ABOUT THE CAS JUNIOR FACULTY SUMMER RESEARCH AWARD PROGRAM

The College of Arts & Sciences Junior Faculty Summer Research Awards program was initiated in the 2005-2006 academic year to support selected junior faculty as they develop their research and creative projects during their probationary period, a critical time in their careers. The program provides summer salary support to junior faculty for the purpose of advancing their research and creative projects and scholarship. Recipients are selected on a competitive basis. A total of 114 awards have been made since the program’s inception.

ACKNOWLEDGMENTS

Sincere thanks are due to members of the College Research & Faculty Development Committee for their diligent work in reviewing the applications and selecting the recipients. We are also indebted to Mrs. Dana Kearns and Ms. Roxann Sumner, the Dean’s office staff who worked meticulously in handling the logistics involved in the application review process, award management, and the setting up of the poster presentation session. Last but not least, our gratitude goes to award recipients and all applicants for making the junior faculty summer research program the success that it is.

PROGRAM

Date: November 11, 2014
Location: First Floor Lobby, Roark Building (Refreshments served)

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<td>9.30 - 9.35 am</td>
<td>Opening remarks, Dr. John Wade, Dean</td>
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<td>9.35 - 10.10 am</td>
<td>Poster session</td>
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FURTHER INFORMATION

For further information please contact:

Dr. Tom Otieno
Associate Dean for Administrative Affairs & Research

E-mail: tom.otieno@eku.edu
Phone: 622-1393
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**ARTS & HUMANITIES**

**NATURAL & MATHEMATICAL SCIENCES**

**SOCIAL & BEHAVIORAL SCIENCES**
ABSTRACTS

1


Rachel Williams
Department of Languages, Culture & Humanities

“French Women Travelers in Nineteenth-Century North America: Francophone Identities and Feminist Visions” has as its long-term goal an in-depth examination of French women travelers to North America in the nineteenth century, with the aim of teasing out their perceptions of differing gender roles in France and North America. Of particular interest are their travels in Francophone North America, Quebec and New Orleans, as these areas represented a culture that was both “foreign” and “familiar” to these French-speaking travelers. My analysis of these travelers, such as, for example, Thérèse Bentzon and Louise Bourbonnau, examines their constructions of North American Francophone gender roles as both exotic and normative, foreign and familiar, in conjunction with the changes they desire to see in French gender roles.

This phase of the project, “Thérèse Bentzon’s American ‘Other’ in New Orleans: Constructing Frenchness and Femininity in Louisiana at the Turn of the Twentieth Century,” examines Bentzon’s travelogue Notes de voyages: les Américaines chez elles in order to analyze her construction of women’s roles in New Orleans and how she saw these roles as possible influences for women in France. For Bentzon, New Orleans represented an important “middle point,” both in women’s roles in preserving their French heritage and in their experiences with educational advances stemming from the Northeast. As this project demonstrates, she encourages her readers to look to New Orleans as a possible model in advancing women’s opportunities in France. Bentzon’s formulation of an exotic, Francophone identity, then, rests upon the notion that Francophone gender roles in the former North American colonies as she interprets them are both capable of influencing French society for the better and, at the same time, essentially inseparable from a French identity.
Mori Ōgai (1862-1922), Resignation and Yōgacāra Buddhism

Christopher Michael Rich
Department of Languages, Culture & Humanities

The most important influence on Ōgai’s literature, apart from his experiences while studying military hygiene as a student in Germany (1884-1888), were the three years he spent in Kokura from 1899 through 1902. In addition to his military duties, Ōgai, who later rose to the Army Medical Corps’ highest position of Surgeon-General, spent his “backwater exile” in Kokura studying French and Sanskrit, where he also established a close friendship with a Buddhist priest, Tamamizu Shunkō. Shunkō tutored Ōgai in the Yōgacāra school of Buddhism (yuishikiron, Jpn) in exchange for lessons in German. The Ōgai Bunkō at Tokyo University which houses Ōgai’s personal library contains several volumes on yuishikiron, and Ōgai’s notes and underlining in these texts indicate that he had read them carefully. In a letter to his mother dated 1901 Ōgai compares yuishikiron to von Hartmann’s Philosophy of the unconscious – correlating Schopenhauer and von Hartmann’s vorstellung with the yōgacāra concept of prati-bimba which claims that all reality is produced by the mind.

