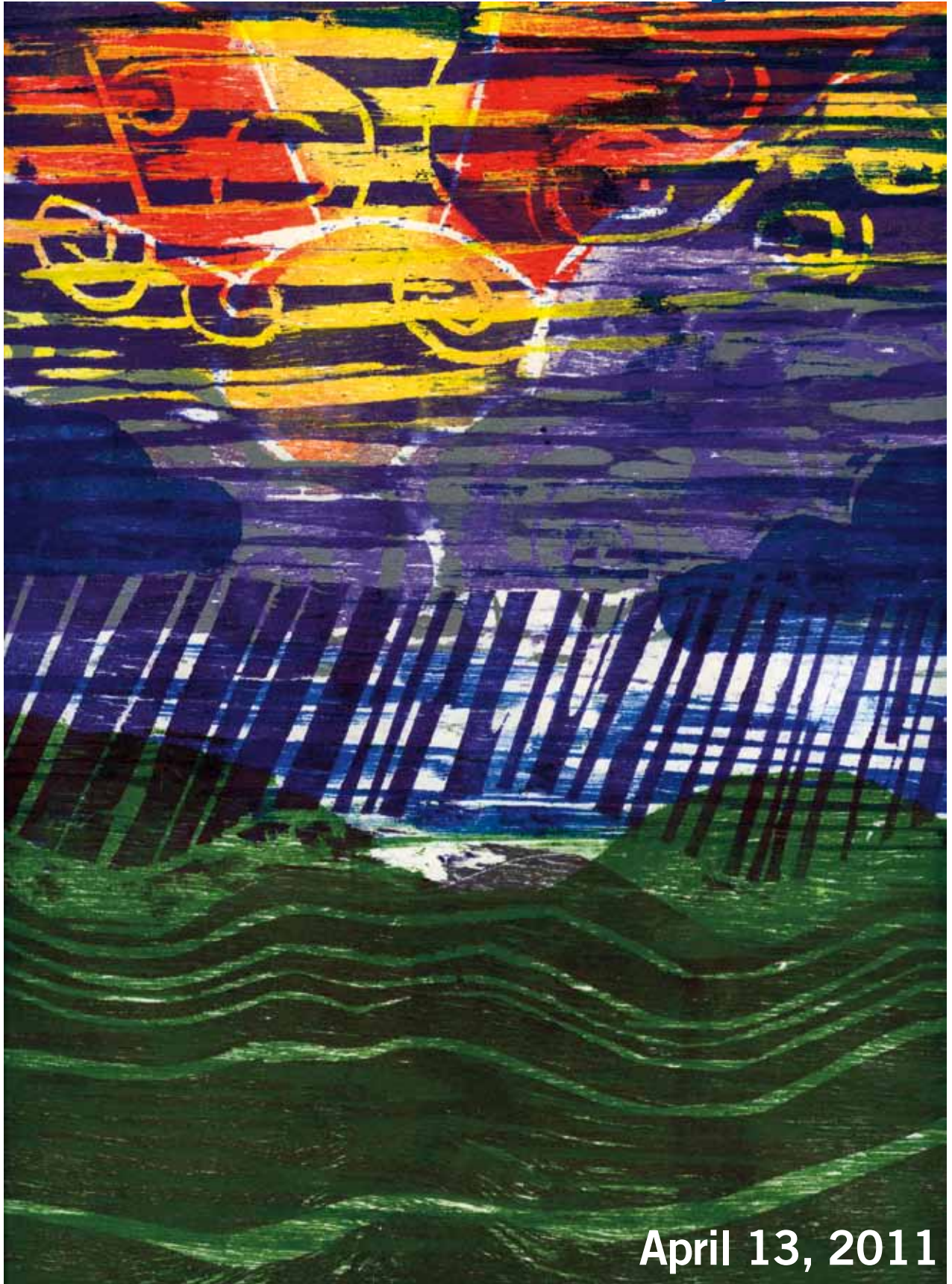


# Student Scholars Day



April 13, 2011

*Layered Skies*, Essian



# Table Of Contents

2011 SSD Committee	4
Welcome from Co-Directors	5
McNair, Student Summer Scholars, and Academic Conference Fund	6
History of SSD	12
Keynote Lecture	13
Schedule of Events	14
Statement from the Cover Artist	14
Campus Map	15
Henry Hall Map	16
Kirkhof Center Map	17
Schedule of Poster Presentations	19
Schedule of Oral Presentations	38
Panel Presentations	51
Poster Presentation Abstracts	52
Oral Presentation Abstracts	113
Panel Presentation Abstracts	158
Index of Presenters	160
Index of Mentors	172
Sustainable Book Benefits	176

# fishladder

*A Student Journal of  
Art and Writing*

## UNVEILING & EXHIBITION

Spring 2011

Please join us for the unveiling reception:

- Friday, April 15<sup>th</sup> at 6 PM
- Lake Ontario Hall, room #164

LOH Red Wall Exhibition: March 28 – April 29, 2011

## Contributors

<b>Fiction</b>	Jamie deGraaf Joshua Hackler Claire Helakoski Andrew Wernette
<b>Poetry</b>	Brianna Eberspeaker Ryan Hanna Emily Loftis Kristin Oke Maggie Roa Erin Terback Michelle Thomas Sara Warren
<b>Nonfiction</b>	Kendel Goonis Rachel MacDonald
<b>Drama</b>	Jeremy Llorence Brittney Mestdagh
<b>Art</b>	Lindsay Fisher Annie Gerlofs Eliza Von Hagen Ashley Harriger Evan Hinze Joey Salamon Sarah Sligh Maria Smith Kathy Tran Milissa Thibodeau Macaskill Wright Barbara Williams Amanda Wieczorek
<b>Photography</b>	Jessie Caron Rane Martin Uma Mishra Jared Talcott Rosamaria Zamarron

## Staff

<b>Editors</b>	Allie Oosta & Lynn Dimick	
<b>Fiction Editors</b>	Ashley Zirkle & Ian McCaul	
<b>Fiction Readers</b>	Lauren Allen Claire Helakoski Alexandra Koelsch Morgan Miller Kristin Oke	Kristina Pepelko Kristin Schmitt Susie Skowronek Michael Walton
<b>Poetry Editors</b>	Shaun Morton & Gavin Hollemans	
<b>Poetry Readers</b>	Nikki Fisher Kevin Joffre Kelsey Mackie	Jess Paauwe Jared Leys Seth Piccolo
<b>Nonfiction Editors</b>	Carly Crookston & Tayler Keefer	
<b>Nonfiction Readers</b>	Kiera Wilson Meghan McAfee Maya Soter Riley Trager	Garrett Dennert Kate Pillsbury Audrey Robl Emily Hengstebeck
<b>Drama Editors</b>	Kate Willis & Elizabeth Morse	
<b>Drama Readers</b>	Laura Hogg Mary Mattingly Emily Colletti	Matthew Sullivan Emma Carlton
<b>Art Editors</b>	Katie Bajema, Dale Johnson, & Elizabeth Uitvlugt	
<b>Photography Editors</b>	Dylan Graham, Erika Richardson, & Julie Sannes	
<b>Layout Designer</b>	Katie Bajema	
<b>Faculty Advisors</b>	Professors Caitlin Horrocks & Chris Haven	



## SSD Committee

**Bopi Biddanda** | Annis Water Resources Institute

**Amanda Cuevas** | Office of Fellowships

**Robert Deaner** | Psychology

**Matthew Hart** | Chemistry

**Susan Mendoza** | Undergraduate Research and Scholarship

**Christina Moord** | Research Protections Program

**Melissa Morison** | Classics

**Debbie Morrow** | Library

**Ross Reynolds** | Physics

**Megan Shannahan** | Undergraduate Research and Scholarship

**Shelley Sickrey** | Undergraduate Research and Scholarship

**Suganthi Sridhar** | Biomedical Sciences

**Patricia Videtich** | Geology

**Janet Vigna** | Biology



# Welcome To Student Scholars Day 2011

It is with great pleasure that we welcome you to celebrate the diversity and excellence of faculty-student collaboration at GVSU. In its 16th year, Student Scholars Day continues to grow in scope, including six hundred students and mentors in over four hundred presentations. We are excited to support the achievements of these students representing seventy diverse majors across the university. We encourage you to visit presentations of interest in a variety of disciplines and presentation formats, and to engage these students in meaningful discussions of their work. This event is a true celebration of creative thought and practice.

Many have contributed to make this growing event a success. We are especially grateful for the hard work and patience of Shelley Sickrey, Megan Shannahan, Kassi Bullen, and Isaac Billings who made this process manageable and enjoyable. We thank the members of the 2011 SSD committee, Bopi Biddanda, Amanda Cuevas, Robert Deaner, Christina Moord, Melissa Morison, Debbie Morrow, Ross Reynolds, Megan Shannahan, Shelley Sickrey, Suganthi Sridhar, Patricia Videtich, and Janet Vigna for their dedication and continuous flow of creative ideas. It takes an entire year to put together a program like this, and we appreciate the hours spent engaging with us in this process.

Once again our deepest gratitude goes to Dan Slaughter for his support of the web registration for SSD. We would also like to thank the Kirkhof Center staff, Fred Mooney, and Kellie Pnack-Carter for their assistance and patience. Our deepest thanks to Aimee Sitka and Catering for their assistance and support. We would also like to thank Jeff Woollet for assisting in the preparation of Henry Hall.

Thank you to Jessi Essian for her artistic contributions to this abstract book. Layered Skies was one of several pieces submitted in response to a student competition hosted by the Office of Undergraduate Research and Scholarship. Jessi's woodblock piece was selected to serve as the cover by the SSD committee.

Thanks to our student, faculty, and staff volunteers for their commitment to the university's mission and values, as evidenced by their involvement in this important activity. We value the time and effort given to this event.

A very special thank you goes to the faculty mentors who work collaboratively with undergraduate and graduate students in their scholarly and creative pursuits. We know it takes a great deal of time and dedication, but these experiences make a formidable impression on the education of GVSU students. We applaud your commitment and passion for teaching and learning.

And finally, a day like this does not happen without outstanding students like this year's SSD presenters. These students have sought ways to connect their classroom experiences with scholarly and creative practice. They have engaged in a process of discovery that is often difficult and demanding. We thank these students for taking full advantage of their liberal education at GVSU. We are proud of their achievements and excited to share their success.

Please enjoy this day of celebration. Attend the many presentations available throughout the day. We extend a special invitation to attend the presentation given by this year's Keynote Speaker, Dr. Nina Jablonski from The Pennsylvania State University. Today is sure to be a day of sharing and celebration.

## **Susan Mendoza**

Director, Undergraduate Research & Integrative Learning  
Office of Undergraduate Research & Scholarship

## **Matthew Hart**

Assistant Professor, Chemistry  
College of Liberal Arts & Sciences

# TRiO Ronald E. McNair

## *Post-Baccalaureate Achievement Program*

The McNair Scholars Program is designed to prepare highly talented undergraduates to pursue doctoral degrees and to increase the number of individuals (from target groups) on college and university faculties.

The McNair Scholars are highly talented undergraduate students whose parents have no 4-year college degree and are low-income, or groups underrepresented at the graduate level for doctoral studies. The program accepts students from all disciplines.

The McNair Scholars receive academic counseling, advising, and GRE preparation. In addition, they're matched with a Ph.D. faculty mentor to conduct research and attend a McNair research conference to present their findings. In the first semester of their senior year, the scholars receive assistance with the graduate school application process.

McNair Scholars is a TRiO program funded through the United States Department of Education and Grand Valley State University.

The 2010 McNair Scholars presenting at this year's SSD include:

Princess Braxton-Davis, Joi Dupler, Andrea Gómez Cervantes, Nathaniel Hansen, Erin Harshberger, Kraig Lischke, Anne McNeely, Kurt O'Hearn, Chelsea Sage, Aaron Schutza, Jordan Sparks, Tammy Stambaugh, Lisa Wilkinson.

*More information about the program can be found on the website at [www.gvsu.edu/mcnair](http://www.gvsu.edu/mcnair)*

## Student Summer Scholars (S3)

The Student Summer Scholars Program (S3) provides funds for a student and faculty mentor to devote twelve weeks to a research and/or creative project during the spring/summer semester. Through these grants and the mentorship of a faculty member, the S3 program offers a unique opportunity for undergraduate students to do hands-on, professional research and creative practice in their chosen field. Combining academics, field work, and a reflection component provides students with a meaningful learning experience that helps to prepare them for graduate school and future careers.

For each S3 participant, the project begins with an innovative and thoroughly researched proposal. With guidance from faculty mentors, students identify a research question or an area of creative practice and shape the structure of their project. The value of mentorship is an important part of S3. Experienced faculty mentors act as support and sounding board for their students.

By building on a foundation of academic and critical thinking skills provided by undergraduate courses, self-motivated students can use S3 to further their knowledge in a specific area while learning to incorporate academics with professional work. S3 provides students with a new lens through which to view their long-term educational, work, and life plans.

The 2010 Student Summer Scholars presenting at this year's SSD include:

Matthew Boeve, Katherine Butler, Kelsey Crowley, Joshua Davis, Trevor DeWaard, Lena Drake, Kendall Gilbert, Tamara Hillman, Susan Krizmanich, Min Lee, Andrea Lowing, Alex MacDonald, Bertil Nshime, Douglas Peterson, Jennifer Phelan, Daniel Rhode, Nichole Rydahl, M. Andrew Sanford, Shawna Tanner, Andrew Taylor, Jennifer Torreano, Julie Wesselink, Shawn Wright.

*More information about the program can be found on the website at [www.gvsu.edu/ours](http://www.gvsu.edu/ours)*

# Academic Conference Fund

The Student Senate, the Provost's Office, and the Center for Scholarly and Creative Excellence have established a fund to support student travel to academic conferences. The Academic Conference Fund (ACF) is available to all students, including non-traditional and graduate students, who may be looking for one time funding to present at an academic conference that is related to their major, minor, and/or professional goals regardless of their affiliation with student organizations.

Undergraduate and graduate students are able to apply for travel grants that range up to \$500 for conference presenters. The purpose of these grants is to encourage student presentations at academic conferences by offsetting the cost of attendance.

Since January through December of 2010, the Academic Conference Fund aided the following presentations:

**Lyndsey Adams**, "The Evolution of Morality in Non-Human Animals," Midwest Ecology and Evolution Conference (MEEC)

**Michael Agius and Colin McGee**, "Synthesis of novel cyclic heterocyclic compounds to interact with higher-order DNA," Joint SERM/SWRM Regional Meeting

**Patrick Anderson**, "A Critique of the Marxist Revolution: The Problem of Political Power," Pacific University Philosophy Department

**Toomas Arusoo**, "Towards the Synthesis of Novel Cyclic Heterocyclic Compounds to Interact with Higher-Order DNA," Joint SERM/SWRM Regional Meeting

**Sweta Basnet**, "Medical Pluralism and Health Strategies in Rural Nepal," Central States Anthropological Society 2010 Annual Meeting

**Tiffany Beaudry, Shorayi Mareya, Markus Neuhoﬀ, and Todd Workman**, "Positive Relationships overcoming violent experiences (P.R.O.V.E.): A Mentoring partnership," 21st Annual National Youth At Risk Conference

**Whitney Belprez**, "Religious Illiteracy," Society for the Scientific Study of Religion 2010 Annual Meeting

**Catherine Bersuder, Amber Klooster, and Lauren Kreha**, Quiz Bowl Participants, Great Lakes Athletic Trainers Association Winter Meeting and Symposium

**Marcella Biaz and Liberty Hightower**, "Parental Anti-Predator Responses During the Nestling Period in Tree Swallows," Michigan Academy of Science, Arts, and Letters (MASAL)

**Andrea Blanchard**, "Refugees Near and Far: What they Need vs. What they Receive," Michigan Teachers of English to Speakers of Other Languages (MITESOL): ESL at the Crossroads

**Lisa Bol**, "Factors that Affect Egg Mass in Tree Swallows," Michigan Academy of Science, Arts, and Letters (MASAL)

**Randall Breckon**, "Investigation of the Silaallyl Anion," Spring 2010/239th National Meeting of the American Chemical Society

**Kristy Butler**, "Connecting Zoo Animals to Major Evolutionary Changes and Geologic Time," Michigan Science Teachers Association Annual Conference

**James Buzzell**, "GIS Analysis of Potential Coastal Changes Resulting from Tropical and Extra Tropical Storms near Port Au Prince, Haiti," Geological Society of America Annual Meeting & Exposition 2010: Reaching New Peaks in the Geosciences

**Christopher Carlson**, "Modeling Land Use and Land Cover Change in Michigan from 1996 to 2050," Michigan Academy of Science, Arts, and Letters (MASAL)

**Allison Chandler and Shaynon Munn**, "Closing the Gap Between Writing Center Ideologies and High School Writing," East Central Writing Centers Association (ECWCA) Conference 2010: "Converging at the Vanishing Point"

**Ryan Comeau**, "A Discourse on the Phenomenology of Sensory Experience and Dogmatism," Southern Illinois University Edwardsville Undergraduate Philosophy Conference

**Megan Cookingham**, "Ecology of juvenile salmon in upland vs. lowland Alaskan streams: an assessment of food webs using stable isotope analysis," North American Benthological Society (NABS) and American Society of Limnology and Oceanography (ASLO) Summer Meeting 2010

**Linsey Cory**, "Parteras and Choice of Birth Practitioners in a Tourism Community of Yucatan, Mexico," Society for Applied Anthropology 70th Annual Meeting

**Carly Crookston and Allie Oosta**, "The Inside Track: A Deeper Look at Professor/Consultant Relationships," East Central Writing Centers Association (ECWCA) Conference 2010: "Converging at the Vanishing Point"

**Andrew Crosby**, "An Evaluation of Michigan's Fiscal Indicator Scores," Midwest Political Science Association (MPSA) Annual National Conference

**Andrew Crosby**, "First Aid for Michigan Municipalities: Band-aids or Tourniquets," Association for Budgeting & Financial Management Annual National Conference

**Erica Dalman**, "Using a Rock Tumbler in Sedimentology Courses to Simulate Weathering and Erosional Processes," Geological Society of America Annual Meeting & Exposition 2010: Reaching New Peaks in the Geosciences

**Heather Danhof**, "Nestling Oral Microbial Colonization in the Tree Swallows (*Tachycineta bicolor*)," American Society for Biochemistry and Molecular Biology (ASBMB) 2010 Annual Meeting

**Jamie DeGraaf, Sean Duffie, and Madeline Hart**, "Working with International Students: Bridging the Gap Between Student and Consultant Expectations," East Central Writing Centers Association (ECWCA) Conference 2010: "Converging at the Vanishing Point"

**Marie-Angela Della Pia**, "Socio-economic Dimension of Radon Gas in West Michigan - An Applied Medical Anthropology Study," Central States Anthropological Society 2010 Annual Meeting

**Olivia Destrades Mendoza**, "Qualification challenges in K-12 ESL teacher education and certification," TESOL International

**Olivia Destrades Mendoza**, "Where Paradigms Intersect: Toward a Unified Theory of SLA," Michigan Teachers of English to Speakers of Other Languages (MITESOL): ESL at the Crossroads

**Ann Dilworth, Kathleen Lee, Maureen O'Brien, and Darion Murchison**, "Bard to Go – Traveling Theatre as a Cultural Connector," Liverpool International Theatre Festival

**Shavon Doyle, Leah Mastee, and Jennifer Torreano**, "Everyone That Researches Must Converge: The Role Writing Consultants Can Play in Supporting Student Research," East Central Writing Centers Association (ECWCA) Conference 2010: "Converging at the Vanishing Point"

**Kaitlyn Driza**, "Forging the missing link between sustainability and green chemistry at GVSU," Spring 2010/239th National Meeting of the American Chemical Society

