4-9-2013

19th Annual Governors State University Student Research Conference Proceedings

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Dear Student Researcher:

Welcome to the Annual Governors State University Research Conference. We are proud of the excellence, expertise, and variety of your research presentations. Thank you for sharing your work with the GSU academic community. A university education goes beyond the mastery of information to the creation of new knowledge.

Congratulations to you and to your professors and advisers for participating in the joy of discovery. We are proud to count you as members of the GSU community.

Thank you for participating in this research conference and for what we hope will be a life-long commitment to new ideas.

Sincerely,

Elaine P. Maimon, Ph.D.
President
A MESSAGE FROM THE CONFERENCE
STEERING COMMITTEE

The steering committee is pleased to announce the 19th Annual GSU Student Research Conference to be held on April 9, 2013. For the past seventeen years this conference has become a tradition in excellence, and we are confident that today again we will witness another session of quality presentations by our students. This conference will be presented in its original format and with its original objectives:

1. To provide students an opportunity to present their research work before an audience of their peers, and to use the comments they receive to improve presentations made at professional conferences.

2. To provide a forum to highlight research accomplishments at GSU, and honor students presenting their research work.

3. To generate enthusiasm among the student body in general, and encourage them to pursue research and other scholarly activities.

4. To enhance communications in the area of research among the four colleges at GSU. The interactions may also lead to collaborative work among students and faculty of different colleges.

5. To enhance the image of GSU in the area of teaching, as research is considered an integral part of teaching at the university level. In the long run a larger number of students attracted to research would enroll at GSU to pursue higher education.

The committee hopes that you will enjoy the conference, that you share in the excitement of doing research, and that you will look forward to participating in future student and professional conferences.
KEYNOTE SPEAKER BIOGRAPHY

The Student Research Conference Steering Committee is proud to announce that the keynote speaker for the lunch will be:

Dr. Carol L. Adams, Ph. D.

President and CEO
DuSable Museum of African American History
Chicago, IL

An esteemed educator, Dr. Carol L. Adams helped to bring about the convergence of art and education in Chicago, particularly in its museums and public schools. As founding Director of MAPS (Museums and Public Schools), she worked with teachers and museum educators to develop curricula that utilized the museums as a living teaching resource and integrated their holdings into approved lesson plans for elementary school students in Chicago Public Schools. In addition, during her tenure as an Administrator at the Chicago Housing Authority (CHA), Dr. Adams founded the Museum Consortium whose mission was for each major museum in Chicago to adopt a public housing development and mainstream its youth into their activities.

Dr. Adams has a proven track record in the fields of grantsmanship, administration, and organizational development. A consummate fund-raiser, Dr. Adams has raised over $400 million for a diverse and varied group of institutions of higher learning, governmental agencies, and not-for-profits. She was formerly the Chairman of the African American Studies Department at Loyola University; Director of The Center for Inner City Studies at Northeastern Illinois University; and, most recently, the Secretary of the Illinois Department of Human Services, where she managed a staff of 14,000 and a budget of over $5 billion.

Educated at Fisk University, Dr. Adams matriculated at Boston University, the University of Chicago, and The Union Graduate School. She has also had additional courses of study at the John F. Kennedy School of Governmental Affairs at Harvard University, and Yale University. In addition, she holds the prestigious Phi Beta Kappa key.

Carol Adams has spent much of her career engaged in cultural arts research, analysis, and production. Her unique perspective on art and its integral role in shaping and defining culture and community is informed by her parallel study of sociology and Africana history and culture.

Dr. Adams serves on the Board of Directors of eta Creative Arts Foundation, After School Matters, and The DuSable Museum of African American History, among others. Her memberships include: the American Sociological Association, the Conference of Minority Public Administrators, Quadrangle Club, the Association of African American

Among her many awards and honors are: the Illinois Arts Council Governor's Award in the Arts, the Outstanding Humanitarian Award from the NAACP, the YWCA of Metropolitan Chicago Leadership in Education Award, Illinois Board of Higher Education Community Service Award, and the Outstanding Leadership Award presented by the Senior Citizens of the Chicago Housing Authority. She was recently inducted into the Central High School Hall of Fame and is the recipient of the Certificate of Merit presented by the Board of Alderman, both in her hometown of Louisville, Kentucky.
RESEARCH AND UBIQUITY

Carol L. Adams

President and CEO
DuSable Museum of African American History
Chicago, IL

ABSTRACT

Research is the one consistent theme in my very eclectic career path and the mastery of this skill has never failed me. In this presentation, I will discuss the significance of inquiry-based learning, the role of research in critical thinking, knowledge building, and evaluation. As an applied sociologist, I have very much engaged in the dialogue concerning evidence-based practice and I will address its significance, as well as that of practice-based evidence. I will also discuss the ubiquity of research in the digital age and the role it plays in every aspect of our lives.
19th Annual GSU Student Research Conference
April 9, 2013

PROGRAM SUMMARY

Sherman Recital Hall:

8:30 A.M. – 9:00 A.M.  Conference Registration & Continental Breakfast
9:00 A.M. – 9:10 A.M.  Welcome and Introduction
9:10 A.M. – 10:30 A.M.  Podium Presentations
10:30 A.M. – 10:50 A.M.  Refreshment Break
10:50 A.M. – 12:10 P.M.  Podium Presentations