Exploring the influence of yuishikiron on Ōgai’s literature begins with the problem of “teinen,” or “resignation,” a concept Ōgai used most notably in his 1909 essay “Yo ga tachiba” (“My position”). Okazaki Yoshie’s Ōgai to teinen (1967) explores the concept of teinen in depth in Ōgai’s literature, and views teinen as a stance of abandonment (enstagung). I explore the possibility that Ōgai used the term instead to signify the yuishikiron concept that all phenomena are produced by the mind. Thus yuishikiron helped Ōgai to formulate his modern understanding of the absolute subjectivity of the individual. Ōgai’s aesthetic vision of the novel is also informed by the yuishikiron concept that all perception is contingent and that the purpose of art is not to imitate nature. This paper examines several people in Ōgai’s fiction who embody an understanding of the contingency of the individual as described in yuishikiron concepts.
Concerto for Alto Saxophone and Wind Orchestra by Ingolf Dahl:
A Critical Edition

David Clemmer
Department of Music

In 1949, German-born composer Ingolf Dahl completed his *Concerto for Alto Saxophone and Wind Orchestra*, a composition that now stands as a seminal work for the saxophone and a cornerstone in the body of wind band repertoire. From 1949 through its publication in 1980, the *Concerto for Alto Saxophone and Wind Orchestra* experienced undocumented revisions by Dahl, and the current published version exists in manuscript only. Upon inspection of the hand-written score in comparison to the individual instrumental parts, approximately 1,025 inconsistencies are revealed within this monumental work. Despite the tremendous importance of the *Concerto for Alto Saxophone and Wind Orchestra*, the current published version is not only incorrect, it is an inadequate representation of Ingolf Dahl’s contribution to the wind band catalog. An edited version is necessary to reconcile the vast differences in the published score and parts, and this research initiative compares Dahl’s original manuscripts found in the archives at the University of Southern California with the published version of the work. The final reconciliation (in progress) will yield a critical edition of Ingolf Dahl’s *Concerto for Alto Saxophone and Wind Orchestra*, complete with full score and parts.
Breast Cancer iPLA$_2$$\beta$ Mediates Nicotine-induced Metastasis through Matrix Metalloprotease-9 Secretion

Nova Arnold, Kacy Gregory, Bethany Breakhall, Lindsay Calderon
Department of Biological Sciences

Ca$^{2+}$-independent Phospholipase A$_2$$\beta$ (iPLA$_2$$\beta$) is a member of the phospholipase A2 superfamily has been linked to the regulation of a variety of cellular signaling pathways and functions. This is in part due to the catalytic activity of iPLA$_2$$\beta$, cleaving glycerophospholipids at the sn-2 position causing the release of free fatty acids including arachidonic acid and 2-lysophospholipid. However, the ability of iPLA$_2$$\beta$ to mediate breast cancer cellular functioning including proliferation and migration remains unknown. Our central hypothesis is that suppression of iPLA$_2$$\beta$ reduces nicotine-induced breast cancer metastasis through attenuating MMP-9 (Matrix Metalloprotease-9) secretion. Our in-vivo preliminary data shows that iPLA$_2$$\beta$ is overexpressed in 4T1 stage four breast cancer tumors grown in-vivo for 2 weeks and nicotine (5mg/kg/day) significantly increased growth. Additionally, we found BEL (Bromoenol lactone, 3uM) an inhibitor of iPLA2beta significantly attenuated nicotine-induced breast cancer cell proliferation. Further, we found that BEL significantly decreased nicotine-induced breast cancer cell migration (gap closure) utilizing a scratch assay. Through the use of gel zymography we elucidated that BEL attenuates nicotine-induced matrix metalloprotease-9 secretion, which, is an important contributor to cancer cell metastasis and the initiation of angiogenesis. Taken together, our in-vivo and in-vitro results indicate that iPLA$_2$$\beta$ is an important regulator of nicotine-induced breast cancer tumor growth, cell migration, and proliferation. Much work is still to be done in future studies to fully elucidate the full capacity of iPLA2beta in mediating breast cancer tumorigenicity, angiogenesis, and its invasive nature.
Fabrication and Characterization of Mesoscale Protein Patterns on Surfaces