**Elizabeth Eastman, Amanda Herd, and Rachel VanStrien**, "The Influence of Medication Assistance Programs on Uninsured Type 2 Diabetic Patients," American Academy of Physician Assistants 38th Annual PA Conference - Impact 2010

**Mariel Eben**, "Georgie's Consignment Shop: Inventory and CRM Practices," North American Case Research Association (NACRA) 2010 Annual Meeting

**Allison Elkins**, "Reexamining the role of emergency food organizations in West Michigan in feeding the hungry," Midwest Political Science Association (MPSA) Annual National Conference



**Wendi-Jo Ervin**, "Histamine and eGFP distribution in flies bearing an Hdc promoter-eGFP gene fusion," 51st Annual Drosophila Research Conference

**Ian Fields**, "Taser Deployment: The Role of Departmental Policy and Training in Officer Discretion," Midwestern Criminal Justice Association Meeting

**Jennifer Folkerth**, "Memory's Catalyst: Nature in Sappho's Poetry," CAMWS 2010 Annual Meeting

**Lisa Genovese**, "Low Resolution, High Spatial Resolution Spectroscopy with a Digital Camera," National Conferences on Undergraduate Research (NCUR)

**Samuel Girwornauth**, "Is there a Duality of Primary Substance: as Individual and Universal Form?" Western Canadian Undergraduate Conference of Philosophy

**Jamie Gomez**, "Investigating Efficient Catalytic Systems for Coupling 2'-Deoxyguanosine Mesitylene Sulfonate with Terminal Alkynes," Spring 2010/239th National Meeting of the American Chemical Society

**Erik Greene**, "Applied Entrepreneurialism in a Communication Program: A Case Study in Green Internships," Intellectbase International Consortium Academic Conference

**Amy Grossman and Sarah Shaheen**, "Autoethnographic Reflections: Understanding the Self to Work More Effectively with the Other," The Sixth International Congress of Qualitative Inquiry

**Christina Gunning**, "Effects of Time on Antibody Identification Screening of Blood via Micro Typing System Gel Cards," Michigan Society for Clinical Laboratory Science (MSCLS) Annual Meeting

**Amanda Hanks**, "Expression, purification and characterization of the Asn152Thr mutant P99 cephalosporinase," Spring 2010/239th National Meeting of the American Chemical Society

**Nathaniel Hansen**, "The geomorphic and environmental settings of known archaeological sites in the Lower Grand River Valley, Ottawa County, Michigan," Geological Society of America Annual Meeting & Exposition 2010: Reaching New Peaks in the Geosciences

**Stacy Heggen**, "Relationship Based Care: Framework and Application," 2010 Midwest Nursing Research Society Conference

**Katie Hekstra**, "The use of United States Consortia Microbes in an Anaerobic Fuel Cell for the Productions of Energy from Municipal Waste Water," 2nd Annual Michigan Green Chemistry Conference

**Nancie Hudson**, "To Break Up or Make Up: How Expectancy Violation and Cultural Value Affect Communication and Appraisal in Adult Romantic Conflict," The University of Oklahoma Sooner Communication Conference

**Catherine Idema and Rachel Walker**, "Classification and Prediction of Interpersonal Intentions: A Cross-Cultural Investigation," Midwest Psychological Association (MPA) 2010 Conference

**Jennifer Jakubowski**, "Association of the Anillin-related Protein Mid1 with Actin," American Society for Biochemistry and Molecular Biology (ASBMB) 2010 Annual Meeting

**Dale Johnson and Kiera Wilson**, "Tutoring in Groups: Facilitating Productive Sessions and Providing Students with the Tools to Become Better Peer Reviews," East Central Writing Centers Association (ECWCA) Conference 2010: "Converging at the Vanishing Point"

**Ryan Kielbasa and Erika VanDyke**, "Need for Cognition and Religiosity Predict Students' Meanings of Education," Midwestern Psychological Association Annual Meeting

**Elizabeth Koeman**, "The Impact of Land-Use Changes on Carbon Storage in Small Streams, Ottawa County, Michigan," Geological Society of America Annual Meeting & Exposition 2010: Reaching New Peaks in the Geosciences

**Andrea Koster**, "Diet of Round Gobies in coastal areas of Lake Michigan," Midwest Fish and Wildlife Conference

**Angela Larsen**, "Effects of forest thinning on predator-prey relationship between white-footed mice and gypsy moth pupae in west central Michigan," The Wildlife Society Annual Conference

**Dana LeBar**, "Hydration strategies and change in body mass during pre-season two-a-days in female college soccer players," American College of Sports Medicine Annual Meeting (Midwest Chapter)

**Katy Leedy**, "Guests in Their Nation: Identity by Exclusion in the Contemporary Irish Short Story," 11th International Conference on the Short Story in English-"The Border as Fiction"

**Kevin Maupin**, "The Synthesis of Novel Indane Derivatives as Regulators of TAAR Activity: An Updated Approach," Spring 2010/239th National Meeting of the American Chemical Society

**Shane McGrath**, "Conversion of Cellulose to Value-Added Chemicals," American Chemical Society (ACS) 14th Annual Green Chemistry and Engineering Conference: Innovation and Application

**Michael Medonis**, "Deep Impact: Integrative Approaches to Sustainability," American Association of Colleges and Universities Annual Conference

**Mehreteab Mengsteab and James Ruble**, "Effects of Asn152 mutation on substrate selectivity of P99 cephalosporinase," Spring 2010/239th National Meeting of the American Chemical Society

**Elliot Michel**, "Effectiveness of Structured Learning Assistance Instruction in Rotational Kinematics," National Conferences on Undergraduate Research (NCUR)

**Diane Miller**, "Impact of Size of Place on Sense of Community," Michigan Academy of Science, Arts, and Letters (MASAL)

**Diane Miller**, "Using Spatial Technologies to Build Sustainable Garden Networks in Muskegon MI: a University and Community Collaboration," International Conference on Civic Education

**Ashley Mitchell**, "An Approach to Medication Errors Using Reason's Swiss Cheese Model of Defenses," Midwest Nursing Research 2010 Annual Research Conference

**Negin Nadvar**, "A Novel Technique for Frequency Domain Analysis of Heart Rate Variability," Biomedical Engineering Society (BMES) Annual Meeting 2010

**Ramez Nassri**, "Clinical Antecedents to In-Hospital Cardiopulmonary Arrest After Institution of a Rapid Response Team," American Academy of Physician Assistants 38th Annual PA Conference - Impact 2010

**Whitney Nelson**, "Composition and Toxic Sensitivity of Benthic Macroinvertebrate Assemblages in Muskegon Lake, a Great Lakes Area of Concern," North American Benthological Society (NABS) and American Society of Limnology and Oceanography (ASLO) Summer Meeting 2010

**Rebecca Norris**, "Predicting habitat quality for Bobcats in Michigan's Southern Lower Peninsula using non invasive detection methods," The Wildlife Society Annual Conference

**Kali Penfold**, "The Importance of Play in Hospitalized Children," 2010 Midwest Nursing Research Society Conference

**Alvina Qureshi**, "Investigations into the Preparation and Molecular Recognition Properties of Calix[4]furans," Spring 2010/239th National Meeting of the American Chemical Society

**Robert Roos**, "A Michigan Sand Prairie Restoration Experiment: Design and Pre-restoration Conditions," Society for Ecological Restoration International, Midwest-Great Lakes Chapter

**Michael Sanford**, "Ethics and Aesthetics - Ancient Philosophy – Classics," Ohio State University Undergraduate Philosophy Conference

**Stacia Schipper**, "Using Ongoing Eruptions to Study the Basic Characteristics of Volcanoes," National Science Teachers Association National Conference

**Samantha Schenk**, "Activist Identity Development Through the Lens of The Vagina Monologues (Individual Paper)"; "From the Stage to the Streets: Feminist Performance and the Call to Activism (Panel)," National Women's Studies Association (NWSA) Annual Conference

**Thomas Schmidt**, "An Evaluation of Four Plant Species for Use in Sand Mine Revegetation," Michigan Academy of Science, Arts, and Letters (MASAL)

**Jessica Sears**, "The Fractal Beauty of Byzantine Music," Joint Mathematics Meeting 2010

**Kyle Siemer**, "Clogging of a Landfill Drainage System in Southern Kent County, Michigan," Geological Society of America Annual Meeting & Exposition 2010: Reaching New Peaks in the Geosciences

**Tammy Stambaugh**, "Dispersal of the Karner Blue Butterfly in a Heterogeneous Landscape," The Sixth International Conference on the Biology of Butterflies

**Tracy Steinbach**, "Positronium Annihilation Lifetime Spectroscopy Study of SBA-15," National Conferences on Undergraduate Research (NCUR)

**Hannah Tavalire**, "Genetic Impacts on Invasive Potential: A Pilot Study in *Myriophyllum* Species," Society for the Study of Evolution (SSE), the Society of Systematic Biologists (SSB), and the American Society of Naturalists (ASN) Joint Annual Meeting: Evolution 2010

**Andrew Taylor**, "Balanced evidence processing: Evidence based and affect-based subjects process scientific texts differently," Conference of the Society for Text and Discourse

**Andrew Taylor**, "Reevaluating the Contact Hypothesis: An Alternative Theory for the Development of Face Prototypes in Older Children," Stanford Undergraduate Psychology Conference (SUPC)

**Jonathon Verwys**, "The Geometry of Compact Sets," Mathematical Association of America

**Kent Walters**, "Amounts of Organic Carbon Stored in First and Second Order Streams in Ottawa County, Michigan," Geological Society of America Annual Meeting & Exposition 2010: Reaching New Peaks in the Geosciences

**Matt Weaver**, "I Can Use Science Where?" National Science Teachers Association National Conference

**Jonathan Whitmer**, "William Blake in 20th Century Popular Music," Midwest Popular Culture Association Annual Conference

**Amanda Willis**, "The Role of Anxiety on Perfectionist Individuals Predisposed to Disordered Eating," 19th Annual UCLA Psychology Undergraduate Research Conference

**Michael Wilson**, "Construction and use of viral Nato3 overexpression vector in the developing neural tube of Gallus gallus," The American Society for Cell Biology 50th Annual Meeting

**Taylor Wondergem**, "Gender and Ethnic Differences in Smiling: A Yearbook Photographs Analysis," Midwestern Psychological Association Annual Meeting

**Kirk Wyatt**, "Evaluation of Non-Radioactive Luminescence Assays for Protein Kinase Activity," Spring 2010/239th National Meeting of the American Chemical Society

**Jenny Yonkman**, "Advocating for Engagement: Teachers and Students Living Literate Lives Online," National Council of Teachers of English: Teachers and Students Together: Living Literate Lives

**Anna Young**, "2010 Nebraska Tern and Plover Meeting," 2010 Nebraska Tern and Plover Meeting

**Sara Zecman**, Fourth International Congress on Islamic Feminism

**Matthew Zuellig**, "A Genetic Survey of *Myriophyllum spicatum* in North America," Society for the Study of Evolution (SSE), the Society of Systematic Biologists (SSB), and the American Society of Naturalists (ASN) Joint Annual Meeting: Evolution 2010

**Matthew Zuellig**, "Identifying Unique Biotypes of Eurasian Watermilfoil Using A Genetic Fingerprinting Method," Aquatic Plant Management Society (APMS) National Meeting

*More information can be found on the website at [www.gvsu.edu/ours](http://www.gvsu.edu/ours)*



# History of Student Scholars Day

BY NEAL ROGNESS AND SHELLEY SICKREY

In the summer of 1995, a small group of faculty members in the Science and Mathematics Division met to explore the feasibility of creating an event where students could present their findings from faculty-mentored research to a university-wide audience. P. Douglas Kindschi, Dean of Science and Mathematics, was enthusiastically supportive, thus Student Research Day (SRD) was born.

It was decided to hold the event on April 12, 1996, in conjunction with the dedication and celebration of the new Seymour and Esther Padnos Hall of Science. The first-time event was expected to draw about thirty student participants. All expectations were exceeded when the registration period ended with over 150 presenters committed to present almost 100 presentations. The first event was a tremendous success; however, it was unknown whether SRD could be a successful “stand alone” event. These fears were quickly allayed when the second annual Student Research Day was held in April of 1997 and proved to be a great success with a similar level of participation.

The event became popular enough to get requests from students outside of science and mathematics majors who wanted to present their work. An effort began to make the event truly university-wide, which then Provost Glenn Niemeyer whole-heartedly supported. Students from all majors were encouraged to present and/or exhibit their faculty-mentored scholarly work at the event. To help make the event more inclusive, its name was changed from Student Research Day to Student Scholarship Day. The first university-wide event doubled in size with nearly 300 students giving almost 200 presentations in 1998. The first SSD keynote speaker was Dr. Robert Powell, Professor of Biology at Avila College, who talked about “Student/Faculty Collaboration: Teaching and Scholarship.” Another name change occurred in the Fall of 2009, this time to Student Scholars Day. The name change was instituted to combat occasional confusion over the nature of the event. “It’s still very focused on student work, but the new name takes away any ambiguity about what the purpose of the day is,” said Susan Mendoza, Director of Undergraduate Research and Scholarship.

What began as an event primarily composed of science and mathematics majors has grown to include student presentations representing majors from across the university. The GVSU community has truly embraced this annual event as a day in which to take pause and proudly celebrate the scholarly achievements of students from the past year. Student Scholars Day continues to grow, both in size and scope. The event continues to encompass interdisciplinary relationships among the presentations. Individually, the presentation is clear and focused. Taken as a whole, a larger, more inclusive picture of collaboration and learning emerges.







## Keynote Lecture

2204 Kirkhof Center at 6:00 P.M.

### Why Skin Color Matters:

A Look at the Evolution and Meaning of our Most Visible Trait

#### ABSTRACT

Skin color is one of the most obvious ways in which people vary, and has been used in the past as a basis for classifying people into races. Our research has demonstrated that skin pigmentation is a biological adaptation that regulates the penetration of ultraviolet radiation (UVR) into the skin. Skin pigmentation is an evolutionary compromise between the conflicting demands of protection of the skin against UVR and of production of vitamin D by UVR. This compromise represents one of the best examples of evolution by natural selection acting on the human body. In the history of the genus *Homo* and of our species, *Homo sapiens*, skin pigmentation has been a highly labile trait. Similar skin tones have evolved independently numerous times in response to similar environmental conditions and, because of this, skin color is an entirely inappropriate trait for grouping people according to shared ancestry. This lecture will discuss the evolution of the human rainbow, and how our skin color influences our health and social well-being.

### Nina Jablonski

Professor, Department of Anthropology, The Pennsylvania State University



Nina G. Jablonski is a biological anthropologist and paleobiologist who conducts research on the evolution of adaptations to the environment in humans and our close primate relatives. She is currently Head and Professor of Anthropology at The Pennsylvania State University. Jablonski's research combines field paleontology with detailed study of fossils in the laboratory, and theoretical work aimed at understanding why some animals survive under changing environmental conditions and others don't. She is fascinated by problems of evolution that do not have immediate answers in the fossil record. Pursuing studies of the "unseen" aspects of human evolution, most notably, the evolution of human skin and skin color, and the evolution of human communication have absorbed increasing amounts of her time in the last 15 years. Her fieldwork and laboratory studies in paleontology have involved long-term collaborations with scientists in east and south Asia, and in eastern

Africa. She conducts at least one season of fieldwork every year, most regularly in southwestern China. Jablonski is a Joint Editor of the Cambridge Series in Biological and Evolutionary Anthropology and an Associate Editor of *Folia Primatologica*. She is a Fellow of the American Association for the Advancement of Science and the California Academy of Sciences, an elected member of the American Philosophical Society, and a member of the Advisory Council for the Social, Behavioral, and Economic Sciences of the National Science Foundation. In April 2005, she was awarded one of first twelve Alphonse Fletcher, Sr. Fellowships ("Guggenheims for race") for her research on the evolution of human skin color. She was awarded the W.W. Howells Book Award of the American Anthropological Association for 2007 for her book, *Skin: A Natural History* (University of California Press, 2006). In 2009 she was elected to membership of the American Philosophical Society.





## Schedule of Events

### Poster Presentations

Henry Hall Atrium, Kirkhof Center  
9:00 a.m. – 5:00 p.m.  
See page 19 for detailed schedule.

### Panel Presentations

Kirkhof Center, Room 2204, Area 51  
1:00 p.m. – 5:00 p.m.  
See page 51 for detailed schedule.

### Oral Presentations

Kirkhof Center  
9:00 a.m. – 5:30 p.m.  
See page 38 for detailed schedule.

### Keynote Lecture

Kirkhof Center, Room 2204  
6:00 p.m.

## Statement from the Cover Artist

Jessi Essian

Grand Valley students are a diverse and colorful community of people. Each student plays a part in shaping the university into the environment that students, faculty members, and employees experience. Every year, these experiences blanket each other, creating a rich and meaningful history.

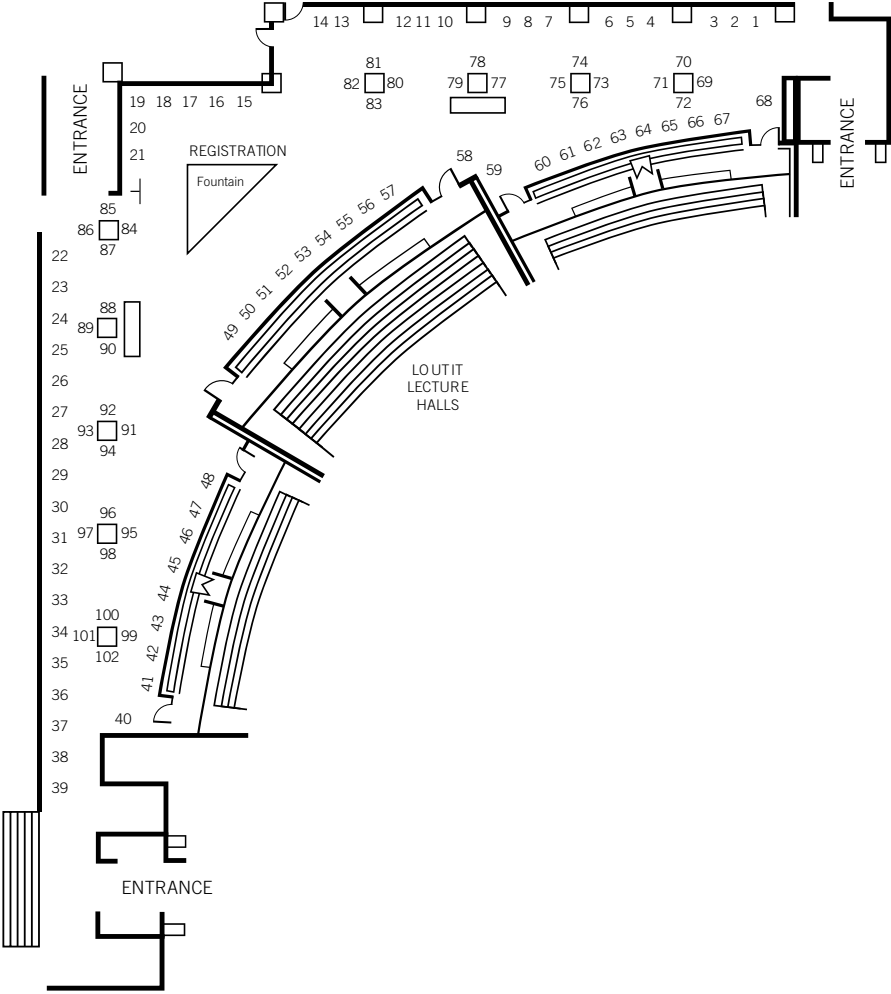
Layered Skies is a four piece woodblock. Each woodblock is linked with several different colors to create a vivid experience of an emerging sun. Like Grand Valley's students, there are many differences in the woodblocks. The images and color choices are reminiscent of the people and places that the GVSU community introduces to present students.