E- Lounge:

12:10 P.M. – 12:20 P.M.  Greetings: Provost and President
12:20 P.M. – 1:10 P.M.  Lunch
1:10 P.M. – 2:00 P.M.  Keynote Address
2:00 P.M. – 2:45 P.M.  Poster Presentations
2:45 P.M. – 3:00 P.M.  Certificates Presentation to Student Participants by the president
3:00 P.M. – 4:20 P.M.  Podium Presentations
4:20 P.M. – 4:25 P.M.  Concluding Remarks
CONFERENCE PROGRAM

Conference Registration & Continental Breakfast
8:30 A.M. Sherman Recital Hall

Program Commencement
9:00 A.M. Welcome and Introduction:
Dr. Shelly Kumar
College of Arts and Sciences

Podium Presentations
9:10 A.M. ESTABLISHING TRUE IDENTITIES: THE ROLE OF TUPAC SHAKUR IN ZADIE SMITH'S ON BEAUTY, Adan Alvarado and Christopher White*, English Secondary Education, College of Arts and Sciences, p. 15.

9:30 A.M. PHARMACEUTICALS AND PERSONAL CARE PRODUCTS (PPCP) IN HAMMOND, INDIANA WATER, Theresa Knipe and Karen D’Arcy*, Analytical Chemistry, College of Arts and Sciences, p. 16.

9:50 A.M. STAGE V: A VISUAL INTERPRETATION OF MY DREAMS, Tim Arroyo, and Beth Parin*, Art, College of Arts and Sciences, p. 17

10:10 A.M. COMPARISON OF E. COLI PRESENCE AND OVERALL COLIFORM COUNTS BETWEEN SITES ON THE KANKAKEE RIVER, NEAR THE MOMENCE MUNICIPALITY SEWAGE TREATMENT FACILITY, Marcos Barajas and Timothy Gsell*, Biology, College of Arts and Sciences. P. 18

10:30 A.M. Refreshment Break
**Session II Moderator:**
Professor Cynthia Carr  
College of Health and Human Services

10:50 A.M.  PHYSOTOEXTRACTION TO BIODIESEL, Barry Latham and Karen D’Arcy*, Analytical Chemistry, College of Arts and Sciences, p. 19

11:10 A.M.  COLORISM, Maria Ramirez and Kerri Morris*, English, College of Arts and Sciences, p. 20

11:30 A.M.  FACEBOOK AND ADULT ATTACHMENT PATTERNS, Fatima Almaru and Albert Tuskenis*, Psychology, College of Education, p. 21

11:50 A.M.  CHARACTERISTICS OF INFILTRATION PROCESS IN THREE LAND COVERS IN NORTHEAST ILLINOIS, Wendy Leonard, Colleen Zumpf, April Murphy, Ljiljana Radic, Oluwadunsin Alli-Afoke and Xiaoyong Chen*, Biology, College of Arts and Sciences, p. 22

**Conference Lunch**

E- Lounge

**Greetings**

Dr. Terry Allison, Provost  
Dr. Elaine P. Maimon, President

**Lunch**

1:10 P.M.  **Keynote Speaker**

Dr. Carol L. Admas, Ph.D.

President and CEO  
DuSable Museum of African American History  
Chicago, IL

Speaking on:

RESEARCH AND UBIQUITY
Poster Presentations
2:00 P.M. E-Lounge

Moderator: Dr. Akkanad Isaac
College of Business and Public Administration

1. DETERMINATION AND STUDY OF NANOPARTICLES IN GSU'S AGRICULTURAL FIELDS, Ekta Desai and Karen D'Arcy*, Analytical Chemistry, College of Arts and Sciences, p. 28

2. PRELIMINARY DETERMINATION OF COPPER IN ENVIRONMENTAL SAMPLES, Michael Sullivan and Karen D'Arcy*, Chemistry, College of Arts and Sciences, p. 29

3. QUANTITATIVE DETERMINATION OF ACETYLSALICYLIC ACID BY Q-NMR (QUANTITATIVE NUCLEAR MAGNETIC RESONANCE) TECHNIQUE, Sushane Kumar#, Gouthami Kanduri, and Shailendra Kumar*, Analytical Chemistry, College of Arts and Sciences, #Hinsdale Central High School, Hinsdale, IL, p. 30

4. DETECTION OF TRACE METALS AND DEVELOPMENT OF ANALYTICAL METHOD FOR ANALYSIS OF ENVIRONMENTAL SAMPLES FROM KEWEENAW PENINSULA MINES, MICHIGAN, Gopi Chandra Rao, Anusha Parimi, Sandra Johnson#, and Karen D'Arcy*, Analytical Chemistry, #Environmental Biology, College of Arts and Sciences, p. 31

5. EFFECTS OF SOIL MANAGEMENT PRACTICES IN RELATION TO TOTAL BACTERIA AND BACTERIAL DIVERSITY, Craig Sweet and Timothy Gsell*, Biology, College of Arts and Sciences, p. 32

6. THE INHIBITORY EFFECTS OF DISINFECTING AGENTS ON THE SURVIVAL OF NON-DESICCATED AND DESICCATED SALMONELLA TYPHIMIRIUM, Shurook Abdeljaber and Timothy Gsell*, Biology, College of Arts and Sciences, p. 33

7. INFLUENCE OF SOIL TYPE ON PLANT GROWTH OF CORE AND BEANS SEEDLINGS, Oluwadunsin Alli-Afoke and Xiaoyong Chen*, Biology, College of Arts and Sciences, p. 34

8. COMPARATIVE STUDY OF MICROBIAL LEVELS AS A FUNCTION OF DISTANCE FROM BAT GUANO IN THE SEDIMENT FROM TWO SOUTHERN ILLINOIS CAVES, William
2:45 P.M.  

