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Undergraduate Research Symposium

UMSL Undergraduate Works

2014

2014 Program

University of Missouri-St. Louis

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URS

Undergraduate Research Symposium

research • scholarship • creative works

2014

GOLDEN KEY INTERNATIONAL HONOUR SOCIETY
UNIVERSITY OF MISSOURI-ST. LOUIS

Mission Statement

The members of the University of Missouri–St. Louis chapter of Golden Key International Honour Society are committed to the creation of educational opportunities and the development of leadership skills. As leaders, we are dedicated to formulating a paradigm for student activism that preserves and advances the interests and reputation of our campus and its faculty.

In 2002, Golden Key members designed the Undergraduate Research Symposium (URS) to furnish a venue for undergraduate students to present their research, scholarship, and creative works as they would at a professional conference. This multidisciplinary event is intended to help students achieve their educational and professional goals by presenting students an opportunity to refine their communication skills and network with scholars. The URS also provides an opportunity for faculty and the broader academic community to express support for the undergraduate scholars in furthering their research and graduate studies.



What is Golden Key?

Golden Key International Honour Society is an academic honor society that recognizes and encourages scholastic achievement and excellence among college and university students from all academic disciplines. In an effort to reflect the Society's diversity and international presence, Golden Key uses the globally accepted spelling of "honour" in its name.



Chapter Officers 2013–2014

Siinya Edmondson, President

Anela Krijestorac, Vice President

Jeffrey Brayton, Treasurer

Kanisha Collie, Secretary

Jessica Corson, SGA Representative

Loc Nguyen, Webmaster

Jodi Heaps, PhD, Co-Advisor

Kathryn A. Walterscheid, PhD, Advisor



The mission of Golden Key:

To enable members to realize their potential by connecting
individual achievement with service and lifelong opportunity

The values of Golden Key:

Integrity, Collaboration, Innovation, Respect,

Diversity, Excellence, Engagement

URS

Undergraduate Research Symposium

The URS Committee

Eric'el Johnson, Committee Chair

Megan Smith, Editor

Siinya Edmondson, Catering Coordinator

Jodi Heaps, PhD, Poster Editor

Kathryn A. Walterscheid, PhD, Faculty Director

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Joe Sanders
Katie Walterscheid
Loc Nguyen
Yanlin Huang

Jenifer Stokes
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Melaney Walterscheid
Sara Gerberding
Tabitha McCullers
Jenise Davie

Nikki Long

Many URS crew members volunteered after this book went to press
and could not be included in this list.

Thanks to the URS Sponsors

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Sigma Xi: The Scientific Research Society

Writing Lab, Department of English

Psi Chi

University of Missouri-St. Louis Graduate School

Acknowledgments

The members of Golden Key would like to thank all of the dedicated administrators, faculty, and staff who have inspired and helped us. In particular, we wish to express our appreciation to the following individuals:

Tanika Busch

Manager of Business, Fiscal Operations
College of Arts and Sciences

Jay Frey

Printing Services

We would also like to thank all the mentors who supervised the research, reviewed abstracts countless times, edited posters, coached oral presenters, and were there when they were needed.

Presentations



<i>Biochemistry & Biotechnology</i>	<i>1</i>
<i>Biology</i>	<i>1</i>
<i>Chemistry</i>	<i>4</i>
<i>Computer Science</i>	<i>5</i>
<i>Criminology & Criminal Justice</i>	<i>5</i>
<i>Economics</i>	<i>5</i>
<i>English</i>	<i>6</i>
<i>Nursing</i>	<i>6</i>
<i>Physics</i>	<i>6</i>
<i>Psychology</i>	<i>7</i>
<i>Spanish</i>	<i>9</i>
<i>Women's and Gender Studies</i>	<i>9</i>

The URS ends at 3:00 pm. Shortly thereafter, the awards
will be presented at a brief ceremony in the
Millennium Student Center,
on the third floor, in Century Room C.

Awards



The UMSL chapter of Sigma Xi, The Scientific Research Society, will present three awards for posters. Faculty judges will assess the posters on content and style, the abstracts on content and clarity, and the presenters on their interaction with the audience. These awards are made possible by Dr. Patricia Parker through her Des Lee Endowed Professorship Grant.



Psi Chi, the International Honor Society in Psychology, encourages, stimulates, and maintains excellence in scholarship and research. One of its goals is to advance, specifically, the science of psychology; therefore, UMSL's chapter of Psi Chi will present awards to the top three psychology presentations.

