

SPECIAL TOPIC SYMPOSIA

(Listed in Chronological Order)

QUALITATIVE DETECTION AND IDENTIFICATION, USING MOLECULAR METHODS, OF FREE-LIVING, PATHOGENIC AMOEBAS FROM RECREATIONAL WATERS IN NORTHEAST OKLAHOMA

Tuesday, April 2: 10:00 am – 11:50 am (Alcove)

Organizers: Marsha Howard (Biological Sciences)

In the summer of 1998, a 3-year old Skiatook child was the first known victim of Primary Amebic Meningoencephalitis (PAM) in Oklahoma. PAM is a fatal brain infection caused by the free-living amoeba *Naegleria fowleri*. Since 1998, there have been 5 other cases in the state, all fatal. While most were contracted from state lakes, in 2005, two were contracted from water at a splash pad in North Tulsa. Being microscopic organisms, there is no way to tell by looking at a water source if there are amoebas present. The usual method of detection requires weeks of work by sampling, culturing, subculturing, and testing to determine if any amoeba present are pathogens. By the time confirmation has been achieved, countless numbers of children and other individuals could have been exposed. While the numbers of cases are very low compared to the numbers of individuals using the recreational water areas, the outcome of an infection is almost always death.

In recent years, molecular methods have been identified which can detect the presence of *N. fowleri*, and other pathogenic amoeba in a water source, by isolating and amplifying their DNA. These methods can result in making a positive identification of these amoebas in as little as 24 hours, greatly decreasing the usual amount of time required. This will then allow authorities to post warnings and make the public aware of the potential hazard. The work presented today will discuss the methodologies used and results obtained after testing water from local lakes and splash pads in the Greater Tulsa area.

CONTEMPORARY ISSUES IN EDUCATION POLICY AND PRACTICE

Tuesday, April 2: 1:00 pm – 2:50 pm (Great Hall B)

Organizer: Dr. Joshua Corngold (Educational Studies)

This session features the work of Master of Arts students in TU's new Department of Educational Studies. Educational Studies focuses on key questions about the aims and purposes of education, the nature of learners and learning institutions, and the myriad factors that directly or indirectly influence the learning process. As a multidisciplinary area of inquiry, Educational Studies examines such questions using tools of analysis in a range of humanistic and social science fields (history, philosophy, sociology, and so on). The contributions to this special topic session represent the breadth of concerns that Educational Studies seeks to address. The first three papers are philosophical in nature: they apply political theory concepts (personal autonomy and liberal neutrality) in examining debates over school uniforms, creationism in the schools, and the legitimacy of educating students to become agents of social change. The latter two papers employ ethnographic methods—one for the purpose of examining a foreign language teacher's use of classroom discourse at a private elementary school in Oklahoma, and the other for the purpose of examining Chinese parents' involvement in their children's academic affairs.

FOODBORNE PATHOGENS

Tuesday, April 2: 1:00 pm – 2:50 pm (Chouteau)

Organizer: Dr. Mohamed Fakhr (Biological Sciences)

The presence of foodborne pathogens on retail meats always has been a public health concern. The detection of foodborne pathogens like *E. coli* O157:H7, *Salmonella*, and *Listeria monocytogens* in recent years in fresh produce and other foods like spinach, tomato, peanut butter, pistachios, cantaloupe, and both fresh and canned mushrooms elevated such concern. This is mainly because such food items are not cooked as in the case of retail meats where heat destroys the pathogens in the cooking process. Foodborne pathogens like *Staphylococcus aureus* are known for producing heat stable enterotoxins that are not easily deactivated by cooking temperatures, and hence cause intoxication if food contaminated with these toxins is ingested. Antimicrobial resistance of foodborne pathogens is at an alarming rate because of the extensive use of antimicrobials in the feed of poultry and food production animals, and searching for new antimicrobials is desired. This special topic symposium will elaborate on some of the research being conducted here at TU to determine the prevalence and antimicrobial resistance of some important foodborne bacterial pathogens like *Salmonella*, *Campylobacter*, and *Staphylococcus aureus* including MRSA in retail meats and fresh mushrooms. The role of plasmids in antimicrobial resistance and virulence of two of these pathogens will be discussed. Research will also be presented summarizing efforts to isolate and characterize microbes from extreme environments such as the Great Salt Plains of Oklahoma and caves of the Ozark Plateau of North West Arkansas for their ability to produce antimicrobial activities against Methicillin Resistant *Staphylococcus aureus* (MRSA).