**Certificates Presentation**  
Dr. Elaine P. Maimon, President

**Session III Moderator:**  
Dr. Maribeth Kasik  
College of Education

3:00 A.M.  
TWO'S COMPANY: THE VIABILITY OF THE TWO-STATE SOLUTION FOR THE ISRAELI-PALESTINIAN CONFLICT, Stephanie Snow and Elizabeth Johnson*, Interdisciplinary Studies, College of Arts and Sciences, p. 23

3:20 A.M.  
GIS ANALYSIS OF THE PREFERRED HABITATS OF THE ENDANGERED BLANDING’S TURTLE (EMYDOIDEA BLANDINGII), Jamie Viebach and John Yunger*, Environmental Biology, College of Arts and Sciences, p. 24

3:40 A.M.  
THE NO CHILD LEFT BEHIND ACT AND ITS INFLUENCE ON PRE-SERVICE TEACHER MORALE, Felicia Towers, Danielle Daletski, Jill Kopera, Eboni Caldwell, and Tywanda Jiles*, Early Childhood Education, College of Education, p. 25

4:00 A.M.  
THE POWER OF HUMAN AGENCY THROUGH LANGUAGE: NAMING AND STORY-TELLING IN CORMAC MCCARTHY’S THE ROAD, Kara Trojan and Christopher White*, English, College of Arts and Sciences, 26

4:20 P.M.  
**Concluding Remarks**  
Dr. Shelly Kumar
ABSTRACTS OF PODIUM PRESENTATIONS

April 9, 2013

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The authors with underlined names are the presenting authors. The authors with asterisks are the faculty sponsors.

Governors State University
University Park, Illinois
ESTABLISHING TRUE IDENTITIES: THE ROLE OF TUPAC SHAKUR IN ZADIE SMITH'S ON BEAUTY

Adan Alvarado and Christopher White*

English Secondary Education
College of Arts and Sciences

ABSTRACT

Throughout her prize winning 2005 novel, On Beauty, British novelist Zadie Smith intersperses numerous lyrics and references from hip-hop music. However, the hip-hop element in On Beauty has typically been glossed over by critics or its significance contained to one or two secondary characters. Zadie Smith made a decision to weave hip-hop throughout the novel, to have its presence felt, why? Is it simply an arbitrarily chosen aspect of Smith’s contemporary landscape? Or is hip-hop’s presence or prevalence due to how the genre relates to the novel’s characters? The characters exist between two worlds where an internal battle is being fought in hopes of emerging with a “true” singular identity. Hip-hop constantly finds itself in a similar scenario and Smith illustrates this by referencing the works of Tupac Shakur, the hip-hop artist who most embodied the internal struggle the characters are in the midst of. Smith establishes Tupac’s importance in the novel by presenting him as an influential figure in the life of Levi Belsey, who admits that reading a book on Shakur’s death left him wounded and overwhelmed. Levi Belsey quotes two of Shakur’s pieces of work and does so to invoke two very different sentiments. The song and poem Levi pulls his words and thoughts from work to establish not only the dualities that exist within Tupac, but also within Levi and the other characters of the novel. In On Beauty Zadie Smith pays homage to both E.M. Forster and the literary critic Elaine Scarry. She also uses other artists to help tell her story, particularly Rembrandt van Rijn and Tupac Shakur. This tactic has become common in contemporary art. Musician M. Ward uses William Blake’s “The Grave” in order to work through the concept of death in his song, “Blake’s View.” Woody Allen’s leading man in Midnight in Paris discovers himself through the ramblings and philosophies of a myriad of artists (Hemingway, Dali, and Fitzgerald). Today’s artists are comfortable with trading in some originality for authenticity. They acknowledge that they live in the world and are inspired by other artists and see no harm in allowing their art to reflect that inspiration.
PHARMACEUTICALS AND PERSONAL CARE PRODUCTS (PPCP) IN HAMMOND, INDIANA WATER

Theresa Knipe and Karen D'Arcy*

Analytical Chemistry
College of Arts and Sciences

ABSTRACT

Scientists are realizing that there is an "emerging threat" that involves PPCPs in drinking water. By allowing these toxins in our waters, we are slowly drinking it ourselves. Not only are these toxins affecting our drinking waters, but also affecting aquatic life, our soils, and air quality. Everything we do affects our water and our longevity. This investigation will cover one of two main components in water quality restoration. The first piece, what the investigation requires, is the data collection component. The purpose of this component is to identify and analyze the PPCPs found in Hammond’s water to study. In some cases water will be from drinking supplies and other cases water will come from local rivers. Utilizing HPLC and LC/MS PPCPs will be identified and analyzed for concentration levels. The second piece of this component is to raise water quality awareness. This will involve either prescribing a “treatment” or a developing a course of action to reduce the amount of PPCP disposal and dumping in the water supply. This component will necessitate community education and action.
STAGE V: A VISUAL INTERPRETATION OF MY DREAMS