Graduate School Application-Fee Waivers

UMSL

The Graduate School is awarding application-fee waivers to URS Participants.

The URS Committee will be sending a list of URS participants to the graduate school. To use the waiver, put "URS fee waiver" under comments or statement of purpose when you register.

Biochemistry & Biotechnology



Aggregation Properties of the Alzheimer's Amyloid-Beta Protein

Richard Davenport, Biochemistry and Biotechnology
Shana Terrill-Usery, Chemistry
Sanjib Karki, Chemistry

Mentor: Michael Nichols, PhD

Rapid Transcription of Messenger RNA during the Microglial Proinflammatory Response to the Alzheimer's Amyloid-Beta Protein

Eleni Goranitis, Biochemistry and Biology
Shana Terrill-Usery, Chemistry
Sanjib Karki, Chemistry

Mentor: Michael Nichols, PhD

ELISA-Based Methods for Alzheimer's Disease and Inflammation Research

Laura Janks, Biochemistry and Biotechnology
Shana Terrill-Usery, Chemistry
Ben Colvin, Chemistry

Mentor: Michael Nichols, PhD

Biology



Hummingbird Displacement Competition and Butterfly Species Diversity in a Mixed Species Pollinator Assemblage on *Lantana camara*

Sabah Baig, Biology

Mentor: Godfrey Bourne, PhD

Noisy City Slickers and Quiet Country Kin: Urbanization Selects for Higher Frequencies in Loud Songs of the Great Kiskadee, *Pitangus sulphuratus*

Serene Darwish, Biology

Mentor: Godfrey Bourne, PhD

Pit Viper Research

Joshua Higgins, Biology

Mentor: Aimee Dunlap, PhD

Year-Two Biotic and Physicochemical Measurements of Water Quality in the Rupununi River Basin at Karanambu

Christina Leahy, Biology

Kenneth Butler

Felix Holden

Leon Moore

Mentor: Godfrey Bourne, PhD

Postman Butterflies Maintain Relatively Stable Temperatures during Fluctuating Circadian Ambient Temperatures at an Equatorial Site

Chineze Obi, Biology

Mentor: Godfrey Bourne, PhD

Leaf-Cutter Ants, *Atta cephalotes*, Already Transporting Crop Leaves Tend to Ignore Forest Plant Leaves in Smorgasbord Trials

Robert Perks, Biology

Leon Moore

Mentor: Godfrey Bourne, PhD

Indole-3-acetic Acid Response in TAA Mutants

Matthew Richard, Biology
Gretchen Spiess, Biology

Mentor: Bethany Zolman, PhD

Inter-Island Dispersal Dynamics of the Galápagos Hawk

Lauren Sage, Biology

Mentor: Patricia Parker, PhD

Hot Males, Cooler Females: Sexual Differences in Thermoregulatory Behaviors by Dimorphic Red Copper Butterflies

Hannah Stowe, Biology

Mentor: Godfrey Bourne, PhD

Second Year of Sampling Suggests that Aquatic Macroinvertebrate Species and Richness at Karanambu Trust Indicate High Water Quality

Brian Waldrop, Biology

Mentor: Godfrey Bourne, PhD

Frequency Distributions of the Shy-Bold Personality Phenotype in the Pentamorphic Livebearing Fish *Poecilia Parae*

Riam Yousif, Biology

Mentor: Godfrey Bourne, PhD

Chemistry



Comparative Study of the Resolution of Allylic α -hydroxyphosphonates by HPLC with Chiral Stationary Phases

Michael Mannino, Chemistry

Mentor: Bruce Hamper, PhD

Inhibition of Cholinesterases by O,S-Diethylphenylphosphonothioate (DEPP)

Ahmed Mohamed, Chemistry

Mentor: Cynthia Dupureur, PhD

Propargylic Ethers: A Direct Synthesis Using a Ruthenium Based Catalyst

Jordan Rabus, Chemistry

Mentor: Eike Bauer, PhD

Analysis of the (0,0) and (1,1) bands of the $A_2\Pi_{1/2} - X_2\Sigma^+$ transitions of ZrN

Jessica Spencer, Chemistry

Mentors: James Chickos, PhD; James O'Brien, PhD

The Vaporization Enthalpies and Vapor Pressures of Two Insecticide Components, Muscalure and Empenthrin, by Correlation Gas Chromatography