**MAP LEGEND**

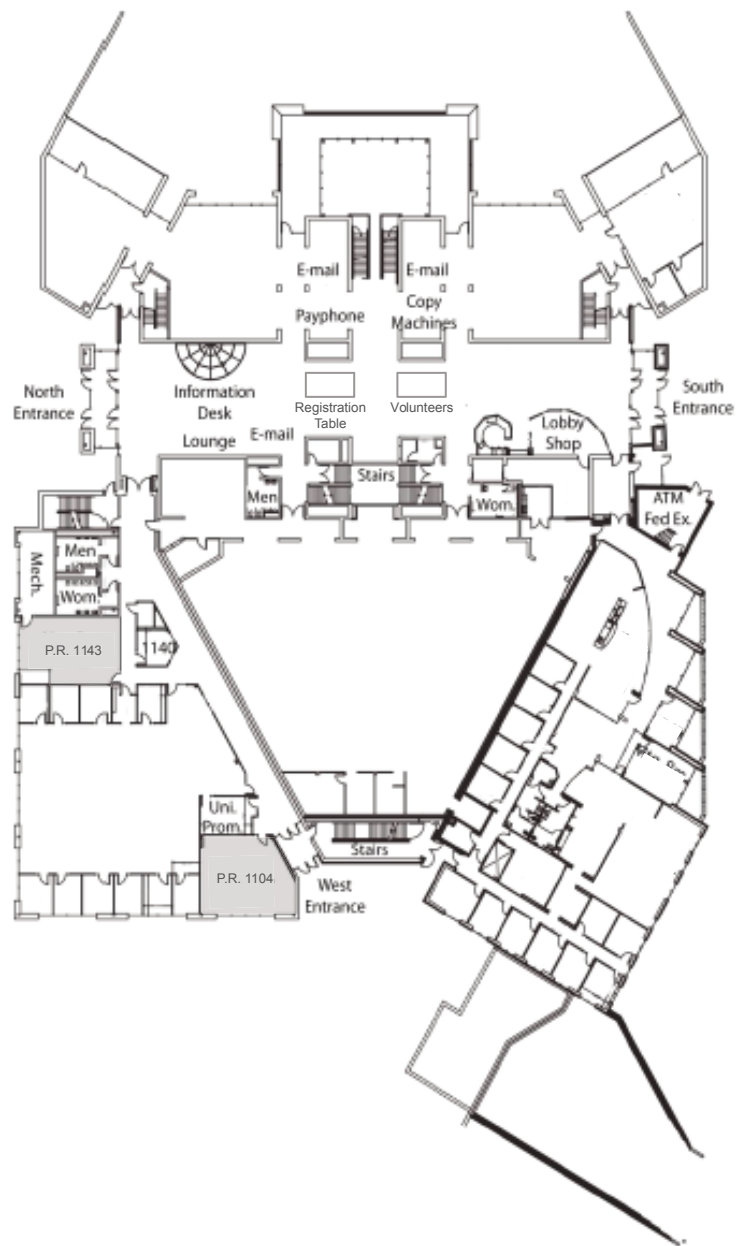
- PAD** Padnos Hall
- HRY** Henry Hall
- LOH** Lake Ontario Hall
- KC** Kirkhof Center

# Henry and Padnos Hall Poster Location Map



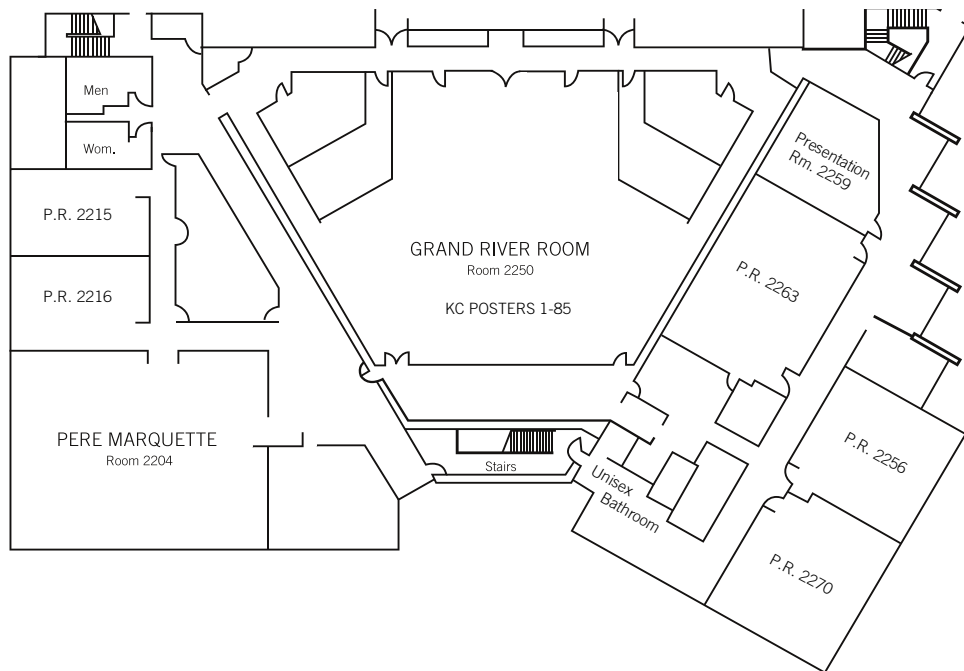


# Kirkhof Center First Floor Map



\* P.R. = Presentation Room

# Kirkhof Center Second Floor Map



\* P.R. = Presentation Room

# Poster Presentations

9:00 A.M. — 5:00 P.M.

## Henry Hall Atrium 1

### **Filling Up at the Biological Pump: The Future of Biofuels**

THOMAS ROGERS, LAURA KIRBY, AARON BEEBE, SUSAN LAWLESS

Participants attending from 11:00 a.m. until 12:00 p.m.

## Henry Hall Atrium 2

### **Phosphoregulation of Mid1 Association with Medial Cortex**

BRANDON NADER

Participants attending from 9:00 a.m. until 10:00 a.m.

## Henry Hall Atrium 4

### **Back to Basics: The Natural Impact of Barefoot Running**

ERIC PETERSEN, JACOB BLOSSFELD

Participants attending from 9:00 a.m. until 10:00 a.m.

## Henry Hall Atrium 5

### **Low-Head Dam Removal Positive Affects on Macroinvertebrate Community Structure**

LAUREN VILLALOBOS

Participants attending from 11:00 a.m. until 12:00 p.m.

## Henry Hall Atrium 6

### **Wheel Chair Trainer**

SHAWN WRIGHT

Participants attending from 9:00 a.m. until 10:00 a.m.

## Henry Hall Atrium 7

### **Synthesis and Fluorescence Analysis of C-6 Modified 2'-Deoxynucleosides**

ALEXANDRA GABRIELLI, MATT MCRAE, GODWILL NWOKOCHA,

MAXWELL WINGELAAR

Participants attending from 11:00 a.m. until 12:00 p.m.

## Henry Hall Atrium 8

### **Distraction Reaction**

TREVOR SPOELMA, ERIC EISWERTH, BRIAN NAWROCKI

Participants attending from 9:00 a.m. until 10:00 a.m.

## Henry Hall Atrium 10

### **Periodization of a Boxer**

NICHOLAS SMITH

Participants attending from 9:00 a.m. until 10:00 a.m.

## Henry Hall Atrium 11

### **Characterization of the Phytoene Desaturase Gene in Invasive Watermilfoil Populations That Exhibit Different Sensitivities to the Herbicide Fluridone**

PATRICIA PHILLIPS

Participants attending from 1:00 p.m. until 2:00 p.m.

## Henry Hall Atrium 12

### **Just World Belief, Religiosity, and Attribution of Responsibility for Misfortune**

LISA ELLIS, AMY VER WEY, LONG NGUYEN, BRITTANI ANDERSON

Participants attending from 1:00 p.m. until 2:00 p.m.

# Poster Presentations

9:00 A.M. — 5:00 P.M.

## Henry Hall Atrium 13

### **A Statistical Consulting Experience: Evaluating the Factors Influencing Physical Education Teachers to Attend Graduate School**

ANDREA BARGER, TREVOR PARISH

Participants attending from 1:00 p.m. until 2:00 p.m.

## Henry Hall Atrium 14

### **Classical and Quantum Mechanics of Magnetic Monopoles**

AARON SCHUTZA

Participants attending from 1:00 p.m. until 2:00 p.m.

## Henry Hall Atrium 15

### **GPU - Accelerated Physically - Based Animation**

CHRISTOPHER BINKS

Participants attending from 9:00 a.m. until 10:00 a.m.

## Henry Hall Atrium 16

### **Long-Term Response of *Luzula arctica* and *Luzula confusa* to Warming in the Alaskan Tundra**

KELSEYANN KREMERS

Participants attending from 2:00 p.m. until 3:00 p.m.

## Henry Hall Atrium 17

### **Piloting an Electromagnetic Sensor System for Hip Range of Motion**

KODY SMITH, JOE JABLONSKI

Participants attending from 12:00 p.m. until 1:00 p.m.

## Henry Hall Atrium 18

### **Snack and Beverage Vending on a College Campus: An Environmental Audit of the Vending Machines and an Assessment of Student Snacking and Physical Activity Habits**

HANNAH CAVICCHIO

Participants attending from 2:00 p.m. until 3:00 p.m.

## Henry Hall Atrium 19

### **Hyperbaric Oxygen Therapy and Coronary Vascular Reactivity**

KATHERINE WEIR, ADAM SNOAP, CHRISTOPHER MACLEAN,

ELIZABETH ZAVALA-ARELLANO, ANN KENDZICKY

Participants attending from 1:00 p.m. until 2:00 p.m.

## Henry Hall Atrium 20

### **Investigating the Role of Textbooks in Student Learning of Chemistry**

KRISTEN SIMON

Participants attending from 12:00 p.m. until 1:00 p.m.

## Henry Hall Atrium 21

### **Preventive Dentistry for the Elderly of West Michigan**

TYLER OATMEN

Participants attending from 12:00 p.m. until 1:00 p.m.



# Poster Presentations

9:00 A.M. — 5:00 P.M.

Henry Hall Atrium 22

**Extrinsic Contingency Focus and Helping Behavior:  
An Exercise on the Influence of Attractiveness Priming**

SARA PUGH, ALLISON PENTECOST

Participants attending from 12:00 p.m. until 1:00 p.m.

Henry Hall Atrium 23

**Gene Expression in the Developing Patagium of  
Embryonic *Glaucomys volans***

TIMOTHY BEENEN

Participants attending from 1:00 p.m. until 2:00 p.m.

Henry Hall Atrium 24

**Special Forces Tactical Training**

SAMIR GHRIRI

Participants attending from 12:00 p.m. until 1:00 p.m.

Henry Hall Atrium 25

**Transmission of Quantum Information via Laguerre  
Gaussian Modes**

AARON SCHUTZA

Participants attending from 12:00 p.m. until 1:00 p.m.

Henry Hall Atrium 26

**Comparing the Spatial Distribution of Two Diseases  
using Geospatial Technology**

RYAN HINKLEY

Participants attending from 2:00 p.m. until 3:00 p.m.

Henry Hall Atrium 27

**Phospho-regulation of the Scaffolding Protein Mid1**

JENNIFER PHELAN

Participants attending from 4:00 p.m. until 5:00 p.m.

Henry Hall Atrium 28

**Phylogenetic Relationships within the Neotropical  
Plant Genus *Lymania* (Family *Bromeliaceae*) based  
on Several DNA Regions**

CALEB JAMES

Participants attending from 4:00 p.m. until 5:00 p.m.

Henry Hall Atrium 29

**Extraction of Pesticides from Contaminated Soil  
via Cyclodextrin Complexation**

BERTIL NSHIME

Participants attending from 9:00 a.m. until 10:00 a.m.

Henry Hall Atrium 30

**Life as an Animal Care Intern at John Ball Zoo**

JENNIFER TAGETT

Participants attending from 9:00 a.m. until 10:00 a.m.

# Poster Presentations

9:00 A.M. — 5:00 P.M.

Henry Hall Atrium 31

## Connecting Differences in Phenology to Changes in Arctic Plant Communities

JENNIFER LIEBIG

Participants attending from 10:00 a.m. until 11:00 a.m.

Henry Hall Atrium 32

## Hawthorn Extract: Viable Treatment for Cardiovascular Disease or Unscrupulous Herbal Supplement?

ANDREA LOWING

Participants attending from 10:00 a.m. until 11:00 a.m.

Henry Hall Atrium 33

## Literature Review of High School Football Periodization Training Programs

MICHAEL CARBOTT, CHRIS BURDIS

Participants attending from 4:00 p.m. until 5:00 p.m.

Henry Hall Atrium 34

## Investigation of Phosphorus (III) Nitrogen Compounds

ANTHONY MONTOKA, BEN THOME

Participants attending from 10:00 a.m. until 11:00 a.m.

Henry Hall Atrium 35

## Construction and Use of Viral Noto3 Overexpression Vector in the Developing Neural Tube of *Gallus gallus*

MICHAEL WILSON

Participants attending from 12:00 p.m. until 1:00 p.m.

Henry Hall Atrium 36

## Determining Influences on a Hurbemerdon Tepe Bronze Age Axe-head Mold

KYLE LEGANT

Participants attending from 9:00 a.m. until 10:00 a.m.

Henry Hall Atrium 37

## Creating an Almost Perfect Connect 4 Player

ERIC BOUWHUIS, LOGAN WESTRICK, KYLE STANFORD

Participants attending from 9:00 a.m. until 10:00 a.m.

Henry Hall Atrium 38

## The Lethality of the k11209 Line of *Drosophila melanogaster*

AMANDA MERCER

Participants attending from 2:00 p.m. until 3:00 p.m.

Henry Hall Atrium 39

## Designing Spaces, Mapping Disciplines: Toward Better Collaboration Between Writing Centers and Libraries

JENNIFER TORREANO

Participants attending from 11:00 a.m. until 12:00 p.m.

Henry Hall Atrium 40

## Unusual Variation in the Branching Pattern of the Unpaired Arteries of the Abdominal Aorta

BRYAN CURNUTTE

Participants attending from 11:00 a.m. until 12:00 p.m.

# Poster Presentations

9:00 A.M. — 5:00 P.M.

## Henry Hall Atrium 41

### ***Drosophila* Genomics: Sequencing and Annotating a Genome in the Classroom**

JORDAN EVANS, MARY WHITWORTH, RYAN SAWYER, KRISTINE OSTBY,  
CARTER BROWN, MATTHEW SIMON, ALYSON GREENWELL,  
ELIZABETH ZAVALA-ARELLANO, TRISHA TOMKINS  
Participants attending from 9:00 a.m. until 10:00 a.m.

## Henry Hall Atrium 42

### **The Development of a Novel Gadolinium Chelating Agent, for MRI contrast agents, Employing Carbomoylmethyl-Phosphine Oxides (CMPOs)**

KIRSTEN TISSUE, FELIX BOUCHER, CHARLES DELISLE  
Participants attending from 2:00 p.m. until 3:00 p.m.

## Henry Hall Atrium 43

### **Take 10 for Chem: Problem-Solving Videos by Students, for Students**

KAITLIN DOWNEY, ELISCIA FOUGHT, ANDY STARR  
Participants attending from 4:00 p.m. until 5:00 p.m.

## Henry Hall Atrium 44

### **A Statistical Consulting Experience: Studying the Relationship between Business Environment and the Perception of Women as Managers**

STACEY KOWALCZYK, RYAN CORGAN  
Participants attending from 11:00 a.m. until 12:00 p.m.

## Henry Hall Atrium 45

### **The Role of Visual Art in the Development of a Special Need Student**

CARLY SEYFERTH, CHELSEA TURNER, ELIZABETH WOOD,  
JACOB STILLSON  
Participants attending from 11:00 a.m. until 12:00 p.m.

## Henry Hall Atrium 46

### **A Statistical Consulting Experience: Evaluating Golf Swings**

SAMUEL REED, PATRICK NOTHAFT  
Participants attending from 2:00 p.m. until 3:00 p.m.

## Henry Hall Atrium 47

### **The Effect of *Nato3* Misexpression on Neural Progenitor Cell Differentiation in the Rostral Neural Tube**

DOUGLAS PETERSON  
Participants attending from 9:00 a.m. until 10:00 a.m.

## Henry Hall Atrium 48

### **A Statistical Consulting Experience: Evaluating the Effectiveness of the SLA Program**

LAUREN LAMAN, JARED KABARA  
Participants attending from 2:00 p.m. until 3:00 p.m.

# Poster Presentations

9:00 A.M. — 5:00 P.M.

**Henry Hall Atrium 49**

**Complementary and Alternative Medicine: The Power of Prayer**

ALYCE HEINLEIN

Participants attending from 11:00 a.m. until 12:00 p.m.

**Henry Hall Atrium 50**

**The Influence of Microhabitat on Nest Tree Selection of Southern Flying Squirrels**

KATHERINE BELKNAP

Participants attending from 9:00 a.m. until 10:00 a.m.

**Henry Hall Atrium 51**

**Formation of Dolomite in the Silurian Bisher Formation in Northeastern Kentucky**

STEPHEN SHIELDS, KYLE ENO, MICHAEL STOCKOSKI

Participants attending from 1:00 p.m. until 2:00 p.m.

**Henry Hall Atrium 52**

**Thermoelectric Impedance Spectroscopy of P-N Type Materials**

JOE KEDROWSKI

Participants attending from 1:00 p.m. until 2:00 p.m.

**Henry Hall Atrium 53**

**Probing the Role of Phosphorylation in the Mechanism of Formin mDia2**

ZACHARY GARLETS

Participants attending from 10:00 a.m. until 11:00 a.m.

**Henry Hall Atrium 54**

**GV-1 Chemical Derivatives as Potential New Antibiotics**

JULIE WESSELINK

Participants attending from 9:00 a.m. until 10:00 a.m.

**Henry Hall Atrium 55**

**A Narrative Life Story of Activist Phyllis Lyon and Her Reflections on a Life with Del Martin**

DIANNA JOHNSON

Participants attending from 12:00 p.m. until 1:00 p.m.

**Henry Hall Atrium 56**

**The Combined Effects of Niacin and Caffeine in Doses Common in Energy Drinks on the Vasoactivity of Porcine Coronary Arteries**

PATRICK ROACH

Participants attending from 12:00 p.m. until 1:00 p.m.

**Henry Hall Atrium 57**

**Assessment of Cranial Suture Density in Living Individuals**

MEGAN GLAZIER

Participants attending from 10:00 a.m. until 11:00 a.m.



# Poster Presentations

9:00 A.M. — 5:00 P.M.

**Henry Hall Atrium 58**

## **Distance Embodied: Connections between Psychological and Physical Distance**

KRISTIE MIELKE

Participants attending from 11:00 a.m. until 12:00 p.m.

**Henry Hall Atrium 59**

## **Periodization Program for Collegiate Women's Rugby**

JORI TESHIMA

Participants attending from 1:00 p.m. until 2:00 p.m.

**Henry Hall Atrium 60**

## **Toward the Synthesis of Cyclic Heterocyclic Polyamides as Tetraplex DNA Interactive Ligands Using Solid Phase Synthesis**

MICHAEL AGIUS

Participants attending from 1:00 p.m. until 2:00 p.m.

**Henry Hall Atrium 61**

## **The Terror Famine in the Ukraine 1932-1933**

KATELYN WOOD

Participants attending from 12:00 p.m. until 1:00 p.m.

**Henry Hall Atrium 62**

## **A Proposed PLA Recycling Project Designed to Produce a Cleaner for the University Community**

RYAN FLAHERTY

Participants attending from 2:00 p.m. until 3:00 p.m.

**Henry Hall Atrium 63**

## **Refrigerated Stability Study of CBC and WBC Parameters**

ERIKA NARUTSCH, SHELBY WOOD, AMANDA FABER

Participants attending from 9:00 a.m. until 10:00 a.m.