Tim Arroyo, and Beth Parin*

Art
College of Arts and Sciences

ABSTRACT

Stage v is a concept based in the psychology of dreams, and interpretations of my own dreams. This is a concept that I have researched for a number of years beginning with the documentation of my dreams, and the interpretations from various sources to gain an understanding of them. The works, which will be created for this project, are photographic. I use symbolism and metaphors to assist the viewer in identifying the purpose of the body of work, while focusing on various techniques used to add depth to the imagery. I will present some of the influences, technical research, and imagery discussing how the project has evolved.
COMPARISON OF E. COLI PRESENCE AND OVERALL COLIFORM COUNTS BETWEEN SITES ON THE KANKAKEE RIVER, NEAR THE MOMENCE MUNICIPALITY SEWAGE TREATMENT FACILITY

Marcos Barajas and Timothy Gsell*

Biology
College of Arts and Sciences

ABSTRACT

The Environmental Protection Agency of the United States has set up parameters for safe drinking water for public access. Small rural communities are often overlooked for analysis of drinking water due to the low population density compared to that of cities with large population densities. Momence Community drinks water from a separate underground spring with sources of possible contamination of fecal coliforms. Within a Five mile radius of the ground water there is a local sewage recycling plant, the Kankakee River, and many industrial businesses that contaminate the water supplies. Using EPA methods, four locations were tested for E. coli and other fecal coliforms using selective media and carbon usage patterns from BiOLOG Eco-Plates. These sites included an upstream control site, the Sewage treatment facility, recycled water site and downstream site. Although there is a low p-value for the aerobic counts, suggesting there is sufficient evidence to suggest contamination from the recycled water, it is not important for this experiment as they are not fecal coliforms, and are other bacteria, which the EPA considers not harmful for the environment. No fecal coliforms, including E. coli and Enterobacter, are being released into the environment from the sewage recycling plant. With a high p-value, we fail to provide sufficient evidence to suggest any contamination from the sewage recycling plant to the adjacent Kankakee River. Interestingly, the data suggest that the upstream control site, had significant amount of fecal contamination compared to the test site which had little to no coliforms present.
PHYTOEXTRACTION TO BIODIESE

Barry Latham and Karen D'Arcy*

Analytical Chemistry
College of Arts and Sciences

ABSTRACT

Phytoremediation is a well-documented method of removing toxic metals from soil with plants and has been in use since the 1970's. Although numerous plants are able to absorb metals, for the interest of this research, only sunflower (Helianthus annuus) will be used for the uptake of lead in the Bronzeville neighborhood of Chicago, IL, which was well known for its steel mills prior to the twenty-first century. Existing research has shown the bio-accumulation points in many kids of plants, but no research can be found that determines the amount of lead specifically found in the seeds. As renewable fuels have gained popularity, more and more organic material is being processed into fuels such as ethanol or biodiesel. Biodiesel results from oil extracted from beans, seeds or algae and trans-esterification of the resulting triglyceride molecules. As sunflowers are an oil-bearing plant, their seeds can be harvested to generate 39-49% oil by mass. If the seeds are one of the sites of bio-accumulated lead, then trans-esterification to biodiesel and combustion would release the lead back into the environment. This would render the plant useless in the carbon cycle of biodiesel production and use. This research will determine the levels of lead by Flame Atomic Absorption Spectroscopy (AAS) in the contaminated soil, grow multiple sunflower plants to maturity, then analyze the entire plant using AAS to determine where the lead accumulates. The seeds will be harvested and pressed to release their oil. This oil will be trans-esterified to biodiesel and tested for lead content as well.
COLORISM

Maria Ramirez and Kerri Morris*

English
College of Arts and Sciences

ABSTRACT

Colorism has been predominant since colonial times. Ever since then, it has only transgressed into society. This is clearly evident in different centuries, even in present day America. Therefore, the effects of Colorism have been tremendous, especially when it comes to recognizing the African influence in the Latin-American culture. This is evident in Mexico’s nationalistic country, where the sense of Black identity was destroyed and in present day, rarely acknowledged. Moreover, Colorism has also caused a sense of superiority among those whose skin complexion is lighter, hence, creating division in the Latino/a community. Besides division, Colorism has also other significant issues that impact the way in which Latinos/as perceive themselves, as well as the way American society sees them. Colorism is all around and sometimes, one pays little to no attention. Therefore, it is of extreme importance to point out the issues with this topic. Such issues will be illustrated through various ways in which Colorism is manifested in the Latino culture and family, as well as in History, society, and media in both Latin America and the U.S.
FACEBOOK AND ADULT ATTACHMENT PATTERNS