THE EUKARYOTIC MICROBE: APPLIED AND BASIC RESEARCH

Tuesday, April 2: 3:00 pm – 4:50 pm (Alcove)

Organizer: Dr. Mark Buchheim (Biological Sciences)

Eukaryotic microbes (i.e., those microbes whose cells bear nuclei and organelles) comprise important model organisms such as *Saccharomyces*, *Chlamydomonas*, and *Tetrahymena*. Ancient relatives of eukaryotic microbes represent the vessels in which mitochondria and plastids arose through an evolutionary process driven by endosymbiotic associations of microbes. These various associations of microbes ultimately gave rise to all of eukaryotic diversity—plants and animals included. And finally, eukaryotic microbes are increasingly being studied as sources of food industry additives, pharmacologically-active compounds and biofuels. Despite the scientific and economic importance of these organisms, our understanding of many aspects of their fundamental nature is quite limited. How diverse are these microbes? Molecular evidence has shown that the simple morphologies that microbes exhibit (e.g., many are referred to as little round green things) can hide a tremendous amount of genetic diversity. What methods can be used to efficiently and effectively discern genetic diversity? Do eukaryotic microbes exhibit patterns of diversity on a global geographic scale? How do eukaryotic microbes interact with other microbes and can this information be put to use? What can we learn from eukaryotic microbial behavior that might be applied to the human condition? These questions highlight the broad focus of the research that will be presented as part of this special topic session on the eukaryotic microbe.

RESEARCH ABROAD

Wednesday, April 2: 8:15 am – 10:35 am (Alcove)

Organizer: Laura Semenow (Center for Global Education)

Every year many University of Tulsa students spend time abroad through an approved study abroad program and many of those students have an opportunity to conduct field research or participate in a service-learning project in their major field of study. Tulsa students not only make contributions to

the host community abroad, but also bring interesting new ideas and knowledge to the Tulsa campus after their return. The Research Abroad Symposium will showcase a variety of creative accomplishments of Tulsa students abroad.

From Latin America to Europe, from Asia to Latin America, in this symposium, study abroad returnees will share what they learned abroad and how their findings influence their fields of study and future career.

RAINFOREST ECOLOGY

Wednesday, April 2: 1:00 pm – 5:10 pm (Alcove)

Organizer: Dr. Glen Collier (Biological Sciences)

Neotropical rainforests are characterized by high biodiversity and intricate coadaptations most of which are poorly known. This symposium reports recent work in a Central American rainforest.

FACTORS THAT AFFECT OVERALL PERFORMANCE IN SCHOOLS

Wednesday, April 2: 5:00 pm – 6:50 pm (Chouteau)

Organizer: Dr. David Brown (Urban Education)

The capstone project for graduate students in The School of Urban Education is the completion of a research project of the student's choosing. This group of 2014 Education students have initiated and completed research related to a wide variety of education topics. The research conducted by these graduate students involves mainly quantitative research methods, yet a qualitative tool was present in each study. These six graduate students bring a wealth of information into this symposium regarding motivation, discourse, school policy and intercollegiate participation in an effort to create discussion opportunities on unique problems that 21st century educators are currently addressing.

FACTORS THAT AFFECT ACADEMIC PERFORMANCE IN K-12 SCHOOLS

Thursday, April 3: 10:00 am – 11:30 am (Alcove)

Organizer: Dr. David Brown (Urban Education)

The capstone project for graduate students in The School of Urban Education is the completion of a research project of the student's choosing. This group of 2014 Education students have initiated and completed research related to a wide variety of education topics, ranging from cyberbullying to family dynamics. The research conducted by these graduate students involves mainly quantitative research methods, yet a qualitative tool was present in each study. These five graduate students bring a wealth of information into this symposium regarding parenting, mentoring and school policy in an effort to create discussion opportunities on unique problems that 21st century educators are currently addressing.

MANAGING THE WORK-NONWORK INTERFACE TO MAINTAIN EMPLOYEE HEALTH AND WELL-BEING

Thursday, April 3: 2:00 pm – 4:40 pm (Alcove)

Organizer: Dr. Jennifer Ragsdale (Psychology)

Much research supports the individual and organizational consequences of work-related stress (see Griffin & Clarke, 2011; Kahn & Byosiere, 1992). At the individual level, stress can result in such negative effects as fatigue, tension, musculoskeletal complaints, irritability, withdrawal, hostility, and illness. As chronic stressors persist, long-term negative health outcomes may result (e.g., burnout; Meijman & Mulder, 1998). This is costly for the organization in terms of reduced performance and productivity, creation of a negative climate, and increased turnover. Therefore, it is imperative that we learn more about how to effectively manage work-related stress in order to maintain health and well-being for both individuals and organizations.