Jessica Spencer, Chemistry

Mentors: James Chickos, PhD; James O'Brien, PhD

The Synthesis and Characterization of Novel Chemical Methods of DNA Transformations

Ryan Stanton, Chemistry

Mentor: George Gokel, PhD

Computer Science



Track Tracker

Garett Bynum, Computer Science

Mentor: Sanjiv Bhatia, PhD

Criminology & Criminal Justice



Explaining the Onset of Mass Incarceration in the Show-Me State

Gwen Smith, Criminology & Criminal Justice

Mentor: Michael Campbell, PhD

Economics



The Determinants of Terrorism: A Quantitative Cross Sectional Analysis of Terrorist Activity Globally in 2010

Jonathan Omvig, Economics

Mentor: Anne E. Winkler, PhD

English



Ivy's Modern Women

Hali Flintrop, English

Mentor: Ann Torrusio, MA

Sensual Beauty and Violent Beasts: Sexuality in Beauty and the Beast

Alicia Jessmon, History

Mentor: Daniel Gerth, MA

Nursing



Hypertension Assessment and Management of African Americans: A Community Based Approach

Renee St. Vrain, Nursing

Mentor: Margaret Barton-Burke, PhD, RN, FAAN

Physics



RGB Analysis of Wedge Angles around a Perforation in Silicon

Jamie Daugherty, Physics

Mentor: Phil Fraundorf, PhD

Light Metal Hydrides as Cathode Materials in Lithium-Ion batteries

Alyssa McFarlane, Physics
Waruni Jawawardana, Physics
Chriss Carr, Physics
Dongxu Zhao, Physics

Mentor: Eric Majzoub, PhD

Study of Volatile Organics in Comet C/2002 T7

Christopher Milliano, Physics

Mentor: Erika Gibb, PhD

Study of OH Absorption in AA Tau

Nathan Roth, Physics
Logan Brown, Physics

Mentor: Erika Gibb, PhD

Psychology



The Effects of Victim-Perpetrator Relationship in PTSD

Julianne Altmann, Psychology & Criminal Justice

Mentors: Michael Griffin, PhD; Brittany Preston, MA

Are Men's Reports of Sexual Risk Influenced by Social Desirability? A Bogus Pipeline Study

William Dement, Psychology
Emily Straag, Psychology

Mentor: Zoe Peterson, PhD

**Preserved Visual Word Recognition in a Patient with
Alexia Sine Agraphia**

Elizabeth Eades, Psychology

Mentor: Suzanne Welcome, PhD

**Sense of Belonging Mediates the Effects of Identity Integration
on Social and Academic Outcomes among Women in STEM**

Anna Glushko, Psychology

Mentor: Bettina Casad, PhD

Emotional Expression in a Mock Interview

Michael Harris, Psychology

Mentor: Bettina Casad, PhD

Sentence Completion Among Skilled Readers

Melanie Jett, Psychology

Mentor: Suzanne Welcome, PhD

Women's Representation in STEM: The Role of Female Faculty

Evan Loveless, Psychology
Breanna R. Wexler, Psychology
Jessica L. Eastin, Psychology
John S. Slifka, Psychology

Mentor: Bettina Casad, PhD

Neural Correlates of Spelling-sound Interaction in Adult Readers

Remington Mallett, Psychology

Mentor: Suzanne Welcome, PhD

**Effects of Posttraumatic Stress Disorder Symptom Severity
and Major Depressive Disorder History
on Psychophysiological Reactivity**

Karin Meeker, Psychology

Mentors: Michael Griffin, PhD; Tara Galovski, PhD; Brittany Preston, MA

**The Influence of Variable Length Cognitive Processing Therapy
on Perceived Health and Sleep Impairment**

Brian Wilkinson, Psychology

Mentors: Tara Galovski, PhD; Courtney Chappuis, MA

Spanish



Perceived and Actual Gains in Fluency after Study Abroad

Courtney Gummersheimer, Liberal Studies

Mentor: Lauren Schmidt, PhD

Women's and Gender Studies



Sexual Objectification in Anime: The Female Body

Anita Fike, Modern Languages

Mentor: Ann Torrusio, MA

***The Hunger Games, Divergent, and Foucault:
The Role of Gaze in Young Adult Dystopias***

Roberta Gordon, English

Mentor: Ann Torrusio, MA

Notes