Fatima Almaru and Albert Tuskenis*

Psychology
College of Education

ABSTRACT

Theories on attachment focused on the bond between caregivers and children; attachment characterizes not only childhood relationships with caregivers but also other close, personal relationships throughout the lifespan. Relevant not only for close relationships, adult attachment styles also relate to how individuals approach more casual or less significant relationships and social interactions. The purpose of the current study was to investigate adult attachment patterns (anxiety and avoidance) and four measures of self-disclosure on Facebook (the opportunity to express oneself on Facebook, the opportunity to connect with other members on Facebook, the degree of safety for self-disclosing emotions on Facebook over in-person disclosure, and the benefits of self-disclosing on Facebook over in-person disclosure) using Forest and Wood's (2012) scale. Participants were asked to complete either written or online surveys regarding adult attachment patterns and perceptions of Facebook. Participants also answered survey questions on their degree of self-disclosure, self-esteem, and trust. It was found that adult attachment anxiety predicted all four measures of Facebook self-disclosure. Adult attachment avoidance did not predict the opportunity to express oneself on Facebook or the opportunity to connect with other members on Facebook; however, adult attachment avoidance was a significant predictor for the degree of safety for self-disclosing emotions on Facebook over in-person disclosure and the benefits of self-disclosing on Facebook over in-person disclosure of Facebook self-disclosure.
CHARACTERISTICS OF INFILTRATION PROCESS IN THREE LAND COVERS IN NORTHEAST ILLINOIS

Wendy Leonard, Colleen Zumpf, April Murphy, Ljiljana Radic, Oluwadunsin Alli-Afoke and Xiaoyong Chen*

Biology
College of Arts and Sciences

ABSTRACT

Soil infiltration is an important part of the hydrological cycle because it is the process by which water on the soil surface penetrates into the soil. Understanding how infiltration occurs and what major factors affect it, is important not only for better understanding the hydrological cycle but also land-use management purposes. In order to examine the influences of land cover changes on infiltration process, the infiltration rates and amount of cumulative infiltrated water were investigated in three land cover types, at Thorn Creek in northeast Illinois. The three land cover types included an evergreen forest site, a grassland site and a residential site. Three plots were selected in each of the land cover types. Water infiltration rate in each plot was measured use an infiltrometer (IN2-W Turf-Tec Infiltrometer, Turf-Tec International, Florida, USA). The results showed the terminal infiltration rate was the highest in forest (1.04 cm3/min), and the next in grassland (0.94 cm3/min), and the lowest in residential site (0.05 cm3/min). After 120 minus, the amount of cumulated infiltrated water was 1264.3 cm3 in forests, which was about 28 and 36 times higher than that in grassland (43.3 cm3) and residential sites (34.6 cm3), respectively. Our study indicate that land cover changes have significantly influence on soil infiltration process and human activities (such as residential area development and urbanization) will cause substantial decrease of infiltration rates. *The authors wish to express their deepest thanks to all students who registered in BIOL4537/6537 Environmental Hydrology Lab in spring 2013 and assisted with the field measurements.
Two's Company: The Viability of the Two-State Solution for the Israeli-Palestinian Conflict

Stephanie Snow and Elizabeth Johnson*
Interdisciplinary Studies
College of Arts and Sciences

Abstract

Peace in the Middle East is a phrase that immediately evokes images of intense violence. The tension that has been a constant presence in this region is nothing new, and many wonder if there will ever be true peace in these affairs. With respect to specific antagonism between the Israelis and the Palestinians, there are particular issues that are at the root of the current disagreement, including: state recognition, border location and land rights, security concerns, Israeli settlements on disputed land, and freedom of movement for Palestinians. The reasons for this situation are multifaceted, but it is universally acknowledged that the instability surrounding Israeli-Palestinian affairs impact not only the countries in the Middle East, but the entire world. This research is a work in progress that attempts to answer the question: Is there a solution for securing peace and ending the conflict?. The two-state solution will be able to bring peace to the area as the two sides negotiate resolutions on the major points of contention: the borders of the new Palestinian state, how to deal with the Palestinian refugees who will most likely be outside the final borders, the status of Arab citizens in Israel, and (of extreme importance) the issue of East Jerusalem and the Temple Mount. The two-state proposal is the only viable solution to begin the peace process between the Israelis and the Palestinians. While the aim of this research is to find merits to the two-state proposal, two alternative methods are investigated to make connections with historical, economic, cultural, and political issues that impacts the land disputes.
GIS ANALYSIS OF THE PREFERRED HABITATS OF THE ENDANGERED
BLANDING’S TURTLE (EMYDOIDEA BLANDINGII)

Jamie Viebach and John Yunger*

Environmental Biology
College of Arts and Sciences

ABSTRACT

Habitat fragmentation plays a large role in the global decline of vertebrates. Fragmentation causes an increase in edge-to-core ratios, impediments to gene flow, and mortality from roads and railways as animals attempt to move between patches. These effects are especially deleterious to reptiles. This research attempts to identify aspects of habitats that are preferred by Blanding’s turtles (Emydoidea blandingii), a species of turtle that is considered endangered throughout its range, in order to better identify areas for reintroduction or improve existing habitat to make it more suitable for the existing populations. GIS was used in conjunction with a database on the distribution and abundance of Blanding’s turtles. Data examined included distance to railroad tracks, distance to roads, size and type of associated wetlands, nearby land use designations, and length of roads through the habitat. A MANOVA found that all but surrounding land types (green space or development) are landscape variables that influence Blanding’s turtle populations. These results indicate that when attempting to identify areas that turtle populations would thrive, land managers should focus on larger wetlands (mean>450m²) with shallow water that is vegetated (i.e. shrub-scrub wetlands). It would also be beneficial to be far away from railroads (mean>1819 m).
THE NO CHILD LEFT BEHIND ACT AND ITS INFLUENCE ON PRE-SERVICE TEACHER MORALE