**Henry Hall Atrium 64**

## **Target Ball: Determining the Relationship between Bilateral Transfer and Repetition**

DAN GREER, TROY ZEIGLER, GREG KING

Participants attending from 2:00 p.m. until 3:00 p.m.

**Henry Hall Atrium 65**

## **Is What You See What You Get? An Exploration of Body Composition and Body Perception in College Students**

BRIDGETTE MCGUIRE, JESSIE MILLER, STEFAN HITCHCOCK

Participants attending from 12:00 p.m. until 1:00 p.m.

**Henry Hall Atrium 66**

## **Sex Differences in Parental Anti-Predator Responses During the Nestling Period in Tree Swallows**

RACHELLE MCLAUGHLIN, MARCI BAIZ, LISA BOL, LIBERTY HIGHTOWER, KYLE BIBBY, LENA SPADACENE

Participants attending from 10:00 a.m. until 11:00 a.m.

# Poster Presentations

9:00 A.M. — 5:00 P.M.

## Henry Hall Atrium 67

### Testing of Novel Antimicrobials to Fight Antibiotic Resistance

BRITTANY WILDGEN

Participants attending from 10:00 a.m. until 11:00 a.m.

## Henry Hall Atrium 68

### The Effects of Auditory Distraction on Reaction Time

JOSEPH PRESUTTI, MICHAEL PHILLIPS

Participants attending from 9:00 a.m. until 10:00 a.m.

## Henry Hall Atrium 69

### Periodization Program for Men's Collegiate Tennis

DEBORAH DOPP, DUSTIN MIER

Participants attending from 10:00 a.m. until 11:00 a.m.

## Henry Hall Atrium 70

### Hole-in-One or Bust: The Effect of the Performance Environment on a Golf Putting Task

KATELYN BUCHHOLZ, SALTANA ALSOOFY, CHELSEA KOBUS

Participants attending from 1:00 p.m. until 2:00 p.m.

## Henry Hall Atrium 71

### Vasodilation and Mega Man Vitapack

WADE WEAVER, CHRISTOPHER HOWARD, WILLAIM VANDECAR, MATTHEW FIGLEWICZ, CHAD KUNTZ, TEODORA FATCHIKOVA

Participants attending from 10:00 a.m. until 11:00 a.m.

## Henry Hall Atrium 72

### The Bard in the Classroom: A Research and Interview-based Review of Teaching Methodologies

KATELYN WOOD

Participants attending from 2:00 p.m. until 3:00 p.m.

## Henry Hall Atrium 73

### Uncovering Cryptic Diversity in the Invasive Aquatic Plant Species, Eurasian Watermilfoil, using DNA Fingerprinting

HEATHER HAYWARD

Participants attending from 1:00 p.m. until 2:00 p.m.

## Henry Hall Atrium 74

### A Survey of the Economics of the Wars in Iraq and Afghanistan

KELLY HOWELL

Participants attending from 2:00 p.m. until 3:00 p.m.

## Henry Hall Atrium 75

### Identifying an Atypical Actin Binding Domain in the Fission Yeast Mid1 Scaffold

CODY HAGER

Participants attending from 1:00 p.m. until 2:00 p.m.

## Henry Hall Atrium 76

### The Coastal Norwegian Floods: The Effects of Global Warming

MATTHEW DONDANVILLE

Participants attending from 9:00 a.m. until 10:00 a.m.

# Poster Presentations

9:00 A.M. — 5:00 P.M.

**Henry Hall Atrium 77**

## **Chiral Silanes by Asymmetric Substitution at Silicon**

NICOLE GIBBONS

Participants attending from 2:00 p.m. until 3:00 p.m.

**Henry Hall Atrium 78**

## **Towards the Synthesis of Novel Cyclic Heterocyclic Compounds to Interact with Higher-Order DNA**

TOM ARUSOO

Participants attending from 10:00 a.m. until 11:00 a.m.

**Henry Hall Atrium 79**

## **Sink to Source? Effect of Climate Warming on Carbon Balance in Muskegon Lake**

KATE COVENEY

Participants attending from 9:00 a.m. until 10:00 a.m.

**Henry Hall Atrium 80**

## **The Occurrence of Girls and Womens Sports Across Cultures: Testing Evolutionary Hypotheses**

BRANDT SMITH, JUSTIN ANDREWS

Participants attending from 2:00 p.m. until 3:00 p.m.

**Henry Hall Atrium 81**

## **Physical Educators Playing with Technology: Creating and Evaluating Motor Development Screencasts**

SUSAN KRIZMANICH

Participants attending from 11:00 a.m. until 12:00 p.m.

**Henry Hall Atrium 82**

## **Periodization of the Male Collegiate Hockey Player**

STACY WILLIAMSON, SCOTT ROOD

Participants attending from 10:00 a.m. until 11:00 a.m.

**Henry Hall Atrium 83**

## **The Impact of School-based Intervention on Healthy Behaviors for 6th Grade Students**

CASEY FOLKERTSMA, JONATHAN HOWARD, FARAH ITANI, NATALIE MCQUILLAN, AMBER CALKINS, NICOLAS FERNANDEZ, CARSON MAHONEY, KRISTA RAPISARDA, MEGAN HURLEY, MELISSA DUGAN

Participants attending from 3:00 p.m. until 4:00 p.m.

**Henry Hall Atrium 84**

## **A Comparison of Selected Effects of RBC Implementation of Two Units**

STACY HEGGEN

Participants attending from 9:00 a.m. until 10:00 a.m.

**Henry Hall Atrium 85**

## **An Adaptive Management Plan to Increase Nature Oriented Recreation and Education in a Public Park in West Michigan**

JORDAN MOEGGENBERG

Participants attending from 9:00 a.m. until 10:00 a.m.

# Poster Presentations

9:00 A.M. — 5:00 P.M.

## Henry Hall Atrium 87

### **A Comparative Analysis of Indian Landing (20BA02), a Log Cabin Site (20MU93), and Blendon Landing (20OT73) Archaeological Sites**

MATTHEW SCHROEDER

Participants attending from 12:00 p.m. until 1:00 p.m.

## Henry Hall Atrium 88

### **Potential Energy Surfaces of Oxygen Herzberg States During Collisions With Nitrogen**

SCOTT SARVER

Participants attending from 2:00 p.m. until 3:00 p.m.

## Henry Hall Atrium 89

### **Co-suppression of endogenous Hdc expression by the heterologous transgene, pHdc-eGFP, in *Drosophila melanogaster***

CHAD GIER, KELSEY CROWLEY, RYAN SAWYER

Participants attending from 10:00 a.m. until 11:00 a.m.

## Henry Hall Atrium 90

### **A Study of the Use of Preservative Tubes on the Accuracy of Routine Urinalysis Results**

SARAH AXDORFF, BRIDGETTE FLYNN

Participants attending from 4:00 p.m. until 5:00 p.m.

## Henry Hall Atrium 91

### **Periodization Training Program for Olympic Male Swimmers for the 200 Individual Medley**

BRITTANY POWELL, KATIE BUNNELL

Participants attending from 10:00 a.m. until 11:00 a.m.

## Henry Hall Atrium 93

### **Analysis of a Cyclic Peptide Library to Identify Proteins That Effect *hilA* and *fimZ* Expression in Salmonella Invasion**

PHILIP KASESKA, ANDREW LUX, BRAD GEAL

Participants attending from 1:00 p.m. until 2:00 p.m.

## Henry Hall Atrium 95

### **Winter Home Range of the Southern Flying Squirrel**

MELISSA CANNAN

Participants attending from 12:00 p.m. until 1:00 p.m.

## Henry Hall Atrium 96

### **A Phylogenetic Analysis of the African Plant Genus *Palisota* (family *Commelinaceae*) Based on Chloroplast DNA Sequences**

GRADY ZUIDERVEEN

Participants attending from 2:00 p.m. until 3:00 p.m.

## Henry Hall Atrium 97

### **Den Tree Characteristics and General Ecology of the Southern Flying Squirrel (*Glaucomys volans*) in Western Michigan**

TAMARA HILLMAN

Participants attending from 2:00 p.m. until 3:00 p.m.

# Poster Presentations

9:00 A.M. — 5:00 P.M.

Henry Hall Atrium 98

## **Raising Awareness about Type III ABO Discrepancies:**

### **A Case Study**

NINIVE COSTA

Participants attending from 4:00 p.m. until 5:00 p.m.

Henry Hall Atrium 99

## **Exploring the Equations of State for Multiple Component Universe**

WILLIAM RICHARDSON

Participants attending from 2:00 p.m. until 3:00 p.m.

Henry Hall Atrium 100

## **Synthesis of Rigid Analogs of 3-Iodothyronamine**

ALEX MACDONALD

Participants attending from 12:00 p.m. until 1:00 p.m.

Henry Hall Atrium 101

## **Effects of Asn152 Mutation on Substrate Selectivity of**

### **P99 Cephalosporinase**

AARON LAMPHERE, DAVID CECI

Participants attending from 10:00 a.m. until 11:00 a.m.

Henry Hall Atrium 102

## **Correlation of Functional Movement Screens and Golf Swing Faults**

BRIAN SCHULTE

Participants attending from 12:00 p.m. until 1:00 p.m.

Kirkhof Center KC1

## **Correlation Study of Specific Gravity Between IRIS,**

### **CHEM100 Automated Urinalysis Systems**

CHRIS KUBONT, SCOTT MACLELLAN, RUSSELL DUFFIN

Participants attending from 10:00 a.m. until 11:00 a.m.

Kirkhof Center KC2

## **The Correlation Between Vertical Jump Height and**

### **Horizontal Leap Length in Dancers**

ERIN COOKE

Participants attending from 10:00 a.m. until 11:00 a.m.

Kirkhof Center KC3

## **Boogie Fever Beats Dancing**

JACOB ROHDE, MEGAN DRAHOS

Participants attending from 10:00 a.m. until 11:00 a.m.

Kirkhof Center KC4

## **Say NO to Bottled Water: A Statistical Consulting Experience**

MARCO BENEDETTI, CARMEN CARABULEA

Participants attending from 1:00 p.m. until 2:00 p.m.

Kirkhof Center KC5

## **Serotonin and Histamine Localization in the CNS of**

### ***Drosophila melanogaster***

KELSEY CROWLEY

Participants attending from 1:00 p.m. until 2:00 p.m.

# Poster Presentations

9:00 A.M. — 5:00 P.M.

## Kirkhof Center KC6

### One Year Periodization of Collegiate Male Sprinters

NATHANIEL MILLER, CANDICE WHEAT

Participants attending from 11:00 a.m. until 12:00 p.m.

## Kirkhof Center KC7

### Does Accession to the European Union Affect Economic Growth?

COLTON LOCK

Participants attending from 3:00 p.m. until 4:00 p.m.

## Kirkhof Center KC8

### Death Thought Accessibility as a Function of Ostracism and Self-Esteem

HAILEY WILMOT, SAMANTHA HEINLEN, JACKIE MAIN, BRIANNE SCHLOEGL

Participants attending from 10:00 a.m. until 11:00 a.m.

## Kirkhof Center KC9

### Hispanic and Caucasian Mothers Emotion Socialization Practices

CHARALENE KISER, MEGAN DRAHOS, LAUREN BEACHUM

Participants attending from 1:00 p.m. until 2:00 p.m.

## Kirkhof Center KC10

### Determination of Phylogenetic Relationships among Members of the Plant Genus *Billbergia* (family *Bromeliaceae*)

WILLIAM LINDBERG

Participants attending from 11:00 a.m. until 12:00 p.m.

## Kirkhof Center KC11

### Environmental Effect on Male Mating Success: The Importance of Song Exposure Versus Nutritional Stress During Development in Male Superb Lyrebirds

JASON STREET

Participants attending from 3:00 p.m. until 4:00 p.m.

## Kirkhof Center KC12

### A Comparison of Administrator Satisfaction with Contract Versus Self-Operated Food Service in Long-Term Care

MARIA AHERN

Participants attending from 9:00 a.m. until 10:00 a.m.

## Kirkhof Center KC13

### The Edible Body: Food and Sex as Pleasure, Disorder, and Commodity

LENA DRAKE

Participants attending from 1:00 p.m. until 2:00 p.m.

## Kirkhof Center KC14

### Regulation of Mouse Endothelial Cell Growth in Culture

BENJAMIN MEYER, JUSTIN VICE, ASHLEY BERISH

Participants attending from 2:00 p.m. until 3:00 p.m.

## Kirkhof Center KC15

### Looking for Evidence of Predator Mediated Apparent Competition Between *Escherichia coli* and *Salmonella typhimurium* Using PRD1 Bacteriophage

FARAH ITANI

Participants attending from 10:00 a.m. until 11:00 a.m.



# Poster Presentations

9:00 A.M. — 5:00 P.M.

**Kirkhof Center KC16**

## **Regulation of the Diaphanous-Related Formin, DAAM1 in Mammalian Cells**

BRIANNE DOCTER

Participants attending from 10:00 a.m. until 11:00 a.m.

**Kirkhof Center KC17**

## **Child Competence Criteria of Caucasian and Hispanic-American Mothers**

NICOLE SUMMERS

Participants attending from 1:00 p.m. until 2:00 p.m.

**Kirkhof Center KC18**

## **Low-Head Dam Removal Causes Immediate Physical Habitat and Water Chemistry Degradation**

ADRIENNE GIBSON

Participants attending from 2:00 p.m. until 3:00 p.m.

**Kirkhof Center KC19**

## **Variation in High School Sports Participation Across U.S. States**

ALLISON NOVAK, JOHN FRAZIER

Participants attending from 3:00 p.m. until 4:00 p.m.

**Kirkhof Center KC20**

## **Trait and Social Influences in the Link between Negative Thinking and Favorable Affect**

SHAWNA TANNER

Participants attending from 1:00 p.m. until 2:00 p.m.

**Kirkhof Center KC21**

## **Case Study: Kimberly Clark Acquisition of Jackson Safety Products**

PAUL RAHRIG

Participants attending from 3:00 p.m. until 4:00 p.m.

**Kirkhof Center KC22**

## **School Disciplinary Patterns by Student Ethnicity**

ANDREA SZURA, MARILYNN PORRITT, ALLYSON O'CONNOR

Participants attending from 12:00 p.m. until 1:00 p.m.

**Kirkhof Center KC23**

## **T-Test for Proportions? Making Do When Your Software Can't Do Confidence Intervals for Proportions**

MATTHEW MALLOURE, DAVID SCHLUETER

Participants attending from 12:00 p.m. until 1:00 p.m.

**Kirkhof Center KC24**

## **Computational Exploration of Rtt109 Conformers Important for Chromosome Stability**

PATRICK LOUDEN

Participants attending from 4:00 p.m. until 5:00 p.m.

# Poster Presentations

9:00 A.M. — 5:00 P.M.

**Kirkhof Center KC25**

**Impact of Hypergravity Exposure on the Mammary Gland  
Cytoskeletal Organization in the Rat**

KIBROM GEBRE-EGZIABHER

Participants attending from 9:00 a.m. until 10:00 a.m.

**Kirkhof Center KC26**

**Construction and Use of a Microbial Fuel Cell for Generating  
Electrical Power from Municipal Waste Water**

KATIE HEKSTRA

Participants attending from 3:00 p.m. until 4:00 p.m.

**Kirkhof Center KC27**

**Honey, I Moved the Kids: Division of Labor in a Biparental  
Cichlid Fish**

LINDSAY STOYKA, ALLISON GASKELL

Participants attending from 2:00 p.m. until 3:00 p.m.

**Kirkhof Center KC28**

**What Big Claws You Have: Relationship Between Claw  
Morphology and Ecology in the Big Cats (*Felidae*)**

LISA DUST

Participants attending from 12:00 p.m. until 1:00 p.m.

**Kirkhof Center KC29**

**Effect of Altered Gravity on Rat Mammary Epithelial  
Cell Proliferation**

ALEXANDER REPECK

Participants attending from 9:00 a.m. until 10:00 a.m.

**Kirkhof Center KC30**

**Episodic Starvation Versus Storm Winnowing of  
Shelly Interbeds: A Depositional Model for the Fairview  
Formation, Upper Ordovician of Northern Kentucky**

KASE KNOCHENHAUER, MATTHEW BOIKE, WILLIAM MONROE, MICHAEL OCHALEK

Participants attending from 3:00 p.m. until 4:00 p.m.

**Kirkhof Center KC31**

**Unusual Appearance of the Synovial Membrane in Chronically  
Infected Bursae**

KARI DE VRIES

Participants attending from 11:00 a.m. until 12:00 p.m.

**Kirkhof Center KC32**

**Correlates with Boredom and Positive and Negative Perfectionism**

CORINA HINTERMAN

Participants attending from 12:00 p.m. until 1:00 p.m.

**Kirkhof Center KC34**

**The Feasibility of Using C&S Preservative Tubes for  
Routine Urinalysis**

DEBORAH GREBENOK, SANI JAHIC, ELISE KANE

Participants attending from 4:00 p.m. until 5:00 p.m.

# Poster Presentations

9:00 A.M. — 5:00 P.M.

**Kirkhof Center KC35**

## **Water Evaporation From Tropospheric Aerosols**

PATRICK LOUDEN

Participants attending from 3:00 p.m. until 4:00 p.m.

**Kirkhof Center KC36**

## **Holocene OSL Age Estimates of Parabolic Dunes Along the Western Shore of Lake Michigan Door Peninsula WI, USA: Insights on the Coastal Dunes Geomorphic History**

JODY WYCECH

Participants attending from 1:00 p.m. until 2:00 p.m.

**Kirkhof Center KC37**

## **Using Modified Optically Stimulated Luminescent Dosimeters to Accurately Measure Dose in Small Field Radiotherapy**

RACHEL GERRITS

Participants attending from 11:00 a.m. until 12:00 p.m.

**Kirkhof Center KC38**

## **Mechanical Foundations of the Second Law of Thermodynamics**

DOUGLAS COLEMAN

Participants attending from 11:00 a.m. until 12:00 p.m.

**Kirkhof Center KC39**

## **The Effects of Ectoparasites on Tree Swallow Biology**

LENA SPADACENE

Participants attending from 9:00 a.m. until 10:00 a.m.

**Kirkhof Center KC40**

## **Impact of Hypergravity Exposure on Pregnant Rat Mammary Lobular Dimensions**

DUSTIN HELSEL

Participants attending from 9:00 a.m. until 10:00 a.m.

**Kirkhof Center KC41**

## **A Preliminary Analysis of Suspended and Bedload Sediment in Ruddiman Creek**

LATRICIA ROZEBOOM

Participants attending from 9:00 a.m. until 10:00 a.m.

**Kirkhof Center KC43**

## **Blendon Landing Archaeology: Analysis of the 2010 GVSU Archaeological Field School**

DIANA RUTLEDGE, STEFANIE GASKO, ROSS LAMBERTS, KYLE LEGANT, AARON HOWE

Participants attending from 11:00 a.m. until 12:00 p.m.

# Poster Presentations

9:00 A.M. — 5:00 P.M.

**Kirkhof Center KC44**

## **Does Gender Still Matter? Women Physicians' Self-Reported Medical Education Experiences**

KATHERINE BUTLER

Participants attending from 11:00 a.m. until 12:00 p.m.

**Kirkhof Center KC45**

## **Hindu Text Bhagvad Gita and its Relation to Traditional and Modern Medicine**

JANAKI SHAH

Participants attending from 12:00 p.m. until 1:00 p.m.

**Kirkhof Center KC46**

## **Student Perceptions on Genetically Modified Foods**

KURT O'HEARN, SEAN FISK, JOHN SMIT, TAMMY WEEKS

Participants attending from 4:00 p.m. until 5:00 p.m.

