: GRADUATE SCHOOL & RESEARCH

MARCH 27, 2014 | 10AM – 6:30PM | UNIVERSITY CENTER

FOR MORE INFORMATION, VISIT
graduatesymposium.wcu.edu

History graduate students Katie Bell, Emily Baker, and Dustin Norris document a Cherokee-made quilt top from the 1930s, recently donated to the Mountain Heritage Center by Margie Bird.
Dear Participants,

Welcome to the Twenty-Second Annual Graduate Research Symposium! Since 1992, the Graduate Research Symposium, sponsored by Graduate School and Research, has provided graduate students the opportunity to showcase their scholarly research and projects, and I want to express my sincere appreciation to you for sharing your excellent work with your classmates, colleagues, and faculty. A warm thanks to all participating faculty and staff mentors: your active and continuing support and encouragement of your students and their research is the hallmark of Western’s graduate education experience.

For many of you, this will be your first opportunity to share empirical findings and creative works with the academic community. Today, you take a step in becoming recognized as a scholar in your chosen discipline. The skills you learn as part of the research process and your ability to convey that research in writing and in person will enable you to share your knowledge, intellectual passion, and commitment to ideas and to your discipline and profession. Congratulations on this significant milestone in your academic development!

It is my hope that your experience today inspires you to continue to contribute to our understanding of all areas of knowledge in the arts, humanities, education, health, social sciences, business, and sciences. You are helping to shape the future and the important issues facing our region, state, and world, and what you are doing today as students is just the beginning of all you can do to make a true difference. Thank you. I look forward to meeting each of you personally and to talking with you about your important work and your plans for the future.

Please join your faculty mentors, colleagues, and members of the Graduate School at a new event, the Three Minute Thesis (3MT) competition in the University Center Theater at 4:00 PM. Then please join us in a reception in your honor in the University Center Grand Room starting at 5:00 PM. We look forward to seeing you and to celebrating your excellence.

Mimi Fenton, Ph.D.
Dean, Graduate School and Research

Activities Overview

10:00 A.M.
HUMANITIES - ENGLISH ............ Multipurpose
SCIENCES - BIOLOGY .................. Cardinal

11:30 A.M.
HUMANITIES - ENGLISH ............ Multipurpose
HUMANITIES - HISTORY ............ Dogwood
NURSING / PHYSICAL THERAPY ......... Theater
SCIENCES - BIOLOGY ................. Cardinal

1:00 P.M.
HISTORY / ART / MUSIC .......... Dogwood
EDUCATION ................................ Cardinal
PHYSICAL THERAPY ................... Theater
SCIENCES - CHEMISTRY .......... Multipurpose
SCIENCES - TECHNOLOGY .......... Catamount

2:30 P.M.
BUSINESS / MATH .................. Dogwood
EDUCATION ........................... Cardinal
PSYCHOLOGY / SOCIAL WORK ...... Multipurpose
SCIENCES - TECHNOLOGY .......... Catamount

4:00 P.M.
THREE MINUTE THESIS (3MT) COMPETITION ..................... Theater

5:00 P.M.
RECEPTION AND AWARDS ........ Grand Room
10:00 A.M.–11:15 A.M.

HUMANITIES, ENGLISH | UC 232 | Multipurpose Room
ANNETTE DEBO, English, Moderator

Baiting the Stage: Bear-Baiting in Shakespeare’s The Winter’s Tale
Presenter: Joshua Bivens
Sponsor: Annette Debo

Visions of Ecological Motherhood in Alice Walker’s Meridian
Presenter: Yolanda Newhouse
Sponsor: Annette Debo

“Of Earth’s Most Solemn Hours”: an Ecocritical Examination of C.S. Lewis’s Spirits in Bondage
Presenter: Corrie Greene
Sponsor: Annette Debo

The Age of Science: Acting Into the Realm of Fabrication in Hannah Arendt’s The Human Condition
Presenter: Colby Murphy
Sponsor: Annette Debo

SCIENCES, BIOLOGY | UC 214 | Cardinal Room
JEREMY HYMAN, Biology, Moderator

Identifying fitness correlates of aggressive behavior in an urban population of song sparrows, Melospiza melodia
Presenter: Jessica Krippel
Sponsor: Jeremy Hyman