Felicia Towers, Danielle Daletski, Jill Kopera, Eboni Caldwell, and Tywanda Jiles*

Early Childhood Education
College of Education

ABSTRACT

The No Child Left Behind Act (NCLB) was instituted under the Bush administration in 2002. This marked the most dramatic change to the Elementary and Secondary Education Act of 1965. The goal of the NCLB legislation was to enact a law which targeted schools receiving Title I funds to close the achievement gap with accountability, flexibility, and choice, so that no child was left behind. Twelve years later, schools, administrators and teachers are still held accountable for this mandate. This ripple effect is no longer just at the school district level. The NCLB Act is discussed in several education preparation courses for pre-service teachers and has caused many students to feel uneasy about the journey that lies ahead. This descriptive study will document the perceptions of pre-service teachers on their beliefs about the influences of the NCLB Act and their morale before entering into the profession. Pre-service teacher’s perceptions were captured through a qualitative analysis of interviews and focus groups. The results from this study concluded that the NCLB Act has an impact on pre-service teachers morale. Future studies should be conducted to help ensure that pre-service teachers are supported by their university and or school to promote morale before entering the teaching field.
THE POWER OF HUMAN AGENCY THROUGH LANGUAGE: NAMING AND STORY-TELLING IN CORMAC MCCARTHY'S THE ROAD

Kara Trojan and Christopher White *

English
College of Arts and Sciences

ABSTRACT

Although many literary scholars explore the messianic image of the boy and humankind’s existential crisis in The Road, they have not addressed the issue of life-affirming language within the man and the boy’s dialogue, which I argue is crucial to understanding the reason why the man and the boy choose to live rather than negate human life. The Road by Cormac McCarthy, a Pulitzer-prize winning post-apocalyptic novel, follows a man and his son on their journey to the southern states to avoid winter while encountering inclement weather patterns, cannibals, disease, and starvation. The prevailing question behind this narrative is why the man and the boy bother to continue living in an environment that is perilous, unforgiving, and hopeless. Nevertheless, I contend that the key to the man and the boy’s struggle to live despite the horrific circumstances stems from their dialogue; though their dialogue is sharp and clipped, there is great depth within their exchanges that posits assertion for human life. Demonstrated by the characters’ action to re-invent a language that is now obsolete, Cormac McCarthy’s The Road embodies self-reliance in response to a nihilistic environment. Therefore, McCarthy’s characters demonstrate the novel’s life-affirming message specifically through re-naming the landscape, human behavior, and human identities in addition to scriptural story-telling to overcome the emptiness of a frontier reduced to nothingness, free of illusions and meanings. Dialogue between the man and the boy is essential to recreating a stripped world by breaking away from the concrete bleakness, which offers some spiritual aspect to a world where “there is no God and we are his prophets.” Moreover, the characters’ use of language signals a significant change in McCarthy’s prose style that also reflects McCarthy’s changed feelings about human existence. Contrasting to McCarthy’s previous novels, The Road focuses on the “good guys” rather than the typical anti-heroes and villains that McCarthy usually develops as his protagonists. The Road is the one novel in his collection of ten novels dating back to 1965 in which Cormac McCarthy does not endorse nihilism.
ABSTRACTS OF POSTER PRESENTATIONS

April 9, 2013

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Governors State University
University Park, Illinois
DETERMINATION AND STUDY OF NANOPARTICLES IN GSU'S AGRICULTURAL FIELDS

Ekta Desai and Karen D'Arcy*

Analytical Chemistry
College of Arts and Sciences

ABSTRACT

This scientific literature project addresses nanoparticles in agricultural environment. This study is motivated by the emergence of engineered nanomaterials as a key environment contaminant and with possible health impacts on humans exposed to nanoparticles. Analysis of nanoparticles in environmental samples presents a number of challenges, including separation and collection of individual nanoparticles from bulk soil. Characterization of nanoparticles requires advanced analytical and spectroscopic techniques.

Nanoparticles are used in medicine, textiles, manufacturing and cosmetics. Literature review focuses on soil bacteria such as Streptomyces and Rhizobiales being susceptible to titanium dioxide (TiO$_2$) and zinc oxide (ZnO) nanoparticles. Literature also focuses on effect of ZnO and cerium oxide (CeO$_2$) nanoparticles on soybean plants. Effect of metal based nanoparticles in soil and soil invertebrates have been reviewed which highlighted the fact that disposal of wastewater treatment plant (WWTPs) sewage sludge is considered main source of nanoparticle disposition onto land and use of sewage sludge could contribute to input of 1µg/Kg$^3$ and 120 µg/Kg$^3$ of Ag and TiO$_2$ nanoparticles to agricultural land per year respectively.