**Kirkhof Center KC47**

## **50 Years of Women in Sports at GVSU**

LISA GUIHER

Participants attending from 4:00 p.m. until 5:00 p.m.

**Kirkhof Center KC48**

## **Grand Valley Students Opinion and Knowledge of "Designer Babies"**

CHELSEY COLLEY, MALLORY FUHST, WHITNEY DULLA, JOHN MADDOX

Participants attending from 10:00 a.m. until 11:00 a.m.

**Kirkhof Center KC50**

## **Kent County Emergency Food System**

NICHOLE RYDAHL

Participants attending from 4:00 p.m. until 5:00 p.m.

**Kirkhof Center KC51**

## **The Effects of Mortality Salience on the Ability to Encode Information**

JOSHUA SWEM, MOLLY COHN

Participants attending from 10:00 a.m. until 11:00 a.m.

**Kirkhof Center KC52**

## **Manipulations to Influence Risk, Worry, and Health Behavior Intentions**

MOLLY STEIN

Participants attending from 1:00 p.m. until 2:00 p.m.

**Kirkhof Center KC53**

## **Reducing Death Anxiety in the Student Nurse Population to Improve Patient Care**

KATHRYN CHILDS

Participants attending from 4:00 p.m. until 5:00 p.m.

**Kirkhof Center KC54**

## **Development of a Modular Raman Spectrometer for the Analysis of Ice Samples**

LUCAS APOL

Participants attending from 11:00 a.m. until 12:00 p.m.

# Poster Presentations

9:00 A.M. — 5:00 P.M.

**Kirkhof Center KC55**

## **Microbial Fuel Cell**

SRECKO PRODANOVIC

Participants attending from 11:00 a.m. until 12:00 p.m.

**Kirkhof Center KC56**

## **Design of Novel Cyclic Heterocyclic Compounds to Interact with Higher-Order DNA**

ERIC HANSEN

Participants attending from 12:00 p.m. until 1:00 p.m.

**Kirkhof Center KC57**

## **Periodization for a Collegiate Wrestler**

DALE O'LEARY, NATHAN BURKE

Participants attending from 1:00 p.m. until 2:00 p.m.

**Kirkhof Center KC58**

## **Synthesis of TAAR Regulators Utilizing a Novel Urea Linkage**

KIELY RICH

Participants attending from 11:00 a.m. until 12:00 p.m.

**Kirkhof Center KC59**

## **Kappa Opioid Regulation of Stress-Related Behavior**

ERIN HARSHBERGER

Participants attending from 11:00 a.m. until 12:00 p.m.

**Kirkhof Center KC60**

## **Osteoporosis Prevention: Assessment of Osteoporosis Knowledge Test (Revised 2010)**

AMY AXLINE-HILLARD

**Kirkhof Center KC61**

## **Periodization of a Baseball Pitcher**

JARED CURLEY, NICK MASON, ROB CHASE

Participants attending from 12:00 p.m. until 1:00 p.m.

**Kirkhof Center KC62**

## **The Effect of Prosody Salience on Reading Fluency and Comprehension**

ANDREA MITCHELL

Participants attending from 2:00 p.m. until 3:00 p.m.

**Kirkhof Center KC63**

## **John Ball Zoo Animal Care Internship**

CASSANDRA WYGANT

Participants attending from 1:00 p.m. until 2:00 p.m.

**Kirkhof Center KC64**

## **Mortality Salience, Extrinsic Contingency Focus and the Desire for Social Connectivity**

RYAN KIELBASA, KIRSTEN POWERS

Participants attending from 4:00 p.m. until 5:00 p.m.

**Kirkhof Center KC65**

## **Evaluation of Depositional Environments in the Upper Ordovician Kope Formation, Kentucky**

CANDACE VOS, SAMUEL HOWARD, BRUCE SHULTZ

Participants attending from 9:00 a.m. until 10:00 p.m.

# Poster Presentations

9:00 A.M. — 5:00 P.M.

Kirkhof Center KC66

## **Negotiated Identities: Nepali Bhutanese in West Michigan**

TREVOR DEWAARD

Participants attending from 2:00 p.m. until 3:00 p.m.

Kirkhof Center KC68

## **Investigating Polymer Nanocomposites Using Positron Annihilation Lifetime Spectroscopy**

PATRICK MCCARTHY

Participants attending from 12:00 p.m. until 1:00 p.m.

Kirkhof Center KC69

## **Searching for Temporal Patterns in Gene Expression Profiles**

OLVI TOLE

Participants attending from 3:00 p.m. until 4:00 p.m.

Kirkhof Center KC70

## **Mapping the Reactivity Surface of Metal-Olefin Reactions**

JOSHUA DAVIS

Participants attending from 4:00 p.m. until 5:00 p.m.

Kirkhof Center KC71

## **Investigating the Effects of BIBR1532 and Related Analogs on Telomerase Activity in Human Prostate Cancer Cells**

THOMAS ROGERS, RUSHEESWAR CHALLA

Participants attending from 10:00 a.m. until 11:00 a.m.

Kirkhof Center KC72

## **Soft Tissue Anatomy of the Hindlimb in the Rhesus Macaque (*Macaca mulatta*)**

LAUREN SMITH

Participants attending from 9:00 a.m. until 10:00 p.m.

Kirkhof Center KC73

## **Cognitive Depletion in the Classroom: The Potential Moderating Effect of Physical Fitness**

JORDAN DUFF, MICHELE VERELLEN, NATALIE COTELA

Participants attending from 3:00 p.m. until 4:00 p.m.

Kirkhof Center KC74

## **The Benefits of Interruptions**

JULIA WRIGHT, HANNAH NICHOLSON, TONY SCHNOTALA, KELSEY WALUKONIS

Participants attending from 12:00 p.m. until 1:00 p.m.

Kirkhof Center KC75

## **Basic Emotion and Early-Learned Verbs**

KATIE HAMMOND, JOEL MOUNTS

Participants attending from 3:00 p.m. until 4:00 p.m.

Kirkhof Center KC76

## **Student Learning in Wave Mechanics Through an Inquiry-Based Approach**

KRISTIN BARBER

Participants attending from 3:00 p.m. until 4:00 p.m.

# Poster Presentations

9:00 A.M. — 5:00 P.M.

**Kirkhof Center KC77**

**Physiological and Psychological Characteristics Associated with Performance in College Female Athletes**

COURTNEY MCCOTTER

Participants attending from 11:00 a.m. until 12:00 p.m.

**Kirkhof Center KC78**

**Stratigraphic and Geologic History of the Point Pleasant Formation (Middle Ordovician) of Ohio and Kentucky**

THOMAS RIDDERING, CLAYTON LIPSKI, JEREMY ESPINOZA, TIFFANY HACKETT

Participants attending from 2:00 p.m. until 3:00 p.m.

**Kirkhof Center KC79**

**Yes, You Can Serve Two Masters: Reflexivity and Mystery Shopping in Hospitality Education**

ERIN PRUITT

Participants attending from 9:00 a.m. until 10:00 p.m.

**Kirkhof Center KC80**

**A Statistical Consulting Experience: Determining Indicators of MCAT Scores and Medical School Admission Rates**

DAVID SCHLUETER, JOHN FRAZIER

Participants attending from 1:00 p.m. until 2:00 p.m.

**Kirkhof Center KC81**

**Honey, I Ate the Kids! Life History Strategies, Fish Behavior, and Management of a Research Cichlid Colony**

CHRISTOPHER SCHEIBER, AMANDA HAUPT

Participants attending from 12:00 p.m. until 1:00 p.m.

**Kirkhof Center KC82**

**Unusual Variant of Gonadal Artery Origin from Accessory Renal Arteries**

RUSSELL MCDANIEL

Participants attending from 11:00 a.m. until 12:00 p.m.

**Kirkhof Center KC83**

**Dolomite Classification and Origin in the Silurian Brassfield Formation of Northern Kentucky**

ZACHARY MCCURLEY, BENJAMIN STEAVENSON, SCOTT SIMONSON, ADAM DAVIS

Participants attending from 9:00 a.m. until 10:00 a.m.

**Kirkhof Center KC84**

**Visual Learning and Discrimination of Abstract Shapes by Crayfish**

MATTHEW BOEVE

Participants attending from 9:00 a.m. until 10:00 a.m.

**Kirkhof Center KC85**

**Poverty Has A Women's Face: Evaluating Social Construction of Poverty and Its Local Implications**

CALLISTA COOK

Participants attending from 4:00 p.m. until 5:00 p.m.



# Oral Presentations

9:00 A.M. — 5:30 P.M.

9:00 A.M.

Kirkhof Center 1104

**Analyzing the Cost of Switching to Compostable Tableware for the Amway Grand Hotel**

THAD CUMMINGS

Kirkhof Center 1142

**Garlic Mustard (*Alliaria petiolata*) influence on decomposition rates in Cass County, Michigan.**

ANN GRACZ

Kirkhof Center 2201

**Religion, Medicine, and the Birthing Experience**

SAMANTHA NICHOLS

Kirkhof Center 2215

**Timeliness of Antibiotic Administration in Neutropenic Patients at Risk for Sepsis**

MEGHANN SIKORA

Kirkhof Center 2216

**Phragmites (*Phragmites australis*) Mapping and Control in Muskegon County, Michigan**

ANTHONY STRALEY

Kirkhof Center 2259

**The Social Psychology of Love and Attraction**

PRINCESS BRAXTON-DAVIS

Kirkhof Center 2263

**Urban Agriculture**

HOLLY STRATTON

Kirkhof Center 2266

**Knowledge of the HPV Vaccine: A Survey of GVSU Freshmen Students**

CHELSEY CHIZICK, ALISHA FOLEY, AMY BRINCH

Kirkhof Center 2270

**Management of Obesity in Childhood by Area Clinicians**

ASHLEY STROTBAUM, LEAH TARRANT, APRIL VANDENBURG

9:30 A.M.

Kirkhof Center 1104

**User Perceptions of Current Wilderness Conditions at Nordhouse Dunes**

JEFFREY BEURKENS

Kirkhof Center 1142

**A Benefit-Cost Analysis of the Composting Program at Grand Valley State University, Michigan.**

KATHERINE BAUER

Kirkhof Center 2201

**Teaching Play Activities to Children with Autism: Comparing Adult and Peer Models**

LISA SHATTUCK

# Oral Presentations

9:00 A.M. — 5:30 P.M.

9:30 A.M. CONTINUED

- Kirkhof Center 2215**      **Museum Education: Understanding the Artist through K-12 Studio Practice**  
ELIZABETH DIXON, LINDA WALKER, TAYLOR MEDELLIN
- Kirkhof Center 2216**      **Comparison of Cardiovascular Diastolic and Systolic Function of 2010 Metro Health Grand Rapids Marathon Runners**  
MELISSA MEYER, ASHLEY WHARTON, MARYLYNN GAASTRA, SUSAN RAAYMAKERS
- Kirkhof Center 2259**      **An Adaptive Management Plan for American marten (*Martes americana*) in Missaukee County, Michigan**  
LESLIE SKORA
- Kirkhof Center 2263**      **Michigan Job Sector Change**  
CODY ROSE
- Kirkhof Center 2266**      **The Function of Food in Latin American Literature**  
ASHLEY MOORE
- Kirkhof Center 2270**      **An Adaptive Management Plan for Whippoorwill (*Caprimulgus vociferus*) Habitat Restoration in Gladwin County, MI**  
MARIE RATHBURG
- 10:00 A.M.
- Kirkhof Center 1104**      **Beaver Activity Implications on Fish Community Assemblage**  
ALAN PERZANOWSKI
- Kirkhof Center 1142**      **Diet Analysis of Stocked Brown Trout vs. Rainbow Trout within the Muskegon River, MI**  
SARA DAMM
- Kirkhof Center 2201**      **Developing Evolutionary-Based Domain-Specific Loyalty Scales**  
KRAIG SHATTUCK
- Kirkhof Center 2215**      **A Comparative Analysis of Social Movements in the Balkans**  
KEVIN DEARNLEY
- Kirkhof Center 2216**      **Accelerating the Computation and Verification of Molecular Collision Models**  
KURT O'HEARN
- Kirkhof Center 2259**      **Evaluating Bottom of the Pyramid Projects**  
STEPHANIE LY, TIM DUBOIS

# Oral Presentations

9:00 A.M. — 5:30 P.M.

10:00 A.M. CONTINUED

**Kirkhof Center 2263**      **Neurobehavioral Effects of Methylmercury Exposure in Young Zebrafish**  
STEFAN GOETZ

**Kirkhof Center 2266**      **A Student Statistical Consulting Experience: Analysis of Water Data**  
RYAN HINKLEY, ERIC HOWARD

**Kirkhof Center 2270**      **A Study of Lady Gaga's Brand, Branding Techniques, and Their Application to Other Brands**  
MEGAN CARTER

10:30 A.M.

**Kirkhof Center 1104**      **Private Land Owner Support for Public Conservation Plans**  
LUCAS COTTON

**Kirkhof Center 1142**      **An Adaptive Management Plan for Reducing White-Tailed Deer (*Odocoileus virginianus*) Herbivory in Ottawa County Parks, MI**  
STEPHANIE PODEIN

**Kirkhof Center 2201**      **Applying Anthropology to Water Quality Assessment: An Investigation of pH and Nitrates in Drinking Water**  
JORDAN SPARKS

**Kirkhof Center 2215**      **Plato and Poetry: A New Interpretation**  
ANDY SANFORD

**Kirkhof Center 2216**      **The Lived Experience: Pulmonary Arterial Hypertension and Intravenous Prostaglandin Therapy**  
PHYLLIS BOONE

**Kirkhof Center 2259**      **The United States and Israel**  
KAYLIE MCLEAY

**Kirkhof Center 2263**      **Beyond Pleasure: Plato and the Good**  
NICHOLAS MAKI

**Kirkhof Center 2266**      **The Density of the External Medium Affects Gravity Sensing in Plants.**  
NAILA KOVACEVIC

**Kirkhof Center 2270**      **The Geomorphic Settings of Known Archaeological Sites in the Lower Grand River Valley, Ottawa County, Michigan**  
NATHANIEL HANSEN

# Oral Presentations

9:00 A.M. — 5:30 P.M.

11:00 A.M.

- Kirkhof Center 1104**      **Analyzing the Cost of Retrofitting a House to L.E.E.D. Standards**  
JORDAN GALLAGHER
- Kirkhof Center 1142**      **An Adaptive Management Plan for Johnson Grass (*Sorghum halepense*) and Cheat Grass (*Bromus tectorum*) Control in a Central Oklahoma Nature Center**  
SHARCY RAY
- Kirkhof Center 2201**      **Group and Individual Performance on a Creativity Task: The Constraining Effects of Examples**  
CHELSEA SAGE
- Kirkhof Center 2215**      **The Successful Retreat of the Soviet New Economic Policy**  
PHILIP SNYDER
- Kirkhof Center 2216**      **Analysis of Outcome Measures in Patients with a Fragility Fracture Treated with Forteo**  
JUSTIN SHIELDS, JESSE KOGELMAN
- Kirkhof Center 2259**      **Educational Intervention Program for Acute Otitis Medi**  
JESSICA MILLER, LAURA VANPELT, BRAD JOHNSON
- Kirkhof Center 2263**      **Domestic and International Educational Inequity**  
ANNIE HAKIM
- Kirkhof Center 2266**      **2011 Nursing Student Policy Summit**  
CYNTHIA VANDER MOREN
- Kirkhof Center 2270**      **An Adaptive Management Plan to Improve Canoeing Recreation along the Grand River in West Michigan**  
LOGAN SCHENDEL

11:30 A.M.

- Kirkhof Center 1104**      **Analysis of Illegal Use and Suitability of Camping in Nordhouse Dunes Wilderness**  
NATHANIEL HIGGINSON
- Kirkhof Center 1142**      **An Adaptive Management Plan for Increasing Waterfowl Habitat at Harbor Island in Grand Haven, MI**  
SEAN STRATIL

# Oral Presentations

9:00 A.M. — 5:30 P.M.

11:30 A.M. CONTINUED

Kirkhof Center 2201

**What Makes an Arctic Plant Predictable?**  
ROBERT SLIDER

Kirkhof Center 2215

**Mindfulness: Seeking a More Perfect Approach to Coping with Life's Challenges**  
CORINA HINTERMAN

Kirkhof Center 2216

**Assessing the Reliability of a Geriatric Knowledge Tool for Graduating Healthcare Providers**  
MICHELE VUILLEMOT, KATHRYN FAHLSTROM, JULIA HOEKSTRA

Kirkhof Center 2259

**Integrated Spaces: Linking CAD & GIS In Geographic Survey of Grand Valley State University (Allendale) campus**  
MATTHEW DONDANVILLE, NATHAN WALKER, PAUL BUSSEY

Kirkhof Center 2263

**Wheelchair Sports in Therapeutic Recreation**  
BETHANY GIESELER, SUZANNA MOHNEY, JENNIFER MARX, SAMANTHA RESENDEZ, KATY FISHER, DOMINQUE BRADSHAW, BRIANNA FERGUSON

Kirkhof Center 2266

**Mapping Hardwood Trees on GVSU Allendale Campus Using GIS, GPS, and Multimedia**  
ALEXANDER EBENSTEIN, EMMA VANACKER, HAYDEN MACINTOSH, JARED BOEVE

Kirkhof Center 2270

**Health Risk of Indoor Radon Gas in West Michigan: An Applied Anthropological Study**  
NATHAN EGNER

12:00 P.M.

Kirkhof Center 1104

**Determining the Spatial Spread and Rate of Dispersal of the Invasive Species *Pinus sylvestris* L. on a Michigan Dune Ecosystem**  
KAITLYN LEMON

Kirkhof Center 1142

**Effects of Education Versus Opportunity on Waste Reduction Success among University Campuses in Michigan**  
NURZHAN TOKZHUMANOV

Kirkhof Center 2201

**Effects of Permafrost Thawing on Land Use and Structural Integrity in the Polar and Sub-Polar Region of North America**  
JAMES SCOTT MAGINITY

# Oral Presentations

9:00 A.M. — 5:30 P.M.

12:00 P.M. CONTINUED

**Kirkhof Center 2215**

**Geographic Mapping of Rain Gardens, Bioswales, and Water Retention Ponds**

RICARDO BENAVIDEZ, MATT FARBER, JAMES CHITTISANE,  
ALAN COLE, STEPHEN HOEKWATER

**Kirkhof Center 2216**

**Latinas in Higher Education**

ANDREA GOMEZ CERVANTES

**Kirkhof Center 2259**

**Sensory Stimulation and Therapeutic Recreation**

SHELBY HARRIGAN, NINA NAVEIRA, SMITA ABRAHAM, ALEX HUTCHINS,  
JESSICA EAGLE, ARIELLE BELIVEAU, TERRI LALONDE

**Kirkhof Center 2263**

**Social Commentary in Northanger Abbey**

ANDREW KUCK

**Kirkhof Center 2266**

**An Analysis of Historic Ceramics at Blendon Landing**

DREW VISTA

**Kirkhof Center 2270**

**Predicting Long-Term Tundra Plant Community Change in Response to Warming**

JEREMY MAY

12:30 P.M.

**Kirkhof Center 1104**

**User Impacts on Nordhouse Dunes Wilderness**

KATHLEEN SEXTON

**Kirkhof Center 1142**

**Line Graphs**

NICHOLAS SMITH

**Kirkhof Center 2201**

**The Concept of Infinity in Ancient Greek Mathematics**

ELIZABETH PARKER

**Kirkhof Center 2259**

**Therapeutic Recreation and Brain Injuries**

AMY AYOTTE, LINDSEY BEELER, KENDRA LAPRES, ANGIE PARSONS,  
ASHLEY HORTON, BENJAMIN COLEMAN

# Oral Presentations

9:00 A.M. — 5:30 P.M.