The Effects of Myrmecochore Species Abundance, Diversity, and Fruiting Phenology on Aphaenogaster Nesting and Foraging in Southern Appalachian Rich Cove Forests
Presenter: Mary Schultz
Sponsor: James Costa

Developing a Predictive Model and Defining the Autecology of the Spruce-Fir Moss Spider, Microhexura montivaga, Crosby and Bishop 1925
Presenter: Travis Seaborn
Sponsor: Kefyn Catley

Assessing the Effectiveness and Value of Wetland Habitat Created for Amphibians in the Nantahala National Forest in NC
Presenter: Jessica McDonald-Duke
Sponsor: Joseph Pechmann

Paleoecological History of a High Elevation Valley in the Blue Ridge Mountains of North Carolina
Presenter: Elizabeth Martin
Sponsor: Beverly Collins

11:30 A.M.-12:45 P.M.

HUMANITIES, ENGLISH | UC 232 | Multipurpose Room
LAURA WRIGHT, English, Moderator

‘O perilous mouths’: Bed Tricks and Silence in All’s Well That Ends Well and Measure for Measure
Presenter: Rachel Adams
Sponsor: Mary Adams

Locke, Nietzsche, and the Rhetoric of Clarity
Presenter: Matthew Coffay
Sponsor: Annette Debo

“We’re Not Here, Are We? We’re Not Even Playing”: Performing Colonizing Literary Canons in The God of Small Things
Presenter: Nicole Herbert
Sponsor: Laura Wright

“By Our Thoughts and Actions”: Examining the Political Implications of Virginia Woolf’s Stylistic Choices in Three Guineas
Presenter: Abigail Wood
Sponsor: Annette Debo

HUMANITIES, HISTORY | UC 212 | Dogwood Room
HONOR SACHS, History, Moderator

Historical Memory and the Cherokee Presence in Cullowhee
Presenter: Taylor Pettet
Sponsor: Andrew Denson

New Age Cherokees: Experiences at the Cherokee Boarding School on the Qualla Boundary
Presenter: Catcuce Tiger
Sponsor: Andrew Denson

Beyond the Battlefield: Rethinking the State of Franklin and Diplomatic Conflicts of John Sevier
Presenter: Meghan Essington
Sponsor: Honor Sachs

Plant, Ritual, Language: Intersections of Cherokee Medicine and Appalachian Folk Healing
Presenter: Emily Baker
Sponsor: Andrew Denson

Selling the Stereotype: How Mast General Store Appropriated the Hillbilly for Profit
Presenter: Stephen Widener
Sponsor: Mary Ella Engel
11:30 A.M.-12:45 P.M.

**NURSING**  |  UC 315  |  Theater
MARK KOSSICK, Nurse Anesthesia, Moderator

An Evaluation of Sedation Level Using Bispectral Index (BIS) and Correlated Adverse Events in Patients Undergoing Colonoscopies

**Presenter:** Paula Grey and Jenna Poziombke  
**Sponsor:** Mark Kossick

High Fidelity Simulation Lab - Grant

**Presenter:** Candice Laney  
**Sponsor:** Linda Comer

11:30 A.M.-12:45 P.M.

**SCIENCES, BIOLOGY**  |  UC 214  |  Cardinal Room
LAURA DEWALD, Biology, Moderator

Multi-Severity Fire Effects and Predicting Burn Severity in Xeric Oak-Pine Communities in the Great Smoky Mountains National Park

**Presenter:** Scott Abla  
**Sponsor:** Laura DeWald

Predicting Suitable Habitat of Federally Threatened Species (Isotria medeoloides (Pursh) Raf.) in the Southern Appalachian Region Using Maxent Model

**Presenter:** Ashley Montgomery  
**Sponsor:** Laura DeWald

Genetic Variation in Mountain and Coastal Fox Squirrel Populations

**Presenter:** Kendell Bennett  
**Sponsor:** Laura DeWald

Whole Genome Next-Generation Sequencing (NGS) of DNA from Salmonella, a Foodborne Bacterial Pathogen