Lastly, literature review gave various detection techniques for nanoparticles which helped in identifying promising technologies for future GSU research.
PRELIMINARY DETERMINATION OF COPPER IN ENVIRONMENTAL SAMPLES

Michael Sullivan and Karen D'Arcy*

Chemistry
College of Arts and Sciences

ABSTRACT

Preliminary Determination of Copper in Environmental Samples Michael Sullivan, Sandra Johnston, Dr. Karen D'Arcy Department of Chemistry Governors State University A method for analytical detection of trace levels of copper was developed to analyze soil, plant, and mammal samples taken by graduate student Sandra Johnston (M.S. in Environmental Biology) in the Kewanee County mining region of Upper Peninsula Michigan. This method was developed and implemented using Atomic Absorption, establishing a lower detection limit and range of accurate detection, as well as protocols for samples falling outside the range. Methodology and data from several samples will be discussed. This project was supported in part by NSF award 008831.
QUANTITATIVE DETERMINATION OF ACETYLSALICYLIC ACID AND ACETAMINOPHEN BY Q-NMR (QUANTITATIVE NUCLEAR MAGNETIC RESONANCE) TECHNIQUE

Sushane Kumar#, Gouthami Kanduri, and Shailendra Kumar*

Analytical Chemistry
College of Arts and Sciences
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ABSTRACT

The pharmaceutical industry mainly uses chromatographic techniques such as High Performance Liquid Chromatography (HPLC) and Gas Chromatography (GC), to determine the quantity of the active ingredient and other material in the drugs. A large effort goes into developing methods using chromatography techniques. The method development and running HPLC and GC are time consuming. Methods need to be updated as the chromatographic columns and the instruments wear out. On the other hand, Nuclear Magnetic Resonance (NMR) technique is mainly used for qualitative analysis to determine the identity of compounds. Proton-NMR technique does provide quantitative information of compounds. However, in order to develop a quantitative determination method an internal standard of known concentration is required.

In this study, Q-NMR (quantitative NMR) was used to quantitatively analyze acetylsalicylic acid with diethyl ether as an internal standard. The area of NMR signals showed a linear relationship with the concentration of the drug. Acetylsalicylic acid was chosen as a representative drug. The method is useful for a wide variety of drugs. Our future studies include using a variety of appropriate internal standards to determine concentrations of several organic compounds including various pharmaceutical drugs and petroleum products.
DETECTION OF TRACE METALS AND DEVELOPMENT OF ANALYTICAL METHOD FOR ANALYSIS OF ENVIRONMENTAL SAMPLES FROM KEWEENAW PENINSULA MINES, MICHIGAN

Gopi Chandra Rao, Anusha Parimi, Sandra Johnson#, and Karen D'Arcy*

Analytical Chemistry
# Environmental Biology
College of Arts and Sciences

ABSTRACT

The primary goal of this research was to develop analytical methods for detection of Trace metals (Silver, Nickel) in environmental samples. Perkin Elmer Atomic Absorption spectrophotometer, Aanalyst 800 was used for this purpose. Both Graphite Furnace and Flame techniques were performed to detect Silver; the calibration curve was linear in the range of 10-100ppm for Flame and s-shaped for Graphite Furnace in the range of 5-100ppb of Silver. For Nickel Flame technique has been used and the calibration was linear in the range of 5-20ppm of nickel in the solution with correlation coefficient r=0.999964. The limit of detection was performed for both Silver (Graphite Furnace) and Nickel (Flame) by taking seven replicate samples of their lowest detectable concentrations and seven of blank reagent samples and further research analysis can be done based on the results obtained for the detection limit value. Preliminary results show trace Silver in Copper mine samples.
EFFECTS OF SOIL MANAGEMENT PRACTICES IN RELATION TO TOTAL BACTERIA AND BACTERIAL DIVERSITY

Craig Sweet and Timothy Gsell*

Biology,
College of Arts and Sciences

ABSTRACT

Agricultural soils can be diverse in the nutrients they carry along with the bacterial communities they contain. Studies suggest soils that have more biodiversity may be able to resist change better than those with lower diversity. Management of soil has a profound effect on bacterial communities within them. In many cases the supplemented elements into these managed soils are nitrogenous compounds. The three different soil practices used in this study were organic, conventional and biosolid, all which are located at Governors State University. In this study, the bacterial communities of these three differently managed soils were diluted and then incubated on R2A agar to determine total bacterial counts and diversity. Supplemental tests were performed using BIOLOG Eco-Plates to gain insight to the bacterial communities. BIOLOG Eco-Plates were used to help determine community level changes in bacteria using 31 common carbon sources. A Kruskal–Wallis test was performed on the sites and significance was found for both total bacteria and diversity.(p<.05). A post Dunn test was performed and it revealed the organic plot was significantly high diversity but also significantly lower total bacteria compared to that of the biosolid plot. Funding: Governors State University supported this research.
THE INHIBITORY EFFECTS OF DISINFECTING AGENTS ON THE SURVIVAL OF NON-DESICCATED AND DESICCATED SALMONELLA TYPHIMIRIUM