12:30 P.M. CONTINUED

**Kirkhof Center 2263**

**Analysis of Two Charging Styles of NiMH AA Batteries**

SAMUEL BOWERMAN

**Kirkhof Center 2270**

**A Geographic Information Systems Analysis of Grand Valley State University's Sidewalk Network**

KHERAN JOSEPH

1:00 P.M.

**Kirkhof Center 1104**

**Analyzing Patterns of Beak Deformity in Wild Birds Populations in North America**

RACHELLE MCLAUGHLIN

**Kirkhof Center 1142**

**Spotted Knapweed Control and Native Plant Establishment at the Bass River Recreation Area**

TIMOTHY BOTTING

**Kirkhof Center 2201**

**Applying GIS Technologies to Monitor the Coniferous Tree Population of Grand Valley State University's Allendale Campus**

JAMES SCOTT MAGINITY, WILLIAM TREAT, JON LAUTENBACH, MATT LARSEN

**Kirkhof Center 2215**

**US Health Care Reform: What Lies in the Hearts of our Citizens**

LUIS TORRES

**Kirkhof Center 2216**

**Did Dad Lick the Kids Today? Transmission of Microbes Through Parental Care in a Teleost Fish (*Cichlosoma nigrofasciatum*).**

MONICA ZIPPLE

**Kirkhof Center 2259**

**Autism and Therapeutic Recreation**

TINA CHIRCO, KAYLA JELTEMA, MEGAN NADOLNY, JILL HASKE, LAUREN ARMSTRONG, DEAN WALDRON

**Kirkhof Center 2263**

**C-C Chemokine Receptor 5 and HIV: Therapeutic Potentials of the Delta 32 Base Pair Deletion**

AMANDA ANTCHAK



# Oral Presentations

9:00 A.M. — 5:30 P.M.

1:00 P.M. CONTINUED

**Kirkhof Center 2266**

**Aldo Leopold's Land Ethic and the Great Lakes**

ANDY SANFORD

**Kirkhof Center 2270**

**Prévost's Manon Lescaut and Her Transition to the Operatic Stage**

LILY GUERRERO

1:30 P.M.

**Kirkhof Center 1104**

**Digestion Dependant Winter Foraging of Northern Pike in Michigan's Lower Penninsula Lakes**

PATRICK LAARMAN

**Kirkhof Center 1142**

**Beyond Gettysburg**

STEPHANIE WILTSE

**Kirkhof Center 2201**

**Code Blue: An Exploratory Study on Crime Prevention and the Role of Emergency Telephones on Grand Valley State University's Allendale Campus**

DONALD CURRY

**Kirkhof Center 2215**

**Adventure Therapy and Therapeutic Recreation**

SANDY UNG, CHAILLE HATHAWAY, KAYLA SMOGOLESKI, AUDREY STOUT, MARY ALLIS, JOEY SHIER, ERIKA STOIKE

**Kirkhof Center 2216**

**Identity and Culture: Autoethnographic Research on Psychological Acculturation**

KAYLEEN SCHEPPER

**Kirkhof Center 2259**

**Ethical Statistical Methods: How Improper or Biased Tests can Result in Public Panic**

RYAN HINKLEY

**Kirkhof Center 2263**

**Gene Expression Profile of Human Prostate Cell Lines (+/-CD82) through Microarray Analysis**

PUSHPAJA DODLA

**Kirkhof Center 2266**

**Constructing Rectangle Visibility Layouts for Rectangle Visibility Graphs**

TODD PETERSON

# Oral Presentations

9:00 A.M. — 5:30 P.M.

1:30 P.M. CONTINUED

**Kirkhof Center 2270**

**Reading *The Great Gatsby* through the Eyes of Nick Carraway**  
BARBARA JANDERNOA

2:00 P.M.

**Kirkhof Center 1104**

**Developing Retention Ponds to Reduce Volume of Water Input to Storm-Sewer System from GVSU Parking Lots.**  
SCOTT MARECEK

**Kirkhof Center 1142**

**Patient/Provider Electronic Mail Communication**  
KATHERINE VANDERLAAN, JUDDSON BALDWIN, CLAUDE LEBLANC

**Kirkhof Center 2201**

**Beliefs and Comprehension: The Relationship Between Beliefs About Scientific Topics, the Reason We Hold Those Beliefs and Comprehension of Scientific Evidence**  
ANDREW TAYLOR

**Kirkhof Center 2215**

**Oedipa and 'Agency Panic' in *The Crying of Lot 49***  
TIMOTHY SCHILLING JR

**Kirkhof Center 2216**

**Revealing the Truths and Fallacies of Orientalism through *Sahar Khalifeh's Wild Thorns***  
KIRSTEN WERNER

**Kirkhof Center 2259**

**An Examination of Using EWMA Charts for Monitoring United States Geospatial Data**  
MARCO BENEDETTI

**Kirkhof Center 2263**

**Indian Ocean Trade: 200 BCE - 300 CE**  
AKSHAY SARATHI

**Kirkhof Center 2266**

**A Puzzlement of Modern Myth: Orientalism in the Anna Leonowens' Story and Rodgers and Hammerstein's *The King and I***  
DANIEL RHODE

**Kirkhof Center 2270**

**The Expanding Role of Certified Nurse-Midwives: A Journalistic Exploration of Current Roles and Future Directions**  
KRISTIN MCBARNES

# Oral Presentations

9:00 A.M. — 5:30 P.M.

2:30 P.M.

Kirkhof Center 1104

**Changes in Lake Trout Population Dynamics Due to the Impact of Introduced Desirable Non-Native Salmonids.**

MIKE DILLOWAY

Kirkhof Center 2201

**The Increase in Recent Years of Desertification in Northern China: Local and Global Impacts**

NATHAN KRINGS

Kirkhof Center 2216

**Cuban Involvement in Angola and Ethiopia during the late 20th century**

MATT MUSSER

Kirkhof Center 2259

**Catherine Morland Grows Up**

NICK MACKSOOD

Kirkhof Center 2263

**Rectangle Visibility Graphs**

MARTHA ROZSI

Kirkhof Center 2266

**The Future, Tomorrow: Comparing War Communism to Marx's Program**

MICHAEL MARTIN

Kirkhof Center 2270

**Genetic Approaches to Assessing the Impact of Wind Turbines on Eastern Red Bats**

MIN LEE

3:00 P.M.

Kirkhof Center 1104

**Nonsocial Threats Activate Belonging Regulation Processes**

BRIANNA MIDDLEWOOD

Kirkhof Center 1142

**Observations of Jupiter and the Sun by Means of a Software Defined Radio**

SAMUEL BOWERMAN

# Oral Presentations

9:00 A.M. — 5:30 P.M.

3:00 P.M. CONTINUED

Kirkhof Center 2201

**Analysis of Outcome Measures in Patients with a Fragility Fracture Treated with Forteo and Supplemented with Prescriptive Vitamin D**

COLENE SRACKANGAST, BRYAN GOETZ, AUSTIN KUIPERS

Kirkhof Center 2215

**Assessment of Risk Factors for Post-Rewarming Rebound Hyperthermia in Cardiac Arrest Patients Undergoing Therapeutic Hypothermia**

KEVIN WOLF

Kirkhof Center 2216

**Michigan Shell Temper Ceramics**

JESSICA MILLER

Kirkhof Center 2259

**Traditional Chinese Medicine and its Implementation in Medical Practices in the United States**

ANNA SCHAAR

Kirkhof Center 2263

**An Analysis of the Narration in Jane Austen's "Northanger Abbey"**

MADELYN O'BRIEN

Kirkhof Center 2266

**Bulgakov's Two Devils**

ASHLEY FALLON

Kirkhof Center 2270

**Factors Influencing Physician Assistants to Practice in the Upper Peninsula of Michigan**

KELLY EHEMAN, KAILI WALKER

3:30 P.M.

Kirkhof Center 1142

**Mosaic Collaboration Project Between Grand Valley Ceramics Program and East Kentwood High School**

JESSICA SCHULTZ, LISA MALESKI

Kirkhof Center 2216

**The Master and Margarita: The Writer's Plight**

PHILIP SNYDER

Kirkhof Center 2259

**Evaluation of Recanalization Rates of Cerebral Aneurysms Treated with Bare Platinum Coils Versus those Treated with Matrix2 Bioabsorbable Coils at a Large Volume Institution**

BRITTAN MASTERS, BOE BISSETT, TIMOTHY GORALSKI

# Oral Presentations

9:00 A.M.— 5:30 P.M.

3:30 P.M. CONTINUED

**Kirkhof Center 2263**

**Made in Grand Rapids: The Furniture Manufacturers Association's Search for Protection in Legal Recognition**

ERIC BAUMGARTEN

**Kirkhof Center 2266**

**The Development and Function of the Cheka 1917-1922**

ASHLEY FALLON

4:00 P.M.

**Kirkhof Center 2201**

**Using Math to Pair Students with Internships.**

ZACH MADAJ

**Kirkhof Center 2215**

**Illusion, Morality, and Reality in The Master and Margarita**

TYLER STEIMLE

**Kirkhof Center 2216**

**Design and Synthesis of Inhibitory Molecules for Cancer-Linked Focal Adhesion Kinase**

GREGORY PATTEN

**Kirkhof Center 2263**

**The Form of the Story: How Literature Shapes Readers**

JESSICA DICK, CARLY CROOKSTON

**Kirkhof Center 2266**

**Chernobyl and the Collapse of the Soviet Union**

BLAINE SULLIVAN

4:30 P.M.

**Kirkhof Center 2201**

**Control of Hypertension and Diabetes as a Measure of Chronic Disease Outcomes at a Free Clinic**

DEANA GIRBACH, MEGAN WALLING, CARLEY BREEN

**Kirkhof Center 2215**

**The Personalism of Putin's Regime**

ALEXANDRA SPURLOCK

**Kirkhof Center 2216**

**On Essences and Concepts: The Nietzschean Model and Beauvoir's Account of Woman**

KIRSTEN ZEITER

**Kirkhof Center 2270**

**Drawing From the Land**

RACHEL KAUFF

# Oral Presentations

9:00 A.M. — 5:30 P.M.

5:00 P.M

**Kirkhof Center 2201**

**Practicing Physician Assistant Job Satisfaction in Michigan**

BRENNA LAMPHEAR, BRIETNEY SIERZANT, ELIZABETH FIELDER

**Kirkhof Center 2215**

**Methicillin Resistant *Staphylococcus Aureus*: Educating Healthcare Workers in the Acute Care Setting**

KELLY MADRID

**Kirkhof Center 2259**

**Breastfeeding Attitudes Among University Undergraduate Women and Men**

HOLLY BARONE

**Kirkhof Center 2263**

**Grand Valley Charter Schools: A Statistical Consulting Experience**

MATT VANCE, DANIEL RICHARD

**Kirkhof Center 2270**

**Outdoor Classrooms: Introducing an Agriculture Program at Grand Valley State University**

KENDALL GILBERT

# Panel Presentations

12:00 A.M. — 5:00 P.M.

1:00 P.M.

**Kirkhof Center Area 51**

**Scholarship and Creative Practice as Continuing Education Students**

TEDDIE BUCHNER, NOREEN DELGADO, JENNIFER BUDDEMEIER,  
JULIE PLUGER, NATALIE TREVINO

4:00 P.M.

**Kirkhof Center 1142**

**US Policy in the Middle East during the Ford Administration**

SANDRA BRADEN, ALLISON BAZAIRE, BART KASSEL



The image features a large, abstract background pattern of thick, black, diagonal lines of varying widths and orientations, creating a complex, textured effect. This pattern is visible in the top, bottom, and side margins of the page, framing a central white rectangular area.

## Poster Presentation Abstracts

NOTES 9:00 AM - 5:00 PM

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

## HENRY HALL ATRIUM 1

### **Filling Up at the Biological Pump: The Future of Biofuels**

Presenter(s): Thomas Rogers, Laura Kirby, Susan Lawless, Aaron Beebe

Our study sought to examine the level of understanding that Grand Valley students have regarding the practicality of biofuels and the funding behind them. Two hundred Grand Valley State University students were surveyed with a variety of majors and a range of class standings. These parameters were utilized to ensure an accurate depiction of the study population. Our preliminary results show a general understanding of biofuels, including E85 ethanol, which has been a recent popular biofuel. With regard to funding for biofuel research, the overall response showed support for funding coming from oil companies, the government and biotechnology companies. Most of those holding positive opinions on biofuels said they would be willing to pay more for them, either at the pump, for a car, or through taxes. We intend on further educating the student population on the potential that biofuels have to offer as our supply of fossil fuels dwindle.

Mentor: Osman Patel

## HENRY HALL ATRIUM 2

### **Phosphoregulation of Mid1 Association with Medial Cortex**

Presenter: Brandon Nader

Phosphorylation events are the driving force of the cell cycle. During mitosis and cytokinesis, fission yeast scaffolding protein Mid1 changes phosphorylation states as it functions to anchor the contractile ring in the cell center. Here we seek to determine if phosphorylation regulates Mid1-membrane association. Cells were arrested at various cell cycle stages corresponding to hypo- and hyper-phosphorylated Mid1. Membrane flotation assays were performed to detect Mid1 in complex with the cell membrane. We expect hyper-phosphorylated Mid1 to fraction with the cellular membrane while hypo-phosphorylated Mid1 separates with membrane free fractions. Preliminary results also suggest that cells expressing hypo-phosphorylated Mid1 maintain the spindle assembly checkpoint during mitosis but show severe polarity defects. Current research events focus on the cellular localization of Mid1 phosphosite mutants and their ability to directly interact with the cellular membrane.

Mentor: Dawn Clifford Hart

## HENRY HALL ATRIUM 4

### **Back to Basics: The Natural Impact of Barefoot Running**

Presenter(s): Eric Petersen, Jacob Blossfeld

We compared the difference in ground-force impact between runners using modern running footwear and those running barefoot. Barefoot running has been popularized in recent years as rumors have spread that this running style minimizes joint injury, giving rise to certain products that aim to replicate barefoot running. In a natural stride, the foot lands on its heel and the sole arcs through the stride until the toes touch down; running shoes restrict this arc, forcing the ankle to absorb more impact. We compared barefoot to shod running using a force plate treadmill, which measured the magnitude of ground impact force during each second of a runner's stride. The treadmill dissected each stride into time-based segments and examined the influence on pronation, the rotation of the foot at the ankle joints. Our working hypothesis stated that the modern running shoe alters the natural state of a runner's stride, and as a result, runners' joints incur greater strain at ground impact.

Mentor(s): James Scott, Bradley Ambrose

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

## HENRY HALL ATRIUM 5

### **Low-Head Dam Removal Positive Affects on Macroinvertebrate Community Structure**

Presenter: Lauren Villalobos

Dams are added to rivers for many reasons, including flood prevention and reservoir creation. Many of these dams are reaching the end of their life span, and must be either repaired or removed. We studied the removal of the Nashville Dam on the Thornapple River in Barry County, MI, by comparing three up- and three down-stream reaches. One year post-removal, we found that the percent EPT on artificial substrate increased from an average of 27.07 to an average of 63.77 at all sites below the former reservoir. Further, in 2009 Isopods dominated the site directly below the dam, exceeding 2,000 individuals per artificial sampler, while an average of 222 Isopods were found at all downstream sites. In contrast, in 2010 we found an average of 4 isopods per artificial sampler at all of the downstream sites combined. Our results demonstrate that the removal of a low-head dam improved the macroinvertebrate community immediately below the dam. This was in contrast to a decline in habitat quality.

Mentor: Eric Snyder

## HENRY HALL ATRIUM 6

### **Wheel Chair Trainer**

Presenter: Shawn Wright

The purpose of this study was to design and fabricate a device that is capable of aiding handicapped children to learn how to use a powered wheel chair. In order to do this the device must use the same control interface as an actual wheel chair. This trainer is composed of a 30 in. x 38 in. platform that stands approximately 6 in. off the ground. A manual wheel chair with user is rolled onto the device, and secured. The user is then able to develop their wheel chair driving skills by driving this device much like a powered wheel chair.

Mentor(s): John Farris, Christopher Pung

## HENRY HALL ATRIUM 7

### **Synthesis and Fluorescence Analysis of C-6 Modified 2'-Deoxynucleosides**

Presenter(s): Alexandra Gabrielli, Maxwell Wingelaar, Matt McRae, Godwill Nwokocha

The synthesis of C-6 modified 2'-deoxyadenosine and 2'-deoxyguanosine is reported. Two synthetic strategies were employed for the introduction of the alkynyl moiety on the C-6 position of 2'-deoxynucleosides by Pd-catalyzed cross-coupling methods. The fluorescence properties of these novel alkynylated 2'-deoxyadenosine and 2'-deoxyguanosine analogs have been determined. The results of our preliminary studies will be presented.

Mentor: Felix Ngassa

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

## HENRY HALL ATRIUM 8

### **Distraction Reaction**

Presenter(s): Trevor Spoelma, Brian Nawrocki, Eric Eiswerth

The purpose of this experiment was to determine the effect various auditory distractions had on reaction time to a change in visual stimuli. According to past studies it was expected that the results would show that auditory distractions increase reaction time. Subjects were volunteers that were filtered to only include nineteen- and twenty-year-olds. The subjects were randomly assigned into groups. All of the groups experienced all of the different auditory distractions (metronome click, solid tone, verbal distraction) in differing orders during the reaction test. A computer reaction timer program was used for assessment of reaction times from a visual stimulus. A t-test was used to discover if there was a significant difference among the mean reaction times for subjects while exposed to different auditory distractions. It was expected that the results would have implications for reaction based activities and distracting learning environments.

Mentor(s): Bradley Ambrose, James Scott

## HENRY HALL ATRIUM 10

### **Periodization of a Boxer**

Presenter: Nicholas Smith

There is no greater combination of finesse and strength than the sport of boxing. The body must be conditioned to endure long rounds and equally trained to produce power punch after power punch. A boxer must also have a well developed kinesthetic awareness and the coordination to evade the oncoming attack. The purpose of this study was to integrate a periodization regimen for a male amateur boxer looking to compete in a fight. Whereas many sports utilize a season-long peak period, boxers need to prepare for the week around their fight. This study explores the variability in periods when applied to different levels of boxers. Because of the theoretical nature of this study, the benefits and specificity of the periods of the macrocycle will be examined in depth in order to ensure understanding. This study should provide a new perspective and deeper understanding of boxing training, allowing amateur boxers and their trainers to compete and train at a highest level.

Mentor: Amy Crawley

## HENRY HALL ATRIUM 11

### **Characterization of the Phytoene Desaturase Gene in Invasive Watermilfoil Populations That Exhibit Different Sensitivities to the Herbicide Fluridone**

Presenter: Patricia Phillips

Eurasian watermilfoil (EWM) is a major invasive aquatic plant in North America that is routinely controlled with aquatic herbicides. Recent studies demonstrate reduced sensitivity to the herbicide fluridone in some populations, though the mechanism(s) for reduced sensitivity is currently unknown. Fluridone resistance has also been observed in the invasive aquatic plant species *Hydrilla verticillata*, and occurs via an amino acid substitution in the phytoene desaturase protein (PDS). PDS, an essential protein in carotenoid synthesis, is inhibited by fluridone. We propose PDS as a candidate gene causing response variation in EWM populations. Here, we describe initial studies to characterize variation in PDS among EWM populations that exhibit different fluridone sensitivities.

Mentor: Ryan Thum

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 12

## **Just World Belief, Religiosity, and Attribution of Responsibility for Misfortune**

Presenter(s): Lisa Ellis, Amy Ver Wey, Brittani Anderson, Long Nguyen

Shared political or religious identity can result in blame for misfortune. A strong “belief in a just world” (BJW) may increase victim blaming in situations of misfortune. The current study assesses the effect of religiosity, BJW, and conservatism in predicting responsibility attributed to victims of the earthquake disaster in Haiti. Participants completed measures of BJW, conservatism, and religiosity. They were assigned to two scenarios: one describing the destruction of a Catholic town, the other describing an identical Voodoo town. Multiple regression was used to assess the attribution of responsibility for their plight based on these factors. When the town was depicted as Christian, conservatism predicted attributions of responsibility. When the town was Voodoo, the participant's religiosity was a greater predictor of attributions of responsibility, indicating that shared religious background affects the attributional process for responsibility in the case of misfortune.