**Presenter:** David Russell  
**Sponsor:** Mark Wilson

1 P.M.-2:15 P.M.

**HISTORY / ART / MUSIC**  |  UC 212  |  Dogwood Room
ALEXANDER MACAULAY, History, Moderator

“This Aggression Will Not Stand, Man”: African Americans, the UN, & the Fight for Equality

**Presenter:** Steven Nickolof  
**Sponsor:** Alexander Macaulay

Finding Cannan or Wandering in the Wilderness: A Comparative Study of the Cortes and De Soto Expeditions

**Presenter:** John Davis  
**Sponsor:** Charlotte Cosner

Raku in the U.S. and Japan: Analyzing My Raku Pottery

**Presenter:** Emiko Suzuki  
**Sponsor:** Joan Byrd

Sequencers and Samples - Digital Film and TV Music Production

**Presenter:** Robert Blair  
**Sponsor:** Bruce Frazier

Robert Schumann’s Geistervariationen: The Sanity Amidst the Insanity

**Presenter:** Brandi Moon  
**Sponsor:** Mary Kay Bauer

1 P.M.-2:15 P.M.

**EDUCATION**  |  UC 214  |  Cardinal Room
ANN ALLEN, Education, Moderator

Elementary School Grade Retention: A Qualitative Study of High School Seniors’ Perceptions of Being Held Back

**Presenter:** Christine M. Smith  
**Sponsor:** Mary Jean Herzog

Critical Information Literacy in Practice: An Interpretive Synthesis

**Presenter:** Beth McDonough  
**Sponsor:** John Habel

Closing the Cracks: Tracking Middle Grade Student Absences to Reduce Failures

**Presenter:** Matthew White  
**Sponsor:** Ann Allen

Exploring Automaticity with Basic Math Facts and its Effect on Student Achievement

**Presenter:** Judy Fleming  
**Sponsor:** Carrie Rogers

“Research is formalized curiosity. It is poking and prying with a purpose.”

Zora Neale Hurston (American Novelist and Playwright, 1903-1960)
1 P.M.-3:15 P.M.

**PHYSICAL THERAPY | UC 315 | Theater**

**TODD WATSON, Physical Therapy, Moderator**

<table>
<thead>
<tr>
<th>Title</th>
<th>Presenter</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Effect of Orthoses on Torsion in the Tibia and Femur in Children who In-toe</strong></td>
<td>Tiffany Salido, Gellen Nonato, and Eleanor Schmitmeyer</td>
<td>David Hudson</td>
</tr>
<tr>
<td><strong>Prevalence of Musculoskeletal Symptoms and Worker Characteristics in Migrant Farmworkers in Western North Carolina</strong></td>
<td>Matthew George, Mary Goforth, Joey Marion, and Connor Trott</td>
<td>Karen Lunnen</td>
</tr>
<tr>
<td><strong>Core Stability and Foot Function in People with Activity Related Knee Pain</strong></td>
<td>Erin Curley, Travis Huffman, Adam Sutphin, and Stephen Tallman</td>
<td>David Hudson</td>
</tr>
<tr>
<td><strong>Body Weight Supported Versus Non-Body Weight Supported Overground Gait Training in Patients with CVA</strong></td>
<td>Alyson Bauhs, Heather Devine, Hannah Helfer, and Michele Landry</td>
<td>Jessica Graning</td>
</tr>
<tr>
<td><strong>Addressing Urinary Incontinence in Individuals Living in Jackson County, NC by Providing Pelvic Physical Therapy through a Workshop Incorporating Transabdominal Ultrasound for Feedback</strong></td>
<td>Jamie Hardigree, Dan Henry, Lauren Huber, Josh Jones, Krystle Price, and Travis Routh</td>
<td>Todd Watson</td>
</tr>
<tr>
<td><strong>Effectiveness of a Community-Based Exercise Program on Fall Risk in Older Adults: An Intervention Study</strong></td>
<td>Katie Barnes, Rebeca Bermudez, Jamie Bowen, Brittany Lysik, Whitney Vandenraadt, and Sarah Worley</td>
<td>Lori Schrodt</td>
</tr>
<tr>
<td><strong>Fostering a Collaborative Relationship among PT and PTA Students Through Clinical Anatomy: a Service Learning Approach</strong></td>
<td>Elizabeth Faw, Cynthia Henson, Allison Jameson, and Timothy Quattlebaum</td>
<td>Kathy Starr</td>
</tr>
</tbody>
</table>