The boundaries between work and off-work time are becoming increasingly more permeable such that stress spills over from the work domain and interferes with other life domains (e.g., school, family, etc.). Sometimes this spillover negatively affects our performance in other life roles (e.g., academic performance, poor well-being) and interferes with our ability to “recharge our batteries” (known as recovery from work-related stress). In contrast, inhabiting multiple roles outside of work has the potential to enrich employees’ work experiences and overall life satisfaction (known as positive spillover). The series of studies presented in this symposium will address how stress can move from the workplace into the nonwork domain. Specifically, these studies investigate stress experienced during the work day, the positive and negative outcomes associated with managing dual roles of student and employee, and how individuals utilize their weekends to recover and recharge from work-related stress (and the consequences of not doing so effectively).

SURFACE AND DEEP LEVEL DIVERSITY, CREATIVITY, AND ATTITUDES IN ORGANIZATIONS

Friday, April 4: 9:30 am – 12:00 pm (Chouteau)

Organizer: Dr. Anupama Narayan (Psychology) and Daniel Simonet (Doctoral Student, Industrial/Organizational Psychology)

Human differences make a difference. These differences exist at multiple levels ranging from visible differences such as ethnicity and gender to more deep level differences in personality, motivation, and attitudes. On the one hand, diversity provides groups the stock of resources needed to spark integrative insights, creativity, and innovation. On the other, such differences provoke conflict, division, and dissolution. To better address this topic, the current symposium tackles issues of diversity from multiple vantage points, including personality, creativity, communication, and interpersonal attitudes. These variables were assessed in different contexts including countries, teams, and dyads.

ANTHROPOLOGY RESEARCH MATTERS

Friday, April 4: 12:00 pm – 4:55 pm (Great Hall B)

Organizer: Kelsey Clardy (Anthropology, Doctoral Student)

In recent times, the validity and importance of anthropological research has come into question. This has made obtaining funding and research permission for anthropologists challenging, as well as diminished the perceived need for this type of research in the public’s eye. This makes it extremely important for anthropologists to explain why their research is needed and is applicable. Pure anthropological research seeks to study and explain biological, linguistic, and cultural aspects of past and present humanity. Students from the department of anthropology at the University of Tulsa use biological, pre-historic and historic archaeological, experimental, and current cultural anthropological approaches to their research. This session showcases the current research of students from the department of anthropology and seeks to demonstrate why anthropological research is relevant to the broader public.

CITIZENSHIP AND SERVICE IN A CHANGING WORLD

Friday, April 4: 3:00 pm – 5:10 pm (Alcove)

Organizers: TU Graduate School & Tulsa Undergraduate Research Challenge

“Citizenship and Service in a Changing World” is concerned with providing a forum for TU students to discuss and promote community service projects they have been involved in within the last 12 months. The University of Tulsa has always actively encouraged involvement in the community and this symposium will provide an opportunity for students to gain public-speaking experience while discussing their preferred community service organizations or projects to a larger audience.

OKLAHOMA NASA ENERGY SYMPOSIUM

Saturday, April 5: 10:00 am – 3:10 pm (Chouteau)

Organizer: Dr. Dale Teeters (Chemistry)

The Oklahoma NASA Energy Symposium promotes NASA’s commitment to energy research and to the development of undergraduate and graduate engineers and scientists. This symposium will highlight the research accomplishments of Oklahoma-area researchers in the topics of energy generation, storage, and management for NASA-relevant terrestrial and orbital missions. As part of the symposium, the research accomplishments of a NASA-funded program composed of researchers from The University of Tulsa, Oklahoma State University, and the University of Oklahoma will be highlighted. Specific topics to be presented include fabrication and characterization of nanostructured photovoltaic (PV) systems, nanostructured batteries, and the fabrication and characterization of integrated, self-sustaining energy storage systems. Presenters will include students from across the state of Oklahoma who are working on research supporting NASA’s energy mission. This symposium is supported by NASA through the Oklahoma NASA Experimental Program to Stimulate Competitive Research (EPSCoR) program.