Mentor: Luke Galen

HENRY HALL ATRIUM 13

## **A Statistical Consulting Experience: Evaluating the Factors Influencing Physical Education Teachers to Attend Graduate School**

Presenter(s): Andrea Barger, Trevor Parish

Drs. Colleen Lewis and Mary Schutten of the Movement Science Department conducted a research study which looked at important factors that influenced physical education teachers to attend graduate school. States with varying requirements were used to help certify these factors. The variables discussed in this study could be helpful in explaining why graduate school for physical education teachers is important. Our task as statistical consultants was to analyze the data and determine what important aspects led these teachers to graduate education. This will provide insight about how graduate programs should focus their attention to attract future physical education teachers.

Mentor(s): Colleen Lewis, Mary Schutten, Neal Rogness

HENRY HALL ATRIUM 14

## **Classical and Quantum Mechanics of Magnetic Monopoles**

Presenter: Aaron Schutza

Recently the interest in magnetic monopoles has been reignited by experiments on systems that exhibit the expected behavior of magnetic charge. Many theories beyond the standard model incorporate fundamental particles that carry magnetic charge. We investigate the interaction of electric and magnetic charges to better understand their dynamics. The classical two particle system of an electric charge and a central particle having both magnetic and electric charge (dyon) is solved using Newtonian dynamics. To further analyze this problem, a singular vector potential is used to construct a Lagrangian for an electric charge interacting with a stationary dyon. We also investigate the quantum mechanical charged particle interacting with a dyon field. The electromagnetic charge quantization condition is derived by considering the integrals of motion of this system.

Mentor: Milun Rakovic

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 15

## **GPU - Accelerated Physically - Based Animation**

Presenter(s): Christopher Brinks

This project demonstrates creating 3-D objects using GLUT and using C to apply translations, rotations, and other calculations to move them through a 3-D environment. In order to accomplish this, principles of calculus, physics, and discrete mathematics are used. Most of the physics and mathematical calculations are carried out on a Graphics Processing Unit. It also demonstrates the application of textures and lighting effects.

Mentor: Hans Dulimarta

HENRY HALL ATRIUM 16

## **Long-Term Response of *Luzula arctica* and *Luzula confusa* to Warming in the Alaskan Tundra**

Presenter: Kelseyann Kremers

Low temperatures limit the growth and reproduction of arctic plants. As a result, plant performance in the arctic is greatly affected by warming. In order to predict the effect of future global climate change on arctic vegetation, an experiment was conducted to estimate the impact of increased temperatures on plant growth and flowering. The objective of this study was to compare the responses of two closely related species, *Luzula arctica* and *Luzula confusa*, to warming. Data was collected June through August from 1996 to 2010. The study sites were located at Barrow and Atkasuk, Alaska. Plots of vegetation were warmed using open-top fiberglass chambers. *L. arctica* and *L. confusa* are common rushes at both study sites and are often associated with disturbances. The results of this study show that *L. arctica* and *L. confusa* respond differently to warming in areas of growth and reproduction. Studies have shown that, in general, arctic plants respond to warming with increased growth and reproductive effort, but these results show that the response may vary by species.

Mentor: Robert Hollister

HENRY HALL ATRIUM 17

## **Piloting an Electromagnetic Sensor System for Hip Range of Motion**

Presenter(s): Kody Smith, Joe Jablonski

The purpose of the study was to examine the reliability of an electromagnetic sensor system measuring hip rotation range of motion. Subjects were healthy college-aged males and females (without injury or surgeries on lower extremities). Hip rotation range of motion was measured in various positions (seated, prone, and standing). All measurements were taken actively and passively for internal and external hip rotation range of motion.

Mentor: Heather Gulgin

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

## HENRY HALL ATRIUM 18

### **Snack and Beverage Vending on a College Campus: An Environmental Audit of the Vending Machines and an Assessment of Student Snacking and Physical Activity Habits**

Presenter: Hannah Cavicchio

We will investigate the food and beverages being sold in Grand Valley's vending machines by conducting an environmental audit of 22 snack machines and 22 beverage machines on the Allendale campus. Additionally, we will survey students about their snacking and physical activity habits, and collect measures of height, weight, and waist circumference. We would like to determine if a correlation exists between the products being sold in the vending machines, student snacking habits, and BMI (body mass index). Our findings could shed light on how the food environment influences the choices we make, and what effects these choices have on our bodies.

Mentor: Christina Beaudoin

## HENRY HALL ATRIUM 19

### **Hyperbaric Oxygen Therapy and Coronary Vascular Reactivity**

Presenter(s): Katherine Weir, Christopher MacLean, Elizabeth Zavala-Arellano, Adam Snoap, Ann Kendzicky

Hyperbaric oxygen treatment utilizes increased pressure to deliver more oxygen to the tissues of the body. Currently, it is commonly used to treat carbon monoxide poisoning and accelerate wound healing. This study aims to characterize the changes in coronary vascular reactivity following acute hyperbaric treatment. In order to evaluate the treatment's effectiveness, porcine coronaries will be dissected, exposed to 2.8 atmospheres of hyperbaric oxygen, and then mounted in isolated organ baths coupled to force transducers. Changes in vascular reactivity (i.e. the ability of blood vessels to change diameter as a means of regulating blood flow) will be measured in response to potassium chloride, sodium nitroprusside, prostaglandin F<sub>2</sub> $\alpha$  and acetylcholine. All of these substances are known vasoconstrictors or vasodilators. It is anticipated that the results of this study will provide insight into the effects of hyperbaric treatment on the cardiovascular system.

Mentor: Francis Sylvester

## HENRY HALL ATRIUM 20

### **Investigating the Role of Textbooks in Student Learning of Chemistry**

Presenter: Kristen Simon

This study is to observe and analyze how undergraduate chemistry students use their textbooks to study and learn chemistry. This work is grounded in phenomenography and seeks to identify fundamentally different ways students interact with the text. In-depth individual interviews with second and third year chemistry students have been done to identify the role the text plays in student learning of chemistry. We anticipate the interviews will also provide information about the effect of instructors' actions on student text usage. Once these various roles for the text are identified a questionnaire will be created that will measure how the students use their textbooks as they study and learn chemistry. This poster will present initial results of the interview analysis and our first analysis of the instructors influence on student text usage.

Mentor: Thomas Pentecost

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

## HENRY HALL ATRIUM 21

### **Preventive Dentistry for the Elderly of West Michigan**

Presenter: Tyler Oatmen

Disparities and difficulties exist in providing preventive dental care to the elderly population of Michigan, which burdens the elderly with unnecessary costs and debilitating oral disease. This study explores common dental problems of Michigan seniors and the barriers they experience in receiving care. The benefits of providing preventive treatment to the at-risk low-income elderly population within Michigan are well documented. In an effort to increase the awareness and utilization of Michigan's existing care options, this study provides an index of statewide resources for the elderly seeking dental care. The study also recommends future legislative advocacy and initiatives within Michigan, and identifies state-level organizations within the dental community that are currently contributing through oral health surveys, yearly reports, and legislative proposals.

Mentor: Mary Karpen

## HENRY HALL ATRIUM 22

### **Extrinsic Contingency Focus and Helping Behavior: An Exercise on the Influence of Attractiveness Priming**

Presenter(s): Sara Pugh, Allison Pentecost

Previous research has found that the attractiveness is related to the extent that individuals are willing to help people in need (Williams, Schimel, Hayes & Martens, 2009). The following research exercise was conducted to examine the extent that extrinsic contingency focus (ECF) moderated this relationship. In light of past research where ECF has been found to be related to the extent that individuals place importance on appearance and other image related qualities (Williams et al. 2010), we predicted that high (vs. low) ECF individuals would show greater bias in helping attractive (vs. average) individuals than their low ECF counterparts. To test this hypothesis we conducted a field exercise where high and low ECF individuals were provided with an opportunity to help either highly attractive or average looking individuals. Results supported our predictions, but must be interpreted with caution due to an insufficient sample size and a lack of experimental control.

Mentor: Todd Williams

## HENRY HALL ATRIUM 23

### **Gene Expression in the Developing Patagium of Embryonic *Glaucomys volans***

Presenter: Timothy Beenen

A number of animals develop a thin flap of skin between their forelimbs and hindlimbs called a patagium. The patagium functions in the ability of these animals to glide, and little is known about the development of this unique structure. This research involved efforts to identify genes involved in the development of the patagium in the southern flying squirrel, *Glaucomys volans*. *G. volans* embryos were obtained and total RNA was extracted. RT-PCR indicated that dHand and Sonic Hedgehog are expressed in the embryo, and specifically in the developing patagium. Three distinct bands were observed upon electrophoresis of Sonic Hedgehog PCR products. To determine which of these was the squirrel Sonic Hedgehog, cDNA from each band was ligated into plasmids. Bacterial cells were made to uptake these plasmids, and were then used for cloning and sequencing of the Sonic Hedgehog gene product. Data will be presented on a comparison of the *G. volans* Sonic Hedgehog gene to homologous mouse DNA.

Mentor: Bruce Ostrow



# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 24

## **Special Forces Tactical Training**

Presenter: Samir Ghriri

With the call to duty in different parts of the world, climates, and the chance of deployment, the Special Forces soldier needs to be in the best physical condition possible year round. The purpose of this study was to create a year-long training periodization model for soldiers that would keep them in shape and able to peak when deployment occurs. This program is pertinent because of the hostile nature of the Special Forces soldiers missions and the demand for them to be more physically conditioned. This research provides a cardiorespiratory, resistance training, agility/flexibility program aimed at keeping soldiers conditioned. The information gathered can be of great benefit to the military as a faster, stronger, and more agile soldier can get the job done effectively and efficiently. A limitation to this research is that there have not been many related studies done. With the design of the program, the armed forces will be able to train at a maximal level to prepare for warfare.

Mentor: Amy Crawley

HENRY HALL ATRIUM 25

## **Transmission of Quantum Information via Laguerre Gaussian Modes**

Presenter: Aaron Schutza

A new era of technology is fast approaching in which quantum computation may be practically realized. In the near future, researchers may require a method of correlating two isolated quantum systems. This would require a signal carrier to be a quantum entity itself. We investigate the quantum states of photons as a medium for encoding information. A communication scheme using the modulation of spatial modes and polarization states in free space or fiber optics is proposed. The Laguerre-Gaussian spatial mode is studied with these applications in mind. We also study photographic slide as a means of creating diffraction gratings. Holographic diffraction gratings were created in order to generate Laguerre-Gauss beam modes of varying quantum number  $n$ . The spatial mode phase characteristics were studied with a Mach-Zehnder interferometer.

Mentor: Richard Vallery

HENRY HALL ATRIUM 26

## **Comparing the Spatial Distribution of Two Diseases using Geospatial Technology**

Presenter: Ryan Hinkley

In a study conducted in 1998, Dr. Andrew Wakefield claimed that there was a link between the Measles, Mumps and Rubella vaccine (MMRV) and Autism Spectrum Disorder (ASD). Geospatial technology will be used to show how the number of Autism cases and their geographic distributions are compared to the number of MMR cases, and where their victims were diagnosed. A number of geospatial technology tools will be employed including spatial correlation, spatial overlay, spatial filtering, remote sensing imagery, triangulated irregular networks. Looking at the prevalence of the two diseases before Dr. Wakefield's study, and after the results of his study were released, we hope to find out if there is a correlation between the diseases spatially.

Mentor: Wanxiao Sun

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 27

## **Phospho-regulation of the Scaffolding Protein Mid1**

Presenter: Jennifer Phelan

Cancer is a disease of improper and uncontrolled cell division. Both human and fission yeast cells divide using an actomyosin ring which constricts to physically divide the cell in two, making fission yeast an ideal model for understanding this process. The scaffolding protein, Mid1, is essential for medial placement of the contractile ring; cells lacking Mid1 form disorganized rings and divide asymmetrically. Our previous research has shown multiple intracellular kinases directly phosphorylate Mid1. This project illuminates the role of these phosphorylation events. To understand phospho-regulation of Mid1, phosphorylation sites are mutated to prevent modification by such kinases. Mid1 mutants divide faster than wild-type cells. However, when treated with cytoskeletal destabilizing agents the cells cannot continue with division. Current studies focus on highlighting the role of specific phosphorylation sites and the effects of compromising the cytoskeleton in mutant cells.

Mentor: Dawn Clifford Hart

HENRY HALL ATRIUM 28

## **Phylogenetic Relationships within the Neotropical Plant Genus *Lymania* (Family *Bromeliaceae*) based on Several DNA Regions**

Presenter: Caleb James

The plant genus *Lymania* (family *Bromeliaceae*) consists of nine species of narrow geographic distribution within neotropical forests. Members of *Bromeliaceae* have undergone adaptive radiation, and there is evidence to support rapid radiation events along the lineage of modern *Lymania*. More recently, *Lymania* species have suffered from massive habitat loss due to human activity. Recent phylogenetic studies have provided weak support for a monophyletic *Lymania*, but relationships within the genus have not been fully resolved. A phylogenetic analysis of the genus was performed using DNA sequences from four chloroplast regions (matK, psbA-trnH, trnL-trnF, and ndhF) as well as the nuclear gene, g3pdh. Preliminary analyses still support a monophyletic *Lymania*, but relationships among several genera remain unresolved. Analysis of phylogenetic branch lengths suggests a recent relatively high extinction rate in the genus, possibly due to the combination of habitat loss and narrow endemism.

Mentor: Timothy Evans

HENRY HALL ATRIUM 29

## **Extraction of Pesticides from Contaminated Soil via Cyclodextrin Complexation**

Presenter: Bertil Nshime

Cyclodextrins (CDs) were successfully used to extract commonly used pesticides from contaminated soil via CD complexation, a more environmentally friendly method compared to surfactants and organic solvents. A combination of five CDs ( $\alpha$ -CD,  $\beta$ -CD,  $\gamma$ -CD, hydroxypropyl- $\beta$ -CD, and Methyl- $\beta$ -CD) and eight pesticides (2,4-D, alachlor, acetochlor, diazinon, dicamba, dimethanamid, metalochlor and propanil) were examined in this study. It was found that a linear relationship exists between the concentrations of the M- $\beta$ -CD and alachlor, which generally indicates that the amount of pesticide extracted depends on the concentration of the cyclodextrin present. With some pesticide-cyclodextrin combination, it was found that as the concentration of cyclodextrin increases the CD-pesticide inclusion complex precipitated out of solution, thus reducing the solubility of the pesticide. Overall the most effective extractants based on this study were found to be HP- $\beta$ -CD and M- $\beta$ -CD.

Mentor: Andrew Lantz

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 30

## **Life as an Animal Care Intern at John Ball Zoo**

Presenter: Jennifer Tagett

In this presentation I will show what it is like to be an Animal Care Intern at John Ball Zoological Garden. I will explain my daily routine and the hard work that it takes to be successful in a zoo setting. My poster will include photos of myself while working as well as many others including the animals I interacted with. I worked primarily in the Tropics building so most of my presentation will reflect that experience. I was also able to do my own project where I observed how different types of enrichment affected the corral animals, which I will explain further in my presentation. This presentation will depict my 12 weeks at John Ball Zoo and how the experience has helped me with decisions about my future. Hopefully, after hearing what I have to say, others will realize that being an Animal Care Intern is a worthwhile experience, and that once-in-a-lifetime experiences can be well worth the sweat and blood.

Mentor: Terry Trier

HENRY HALL ATRIUM 31

## **Connecting Differences in Phenology to Changes in Arctic Plant Communities**

Presenter: Jennifer Liebig

Arctic plant species have different growth and reproductive patterns; in the short Arctic growing season, some species will begin growing or flowering earlier than others. When a species' growth and reproduction are triggered by temperature rather than available light, climate change can affect the timing of growth and blooming of that species. Since there is variation among species in the timing of these growth and reproductive events, change in temperature will affect different species in different ways. Using data from a long-term warming experiment in northern Alaska, we examine whether these differences are reflected in community change. The poster illustrates how differences in phenology are used to look for changes in the community.

Mentor(s): Robert Hollister, Jeremy May

HENRY HALL ATRIUM 32

## **Hawthorn Extract: Viable Treatment for Cardiovascular Disease or Unscrupulous Herbal Supplement?**

Presenter: Andrea Lowing

Hawthorn leaves, berries and flowers have been used to treat high blood pressure. It is hypothesized that Hawthorn extract acts as a vasodilator thus increasing the size of the lumen by relaxing the smooth muscle in the walls of blood vessels. This occurs by decreasing the amount of calcium present in the cytosol by increasing the effectiveness of the  $\text{Ca}^{2+}$ -ATPase pump or by altering the  $\text{Na}^{+}$ - $\text{Ca}^{2+}$  exchanger. With this decrease in cytosolic calcium, the calcium unbinds from calmodulin causing myosin phosphatase to remove phosphate from the myosin thus causing the smooth muscle to relax. Arteries were dissected from porcine organs and mounted in organ baths coupled to force transducers. The commercially available Hawthorn extract used in these studies did not have a significant effect on coronary or pulmonary arteries. The denuded and intact coronary arteries exhibited a significant relaxation at higher concentrations which was likely due to the ethanol that was used in the extract.

Mentor: Francis Sylvester

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

## HENRY HALL ATRIUM 33

### **Literature Review of High School Football Periodization Training Programs**

Presenter(s): Michael Carbott, Chris Burdis

You must win off the field, in order to win on the field. The purpose of this study was to find the most effective way to periodize train high school football players, and maximize strength and power performance before, during, and after the season. This study is significant to the strength and conditioning community because it provides a comprehensive layout that is not readily available in literature for high school football. The researchers conducted an extensive review of literature in order to attain the data. A limitation of this research was that the designed program was not implemented on any athletes; it was merely a program based on past literature. A benefit of this study is that it will provide football coaches with a detailed, educated resource to create training programs for their own team. This should be beneficial at the high school level, as it is often not feasible to have a professional certified strength and conditioning coach to guide athletes in a training program.

Mentor: Amy Crawley

## HENRY HALL ATRIUM 34

### **Investigation of Phosphorus (III) Nitrogen Compounds**

Presenter(s): Anthony Montoya, Ben Thome

Macroscale synthesis of phosphorous (III) nitride is a process still in development. There is little known about bulk phosphorous (III) nitride, but it is expected to be applicable for use in electronic materials. Synthesis of this product was attempted using lithium nitride and several electrophilic phosphorous sources with formula  $PX_3$ . Reactions using  $PCl_3$  have resulted in the formation of an insoluble orange solid. Reactions using  $(CH_3O)_3P$  and  $[(CH_3)_2N]_3P$  have produced insoluble off-white solids. Several reactions using alkyl and aryl phosphorous dichlorides have also been performed and produce slightly soluble polymeric compounds. These results have been characterized using infrared and

NMR spectroscopy.

Mentor: John Bender

## HENRY HALL ATRIUM 35

### **Construction and Use of Viral Nato3 Overexpression Vector in the Developing Neural Tube of *Gallus gallus*.**

Presenter: Michael Wilson

Nato3 is a basic helix-loop-helix gene endogenously expressed along the ventral midline of the developing central nervous system throughout gestation. Dopamine neurons and glia-like cells arise from the neural progenitors in the floor plate of the midbrain in midgestation, but little is known about the role of floor plate specific genes late in development. In order to determine the role of Nato3 in floor plate cell differentiation. We generated a retroviral vector containing Nato3 using a modified RCAS retroviral system. RCAS, derived from an avian retrovirus, can integrate into the genome of infected chick cells to allow persistent expression of Nato3 into late development. We used a modified form of RCAS, G-RCAS, which allows for the integration of Nato3 into the G-RCAS vector through the Gateway system. We are currently generating retrovirus specific for infection of chick tissue using tissue culture and microinjection methods.