“**If we knew what it was we were doing, it would not be called research, would it?**”

Albert Einstein (Theoretical Physicist, 1879-1955)

1 P.M.-2:15 P.M.

**SCIENCES, CHEMISTRY | UC 232 | Multipurpose Room**

**CHANNA DE SILVA, Chemistry, Moderator**

<table>
<thead>
<tr>
<th>Title</th>
<th>Presenter</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adsorption of Aqueous Copper by Modified and Unmodified Peanut Hulls</strong></td>
<td>Kanika Davis</td>
<td>Carmen Huffman</td>
</tr>
<tr>
<td><strong>Manganese Metal-Based Nanoparticles for Developing Cotton Textile with Antimicrobial Properties for Clinical Applications</strong></td>
<td>Nalin Darsanasiri</td>
<td>Channa De Silva</td>
</tr>
<tr>
<td><strong>Development of Magnetite Nanoparticles with Improved Magnetic and Luminescent Properties for Potential Biomedical Applications</strong></td>
<td>Mickey Clark</td>
<td>Channa De Silva</td>
</tr>
</tbody>
</table>

1 P.M.-2:15 P.M.

**ENGINEERING AND TECHNOLOGY | UC 215 | Catamount Room**

**MARTIN TANAKA, Technology, Moderator**

<table>
<thead>
<tr>
<th>Title</th>
<th>Presenter</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biomechanics of the Overhead Motion in Tennis: Effect of Ball Impact Location on the Transfer of Linear and Angular Momentum During Game Play</strong></td>
<td>Ainhoa Iglesias Díaz</td>
<td>Martin Tanaka</td>
</tr>
<tr>
<td><strong>Finger Placement Correction for Static Gesture Recognition in American Sign Language</strong></td>
<td>Veronica Flamenco</td>
<td>Robert Adams</td>
</tr>
<tr>
<td><strong>Effectiveness of Cooperative and Competitive Shared Control</strong></td>
<td>Kevin Babock</td>
<td>Martin Tanaka</td>
</tr>
<tr>
<td><strong>Hardware Implementation of an Optimized Algorithm for Swarm Robotic Constellation Communication for Meta Event Recognition</strong></td>
<td>Nathan Thomas</td>
<td>Paul Yanik</td>
</tr>
<tr>
<td><strong>Viewing a 3-Dimensional Environment using 2-Dimensional Gaze Tracking Input</strong></td>
<td>Carl Drawdy</td>
<td>Paul Yanik</td>
</tr>
</tbody>
</table>

“**Research is to see what everybody else has seen, and to think what everybody else has thought.**”

Albert Szent-Gyorgyi (Hungarian Biochemist, 1937 Nobel Prize for Medicine, 1893-1986)
2:30 P.M.-3:45 P.M.

BUSINESS / MATH | UC 212 | Dogwood Room
STEVE HA, Economics, Moderator

Understanding West Asheville’s Restaurant Scene: A Survey of Constituents
Presenter: Corinne Lininger
Sponsor: Steve Ha

Symmetries in Taxicab Geometry
Presenter: Kasey Jones
Sponsor: Risto Atanasov

A New Variation of the Ping-Pong Lemma ... And Why We Care
Presenter: Josh Hiller
Sponsor: Risto Atanasov

Graphs with Cut Vertices and Zagreb Indices
Presenter: James Schrum
Sponsor: Risto Atanasov

2:30 P.M.-3:45 P.M.

EDUCATION | UC 214 | Cardinal Room
KARENA COOPER-DUFFY, Education, Moderator

Power of Play: An Exploration of 1st Graders’ Free-Play Preferences
Presenter: Shannon Montgomery
Sponsor: Carrie Rogers

What Curriculum is Being Used to Teach Students with Mild to Moderate Disabilities in the Separate Setting?
Presenter: Mike Martin
Sponsor: Karena Cooper-Duffy

2:30 P.M.-3:45 P.M.