Pei Gao
Department of Chemistry

Surface protein patterning method is the selective protein immobilization process in which protein molecules are assembled onto designated positions on the surface. By using nanosphere lithography, we are capable of fabricating a regular array of protein islands over centimeter sample regions. As a model system, lysozyme protein patterns were fabricated on an oxidized 10-undecenyltrichlorosilane (UTS) layer on Si (100) surface, and characterized by atomic force microscopy (AFM) and fluorescence microscope, respectively. Nanosphere lithography offers critical advantages over other immobilization methods. Firstly, nanosphere lithography is a fast and reliable method to fabricate protein arrays ranged from nanometer to micrometer over large areas. Secondly, the protein pattern size can be precisely controlled through the Nanosphere Lithography by selecting nanospheres of different sizes as masks.

Kentucky Judiciary Awareness of the Recommendations of the National Academy of Sciences Regarding Forensic Laboratory Oversight

Sucheta Mohanty
Department of Government

Forensic laboratories in Kentucky are currently housed within the Kentucky State Police for administrative oversight. This is in contradiction with the National Academy of Sciences recommendations calling for neutral third party oversight of forensic laboratories. As gatekeepers of the evidence admitted into criminal trials, judges have a responsibility to determine if the results are free from bias and reliable. District, Circuit and Appellate Judges were surveyed to determine if they were aware of the recommendations of National Academy of Science, and if they agreed with the recommendation. Analysis is to be performed based on race, age, sex, prior work experience, exposure to science methodology at the college level through major discipline, and whether or not they work in an urban region. (The results are pending at this time as the survey is awaiting approval from the General Counsel and Senior Counsel for the Administrative Offices of the Courts of Kentucky before being administered to the judges.)
Communication plays an important role in the social interactions of Asian elephants (*Elephas maximus*) and involves a variety of sensory modalities. Although behavioral exchanges are salient in the social interactions of Asian elephants (Adams & Berg, 1980; Archie, Morrison, Foley, Moss, & Alberts, 2006; Berg, 1987; Freeman, Weiss, & Brown, 2004; Gadgil & Nair, 1984; Garaï, 1992; Langbauer, 2000; Lee, 1986; Moss, 1975; Vidya & Sukumar, 2005), little is known about what some of these behaviors mean, especially when considering the role that touch plays. This study aimed to expand on Makecha, Fad, and Kuczaj’s (2012) findings on tactile behaviors in a group of captive Asian elephants to better understand the role that these behaviors played in behavioral exchanges between dyads in the group. More specifically, we chose to focus on tactile behaviors involving the trunk, including trunk to back contact behaviors between dyads, behaviors involving the tips of two elephants’ trunks touching, and behaviors involving the trunk of one elephant inside the mouth of another elephant, all behaviors that were salient in Makecha et al.’s (2012) study, suggested by experts to be indicative of a certain function, and were mentioned in the past literature as important behaviors. Although these behaviors are acknowledged as important, the function/functions are not entirely clear or have been interpreted in several different ways. The results are discussed in light of the contexts in which these behaviors occurred and the influence and role that dominance rank as well as personality may have played during the expression of these behaviors.
Investigating the Use of the *Learning, Earning, Investing for a New Generation* Curriculum

**Cynthia Harter**  
Department of Economics

This project presents the results of a nationwide online assessment of the newly revised *Learning, Earning and Investing for a New Generation* (*LEIG*) high school curriculum. *LEIG* is composed of 21 lessons that use various methods such as discussion and hands-on activities to help students learn about investing. Following nationwide trainings of teachers in using the curriculum, results from 24 teachers who pre-tested and post-tested their students were used to investigate the effects of the *LEIG* curriculum on high school student knowledge of personal finance and economics concepts. Three teacher groups were used in the study: 1) a matched pretest-posttest sample of 189 students who were taught by teachers who used lessons from the *LEIG* materials along with accompanying missions from the *Gen-I Revolution* online game, 2) a matched pretest-posttest sample of 220 students who were taught by teachers who used lessons from the *LEIG* materials without using the accompanying missions from the online game, and 3) a matched pretest-posttest sample of 174 students whose teachers did undertake *LEIG* training but did not utilize the materials in the classroom and used other resources instead. Results show a statistically significant average gain in knowledge of personal finance and economics, as measured with a 35-item multiple-choice instrument, for all three groups, with the largest average gain achieved by the treatment group of students taught by teachers who used the *LEIG* materials without the online game.