Shurook Abdeljaber and Timothy Gsell*

Biology
College of Arts and Sciences

ABSTRACT

Every year, thousands of people fall ill due to Salmonellosis. This common foodborne illness occurs when Salmonella contaminates food such as eggs and poultry. Initiatives can be taken to prevent this bacterial infection that can result from cross contamination and end up in human food consumption. Generally, disinfecting agents are used to prevent the spread of bacteria. This method can also be used on Salmonella, of which its effectiveness has been variable. In this experiment, disinfectants ranging from acids, sodium hypochlorite, and phenols were tested against Salmonella typhimirium to determine its susceptibility. The disinfecting agents that were used in this experiment are Lysol, Clorox, and sodium hypochlorite, of which the latter was employed at concentrations of 50, 100, and 200 ppm along with lemon juice, honey and extra virgin olive oil. Turbidity tests were performed to determine the effectiveness of each agent on both desiccated and non-desiccated Salmonella. These growth conditions have recently been shown to have an impact on the effectiveness of various agents. Both desiccated and non-desiccated Salmonella were exposed to agents, incubated and tested for growth based on turbidity. Lemon juice, honey and extra virgin olive oil showed relatively high turbidity compared to Clorox, sodium hypochlorite, vinegar and the lemon juice/vinegar mix, which were all very effective in allowing for no turbidity. There was no significant difference between the effectiveness of the non-desiccated and desiccated Salmonella in this set of experiments. Next, the zone of inhibition test was used to verify the original findings, and to define how effective each chemical treatment was relative to the others employed. From this experiment, honey showed the greatest zone of inhibition on desiccated Salmonella cells, followed by Lysol used on non-desiccated Salmonella. However, it is possible that an error in the process of desiccation necessitates further experimental testing. The findings from this experiment indicate that there was no difference between the susceptibility of desiccated and non-desiccated Salmonella based on turbidity alone, but the non-desiccated Salmonella were more susceptible to disinfecting agents than the desiccated Salmonella typhimirium. The results from this experiment show that disinfecting agents can be used to prevent Salmonellosis.
INFLUENCE OF SOIL TYPE ON PLANT GROWTH OF CORE AND BEANS SEEDLINGS

Oluwadunsin Alli-Afoke and Xiaoyong Chen*

Biology
College of Arts and Sciences

ABSTRACT

Soil is the thin layer of material on the earth surface in which plants have their roots. The type of soil a plant sits in acts as a physical and nutritional support system. Soil texture and quality will determine how easily a plant can access these needed materials. Soil types often play a role in determining plant growth. The growth in diameter and height of core and beans seedling were measured under five soil types: clay soil, sandy soil, loamy soil, peat soil, and chalky soil. The results showed that the diameter growth rates of core seedlings were the highest in the loamy and chalky soils (0.34 mm/day), then in peat (0.3 mm/day) and clay (0.24 mm/day), the lowest occurring in the sandy soil (0.16 mm/day). For beans seedlings, the diameter growth rates in the five soil types were in an order clay (0.21 mm/day) > loamy = chalky = peat > sandy (0.12 mm/day). The height growth rates in core seedlings were the highest in the loamy (0.8 cm/day) and the lowest in the sandy (0.45 cm/day). There were no significant differences in terms of the height growth rates of the bean seedlings among the soil types (ranging 0.34 to 0.23 cm/day). The study indicates that loamy soils are the best suitable substrate for the growth of core and beans seedlings and the sandy soils are the worst ones in the study region.
COMPARATIVE STUDY OF MICROBIAL LEVELS AS A FUNCTION OF DISTANCE FROM BAT GUANO IN THE SEDIMENT FROM TWO SOUTHERN ILLINOIS CAVES

William Rudick and Timothy Gsell*

Biology
College of Arts and Sciences

ABSTRACT

The growth of organisms in cave environments, in general, is limited by organic input. These cave ecosystems are mostly constant in overall physical composition. Increased nitrate levels as a result of bat guano presence in Griffith and Layoff caves in Hardin County, IL, and the pathogenic coliform bacteria present in fecal matter are harmful to humans and animals alike. These conditions may increase in amount as a result of bat activity and water flow to places other than the designated cave environment. This study attempts to: 1). Determine the impact of bat guano at various distances on the overall number or bacteria and specifically the potentially harmful fecal pathogens in the cave environments, and 2). To observe if bat guano presence has differing effects on pathogen levels based on differing sediment composition and water flow levels in disparate cave environments. These questions were tested by taking sediment samples from Griffith and Layoff caves and performing counts on total coliform bacteria as well as overall aerobic bacterial levels using standard plate count and selective media. Results showed little to no influence on overall microbial levels as a function of distance from the cave guano sources in Griffith cave, but coliform numbers were variable, but followed no specific pattern correlated to distance. Layoff cave showed increases in both total bacteria and coliforms only directly on the guano piles. Further study is needed to effectively determine diversity of bacterial types and overall importance of guano to microbial organisms within these cave environments.
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ACKNOWLEDGMENT

The Conference Steering Committee would like to express its gratitude to President Elaine Maimon and Provost Terry Ellis for encouragement for the conference, and to the provost's office for financial assistance. The committee would like to thank Mr. Ronald McDavid, for graphic support; Mr. Erick Brenes for web pages support; and Lindsay Gladstone, Thomas Houlihan, and Rhonda Brown for graphic approval process; Mr. Mark Clayton and Mr. John Aducci, for printing; Ms. Vickie Carra for distribution of the proceedings; Ms. Sharon Browne for secretarial services; Ms. Maureen Bendoraitis and Mr. Donald Washington for audio-visual support; Ms. Nicole Harris and physical plant operation staff for room and banquet set-ups; Mr. Joseph Lenard for food coordination; Ms. Tracy Sullivan for supervising printing and food tasks; and graduate assistants Ms. Anusha Parimi and Mr. Gopi Chandra Rao Tedlapally for general help.