PSYCHOLOGY / SOCIAL WORK | UC 232 | Multipurpose Room
THOMAS FORD, Psychology, Moderator

Effect of Relationship Status on Physical Attraction for Alternative Partners
Presenter: Whitney Petit
Sponsor: Thomas Ford

Disparagement Humor Reduces Prejudice Suppression and Improves Cognitive Task Performance
Presenter: Kyle Richardson, Andrew Beveridge, Jason Tippett, Shaun Lappi, and Sam Lusty
Sponsor: Thomas Ford

2:30 P.M.-3:45 P.M.

ENGINEERING AND TECHNOLOGY | UC 215 | Catamount Room
BORA KARAYAKA, Technology, Moderator

Ionic Air Moving Devices
Presenter: Adam Henson
Sponsor: Michael June

A Novel Indirect Control Methodology for Load-Leveling of Space Heating Appliances
Presenter: Lee Holland
Sponsor: Bora Karayaka

Maximizing Ocean Wave Energy Extraction with Slider-Crank Wave Energy Converter
Presenter: Yuanrui Sang
Sponsor: Bora Karayaka

3D Audio and the Haas Effect
Presenter: Al Matthews
Sponsor: Bob Adams

ROI Detection and Signal Estimation for Protein Interaction Analysis Based on Surface Plasmon Resonance Measurements
Presenter: Le Chen
Sponsor: Yanjun Yan

“Contrary to what Asimov says, the most exciting phrase in science, the one that heralds new discoveries, is not ‘Eureka!’ or ‘That’s funny...’ it’s ‘Your research grant has been approved.’”

John Alejandro King (American Comic)
4:00 P.M.-4:45 P.M.

THREE MINUTE THESIS COMPETITION
BRIAN KLOEPPEL, Graduate School, Moderator

Rachel Adams, ENGLISH
Analyzing How Transnational Identities are Structured through Language and Cultural Participation in Literature Works

John Baley, PSYCHOLOGY
Academic Integrity in Online Courses

Elissa Cannon, PSYCHOLOGY
Eye-tracker Correlates of MMPI-2-RF Negative Emotionality Scales

Mickey Lance Clark, CHEMISTRY
Development of Magnetite Nanoparticles with Magnetic and Luminescent Properties for Biomedical Applications

Matthew Coffay, ENGLISH
Experiential Learning: The Rhetoric of the Food System in the Composition Classroom

Nalin Darsanasiri, CHEMISTRY
Synthesis and Property Investigation of Metal-based Nanomaterials for Biotechnological Applications

Whitney Petit, PSYCHOLOGY
Effect of Relationship Status on Physical Attraction for Alternative Partners

Tiffany Salido, PHYSICAL THERAPY
Effect of Orthoses on Torsion in the Tibia and Femur in Children Who In-toe

Matthew White, SCHOOL ADMINISTRATION
Closing the Cracks: Tracking Middle Grades Student Absences to Reduce Failures

HELPFUL BACKGROUND FOR THE 3 MINUTE THESIS COMPETITION

Rules:
1) A single static powerpoint slide is permitted: no slide transitions, animations, or movement of any description
2) No additional electronic media (e.g. sound or video) are permitted
3) No additional props (e.g. costumes, instruments, equipment) are permitted
4) Competitors exceeding the 3 minutes are disqualified
5) Presentations are to be spoken word in English (e.g. no poems or songs)
6) Presentations have commenced when a presenter starts by movement or speech
7) Presentations must be aimed at the educated non-specialist; no disciplinary jargon can be used unless explained as part of the 3 minutes

Judging Criteria:
1) Communication Style: was the topic and its significance communicated in language appropriate to an intelligent, but non-specialist audience?
2) Comprehension: did the presentation help the audience understand the topic?
3) Engagement: did the presentation make the audience want to know more?
4) Impact: did the presentation enlighten the audience on why they should care about the topic?