Mentor: Merritt Taylor

# Poster Presentation Abstracts

BEGINNING AT 9:00 AM

HENRY HALL ATRIUM 36

## **Determining Influences on a Hirbemerdon Tepe Bronze Age Axe-head Mold**

Presenter: Kyle Legant

This poster shows the influences present in Hirbemerdon Tepe during the Bronze Age. Using data from several excavations over the last century I found trends that existed over time and geographic area in the size and shape of Bronze Age ax-heads. Matching the found trends to an ax-head mold found at Hirbemerdon Tepe it is possible to see who was in control of the area at time of deposition. The mold fits into Deshayes' haches a collet category, which can vary in terms of blade length, width, decoration on collet; it is into one of Deshayes' categories that I intend to fit the mold. By finding which ax-heads within this category the mold is most like I will be able to determine which empire was in control of the Tepe at time of deposition.

Mentor: Mark Schwartz

HENRY HALL ATRIUM 37

## **Creating an Almost Perfect Connect 4 Player**

Presenter(s): Eric Bouwhuis, Logan Westrick, Kyle Stanford

This Student Scholars Day (SSD) project tests the expertise of the artificially intelligent (AI) program created by three different CIS 163 honors students in a Connect-4 game. The first project of the year in the honors CIS 163 class was to create a Connect-4 game where a user could challenge a computer in a game of Connect-4. These three students extended the initial assignment and their efforts in creating a system that could truly compete against a human opponent is examined. The poster presents two major themes: First, the integration of the interfaces of the AI systems was non-trivial, and the project management issues that resulted from these integrations are examined. The solutions that were employed to over come these obstacles will be presented. Second, there are many possible AI approaches to playing the Connect-4 game. The poster presents the different approaches the students took in creating their own AI system. During SSD, a working Connect-4 game will be presented.

Mentor: Roger Ferguson

HENRY HALL ATRIUM 38

## **The Lethality of the k11209 Line of *Drosophila melanogaster***

Presenter: Amanda Mercer

The k11209 line of *Drosophila melanogaster* contains the transposon PlacW inserted in the second chromosome. It is homozygous lethal. If the transposon insertion is the cause of lethality, removing it should produce wild type flies. We removed PlacW from the k11209 genome by mating k11209 flies with a line containing the enzyme transposase. 18 lines of offspring lacking PlacW, called delP, were collected and back-crossed with the k11209 stock. We hypothesized this would produce wild type flies. However, this produced a lethal phenotype. This could be caused by an imprecise excision of the transposon from the delP lines or a second site lethal mutation. To distinguish between these possibilities, 9 delP lines were crossed with a line that had a deletion where PlacW had been. The offspring of this cross were viable, indicating that PlacW had excised precisely from the delP lines. We are currently attempting to remove the hypothesized lethal mutation.

Mentor: Bruce Ostrow

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 39

## **Designing Spaces, Mapping Disciplines: Toward Better Collaboration Between Writing Centers and Libraries**

Presenter: Jennifer Torreano

The Mary Idema Pew Learning and Information Commons at Grand Valley State University will house a new collaboration between the writing center and the library. I conducted a research project to answer the following questions: How can writing center theory and practice, and core principles in libraries, inform each other and push each other toward better collaborative models? Given their similarities and differences, how can libraries and writing centers collaborate in physical spaces? After studying existing collaborations, I examined writing center and library professional documents to discover areas of overlap and divergence. I also attended library design planning meetings and conducted interviews of program directors, librarians, and administrators about their visions for the new library. My findings indicate that new consultation models, innovative space design and advanced technology could streamline the writing process for students, as well as modeling effective collaboration.

Mentor: Ellen Schendel

HENRY HALL ATRIUM 40

## **Unusual Variation in the Branching Pattern of the Unpaired Arteries of the Abdominal Aorta**

Presenter: Bryan Curnutte

Demonstrated typical anatomy of the human abdominal aorta shows that the unpaired branches the superior and inferior mesenteric arteries and the celiac trunk diverge from the aorta anteriorly, superior to the renal arteries, with slight angular variations. Presented is an example of an unusual variant of the spatial relationships of the aortic branches. While the renal arteries branch in typical fashion, the positions of the superior mesenteric artery and the celiac trunk are laterally placed on the left of the abdominal aorta. This creates a pattern where there is a close spatial relationship between the superior mesenteric artery and the left renal artery, and an extended common hepatic artery. Not only do these variants demonstrate an unusual developmental pattern, they may also present a challenge to surgeons attempting transplantation of abdominal organs such as the liver.

Mentor(s): Reed James, Tim Strickler, Dawn Richiert

HENRY HALL ATRIUM 41

## ***Drosophila* Genomics: Sequencing and Annotating a Genome in the Classroom**

Presenter(s): Jordan Evans, Carter Brown, Mary Whitworth, Matthew Simon, Kristine Ostby, Elizabeth Zavala-Arellano, Ryan Sawyer, Trisha Tomkins, Alyson Greenwell

Genomics is a rapidly developing field that is proving to be relevant to many areas of biology and medicine. This course provides students with an enhanced understanding of genomics for those potentially interested in entering the field. Of the 12 *Drosophila* species that have been sequenced, only the fourth ('dot') chromosome of *D. melanogaster* has been completed. The Genomics Education Partnership enables undergraduate students to assist in the completion of the genome sequence and annotation of the 'dot' chromosome from selected *Drosophila* species. Students are assigned a DNA fragment to 'finish' the DNA sequence using the resources of the genome sequencing center at Washington University at St. Louis. Students then annotate genes and the location of the gene in the dot chromosome between each species and *D. melanogaster*. The research contributed by students is placed into a database of genomic information, furthering scientific knowledge of comparative genomics in *Drosophila*.

Mentor: Martin Burg

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 42

## **The Development of a Novel Gadolinium Chelating Agent, for MRI contrast agents, Employing Carbamoylmethyl-Phosphine Oxides (CMPOs)**

Presenter(s): Kirsten Tissue, Charles DeLisle, Felix Boucher

Medical resonance imaging (MRI) is sometimes performed using Ionized gadolinium (Gd) as a contrast agent. As gadolinium is a nephrotoxin, chelating agents are needed to prevent toxicity to the patient. Current chelating agents are available; however, they suffer from a lack of water solubility or by having a negative effect on water relaxivity rates. An ideal chelating agent binds well to Gd while allowing it to simultaneously interact with individual water molecules. Our lab is developing a novel class of chelating agents containing carbamoylmethyl phosphine oxides (CMPOs), which have the potential to be more soluble in water, by the manipulation of side groups, than current commercially available agents while retaining a favorable effect on water relaxivity.

Mentor: Shannon Biros

HENRY HALL ATRIUM 43

## **Take 10 for Chem: Problem-Solving Videos by Students, for Students**

Presenter(s): Kaitlin Downey, Andy Starr, Eliscia Fought

In the past year, the student-generated screencasting blog (<http://mi-chemed.net>) nearly doubled in size to over 50 tutoring videos in organic and general chemistry. However, student usage did not increase significantly despite a link to the GVSU library and inclusion in the Google search engine. Recent changes to the registration system and advertising strategy have led to a surge in usage, which resulted in a number of interviews with student users. The issues identified in these interviews will inform improvements in the blogs content and structure.

Mentor(s): Nathan Barrows, Deborah Herrington

HENRY HALL ATRIUM 44

## **A Statistical Consulting Experience: Studying the Relationship between Business Environment and the Perception of Women as Managers**

Presenter(s): Stacey Kowalczyk, Ryan Corgan

Dr. Carol Sanchez, Professor of Seidman Management, surveyed students in seven Latin American countries to examine the relationship between national business environment and the perception of women as managers. Her research question is if differences in national business environment affect how people in those countries perceive women as managers. She is also interested in examining if gender, organizational trust, and organizational entrepreneurship affect people's perception of women as managers. As statistical consultants, our role was to assess the survey data, perform the appropriate analysis, and present final results for the questions of interest.

Mentor(s): Carol Sanchez, Neal Rogness

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 45

## **The Role of Visual Art in the Development of a Special Need Student**

Presenter(s): Carly Seyferth, Elizabeth Wood, Jacob Stillson, Chelsea Turner

Grand Valley State University Art Education students prepared, taught studio art projects to 19 visiting Special Need Students in two semesters. The visiting group age varied 16-22 years old and cognitively functioned at a 1st grade level. The Fall2010 project was based on the Big Idea of Alter Ego that resulted a role-playing act as one of the outcome. The Winter2011 project was broken down to four Art lessons, integrating Social Science. Each teaching practice was visually documented, and written reflection was collected and shared within the Art Education students. The group applied their research skill through a.) prepare the project, b.) problem solve emerging ideas or/and technical challenges, c.) invent new communication strategies. The poster session will also share how this non-traditional teaching practice can be applied in a K-8 classroom as well advocate for the power of art and art making in the development of a special need student.

Mentor: Katalin Zaszlavik

HENRY HALL ATRIUM 46

## **A Statistical Consulting Experience: Evaluating Golf Swings**

Presenter(s): Samuel Reed, Patrick Nothaft

Heather Gulgin, of the faculty in the Movement Science Department, wanted to know if there were any correlations between physical movements, body types and golf swing faults. She collected various body measurements, proctored a physical fitness test and recorded the participants' golf swings using a video camera, to look for some previously established golf swing errors. Our job as statistical consultants was to run correlation analyses of the data set she created from the participants' body measurements, level of physical fitness and golf swing. By comparing the correlation coefficients, we will help Professor Gulgin determine if there is any relationship with various physical limitations and specific golf swing faults. In addition, comparison of these correlation coefficients would determine if there is any relationship between body somatotype and typical golf swing faults.

Mentor(s): Neal Rogness, Heather Gulgin

HENRY HALL ATRIUM 47

## **The Effect of Nato3 Misexpression on Neural Progenitor Cell Differentiation in the Rostral Neural Tube**

Presenter: Douglas Peterson

Nato3, a basic helix-loop-helix protein, is expressed in the floor plate region of the midbrain in the developing embryo. To determine if Nato3 is sufficient to induce floor plate cell characteristics in other regions of the developing neural tube, we have misexpressed Nato3 using in ovo electroporation. We are monitoring neural progenitors and their progeny that misexpress Nato3 during development using a bicistronic EGFP reporter expression vector. Using immunohistochemistry we have observed the effect of Nato3 misexpression on neural progenitors in the hindbrain and midbrain. In the hindbrain, Nato3 misexpression is not sufficient to induce DA neurogenesis, but could induce expression of some floor plate markers. Our data indicates that misexpression of Nato3 is sufficient to induce immature DA neuron markers in the posterior midbrain.

Mentor: Merritt Taylor



# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 48

## **A Statistical Consulting Experience: Evaluating the Effectiveness of the SLA Program**

Presenter(s): Lauren Laman, Jared Kabara

Karel Swanson is the Program Director of the Structured Learning Assistance (SLA) Program at Grand Valley State University. The SLA Program is attached to historically difficult courses and helps students by providing additional resources and academic support to assist in the understanding of course material. Dr. Thomas Pentecost, a faculty member who has taught a General Chemistry SLA course is also interested in the effectiveness of the program within the field of Chemistry, and has provided much data in which to analyze SLA versus non-SLA student outcomes. Our goal as statistical consultants was to examine student performance in the courses BMS 209, BMS 290, and CHM 115 as a measure of the effectiveness of the SLA Program.

Mentor(s): Karel Swanson, Neal Rogness, Thomas Pentecost

HENRY HALL ATRIUM 49

## **Complementary and Alternative Medicine: The Power of Prayer**

Presenter: Alyce Heinlein

Complementary and alternative medicine (CAM) is described as a group of diverse medical and healthcare systems, practices and products that are not presently considered part of conventional medicine (Galantino & Geigle, 2009, p.225). The top two forms of alternative medicine used are prayer for oneself and prayer for another. Numerous documented cases have concluded that prayer is a powerful tool for both the mind and spirit in the process of healing. Praying provides a sense of peace and restoration for one's body. Spirituality and prayer have both been associated with the healing processes of the body. Taking faith a step further than prayer, this paper also addresses how attending church has been linked to healthier individuals. There is still much research that can be performed on the healing power of prayer.

Mentor: Sheldon Kopperl

HENRY HALL ATRIUM 50

## **The Influence of Microhabitat on Nest Tree Selection of Southern Flying Squirrels**

Presenter: Katherine Belknap

Southern flying squirrels (SFS) are common in the GVSU ravines, but are rarely seen because they are nocturnal. Twelve SFSs were radio-collared and tracked in the ravines in order to study their winter ecology. As part of this project, eighteen den trees were identified. These trees will be identified to species and their level of decay will be accessed. I will also measure their diameter-at-breast height, determine the basal area around den trees, and quantify the amount of under-story, mid-story, and upper-story cover around den trees. I will take these same measurements for a set of randomly-selected trees in order to have a comparison group for SFS den trees. These measurements will help determine microhabitat features that are most important in SFS winter den site selection.

Mentor: Joseph Jacquot

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 51

## **Formation of Dolomite in the Silurian Bisher Formation in Northeastern Kentucky**

Presenter(s): Stephen Shields, Kyle Eno, Michael Stockoski

The Silurian Bisher Formation, exposed at the Herron Hill Roadcut on Highway 9 between Vanceburg and Maysville in northeastern Kentucky, is a dolomitic formation that conformably overlies the Estill Shale in the Silurian Crab Orchard Group and unconformably underlies the Devonian Ohio Black Shale. The depositional environment is believed to have been a high energy, shallow water, sub-tidal environment. Point counts were done on thin sections of the dolomite using a petrographic microscope to determine crystal size and crystal shapes such as non-planar, sub-hedral, and euhedral. Our thin sections show a dolomite grain size that ranges from 10 to 200 $\mu$ , in addition to quartz grains and echinoderm grains. The size and shape of the dolomite crystals may help us determine the temperature of formation and diagenetic environment in which the dolomite formed.

Mentor: Patricia Videtich

HENRY HALL ATRIUM 52

## **Thermoelectric Impedance Spectroscopy of P-N Type Materials**

Presenter: Joe Kedrowski

It is well known that current flowing across a P-N type junction will result in a temperature gradient, known as the Peltier Effect. By the associated Seebeck Effect, this thermal gradient results in a potential difference. The thermal gradient, and the associated thermal voltage, takes time to develop. Under alternating current excitation, this could result in a thermal voltage that lags the driving signal, giving the appearance of a complex impedance. We present results from our measurements of several P, N and P-N type materials.

Mentor: Harold Schnyders

HENRY HALL ATRIUM 53

## **Probing the Role of Phosphorylation in the Mechanism of Formin mDia2**

Presenter: Zachary Garlets

Diaphanous-related formins are a highly conserved family of proteins that influence numerous cellular processes by regulating the cytoskeleton. However, since the formins are an important focal point which affect so many cellular processes, it is vital that they are tightly regulated and only activated in response to cellular signals, as uncontrolled formins can result in dire consequences for a cell. The regulation of one specific mammalian formin, mDia2, involves the two ends of the protein binding to each other to keep it in an inactive complex. We have identified a specific cellular protein (PAK1) that phosphorylates mDia2 and potentially serves to activate the formin in cells. We have also identified the specific amino acid sites on mDia2 that are modified by PAK1. Using a combined approach of site-directed mutagenesis, protein biochemistry, isothermal titration calorimetry, and fluorescence anisotropy, we have discovered a novel mechanism of formin protein regulation in cells.

Mentor: Brad Wallar

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 54

## **GV-1 Chemical Derivatives as Potential New Antibiotics**

Presenter: Julie Wesselink

Despite advancements in many areas of human medicine, infectious disease continues to be a leading cause of morbidity and mortality worldwide. Improper and excessive use of antibacterial compounds has led to the rise of resistant species of bacteria like Methicillin Resistant *Staphylococcus aureus* (MRSA), Vancomycin Resistant *Enterococci* (VRE), and Extreme Drug Resistant *Tuberculosis* (XDR-TB). We have found a possible alternative that would replace the current ineffective treatment methods a potentially new class of antibiotics that inhibits Gram-positive bacteria growth. These chemical compounds have shown inhibition against *S. aureus* and *E. faecalis*, and so MRSA and VRE strains were then tested. Inhibition by the newly developed compounds was identical to their inhibition levels against non-resistant strains of both species. These carboxylic amide compounds are novel, non-Penicillin based antibiotics, and could be used to treat MRSA and other Gram-positive infections.

Mentor: Rod Morgan

HENRY HALL ATRIUM 55

## **A Narrative Life Story of Activist Phyllis Lyon and Her Reflections on a Life with Del Martin**

Presenter: Dianna Johnson

Del Martin and Phyllis Lyon's story begins during the 1950s and throughout the gay, lesbian, and women's equal rights issues and gay marriage controversy. The research describes the historical significance of Phyllis Lyon and Del Martin as founders of the Daughters of Bilitis and mothers of the Lesbian Rights Movement. Despite fear aroused by the Cold War, the Red Scare or accidental outings of gays and lesbians; despite women's expected gender roles; and despite societal, medical and religious beliefs that considered homosexuality illegal, immoral, pathological and perverted; the 1950s is where the life story of Martin and Lyon took root. This thesis will frame their relationship within the history, culture and setting of their 55 years together. Personally and professionally, I want to understand the founding history of the Lesbian Rights Movement while learning about the NASW values of service, social justice, integrity, and the importance of human relationships.

Mentor: Dorothea Epple

HENRY HALL ATRIUM 56

## **The Combined Effects of Niacin and Caffeine in Doses Common in Energy Drinks on the Vasoactivity of Porcine Coronary Arteries**

Presenter: Patrick Roach

Caffeine, a known vasoconstrictor, is an almost universal ingredient in energy drinks. While the effects of caffeine on blood vessels have been studied in depth, little is known about the vasoactivity of many of the other, less common ingredients found in energy drinks, which are unregulated by the Food and Drug Administration (FDA). In this ring study using porcine coronary arteries, the effects of niacin (Vitamin B3), will be studied both singularly, and in conjunction with caffeine. Niacin is reported to cause flushing of the skin when taken in high doses, suggesting that it is a vasodilator. If this is the case, its effect would be opposite to that of caffeine. With both of these ingredients present in many popular energy drinks, it is the purpose of this study to determine which plays a more dominant role in the vasoactivity of blood vessels when ingested.

Mentor: Francis Sylvester

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 57

## **Assessment of Cranial Suture Density in Living Individuals**

Presenter: Megan Glazier

Introduction: The objective of this study was to obtain the relative bone density throughout the sagittal, coronal and lambdoidal cranial sutures. Methods: Thirty-six digital, high-resolution computed tomography images were obtained from St. Mary's Hospital. These scans were analyzed using an analogical software (Amira), to find the relative density within the sutures of an individual, measured in Hounsfield units (HU). Differences in the bone densities throughout the cranial sutures of an individual were measured. Results: Density of the bone in the middle of the suture is consistently less in younger individuals, indicating a lack of sutural fusion. Density is greater in older individuals, indicating sutural fusion with increased age. Conclusion: We have found that the use of CT scans can show that bone densities within a suture vary, demonstrating differences in suture closure. These findings may lead to future research opportunities involving CT scans and cranial sutures.

Mentor: Reed James

HENRY HALL ATRIUM 58

## **Distance Embodied: Connections between Psychological and Physical Distance**

Presenter: Kristie Mielke

Theories of embodied cognition emphasize that sensory experiences aid in our understanding of abstract concepts. For example, spatial distance has been found to predict feelings of psychological distance. Past research suggests that cues of spatial closeness/distance increase feelings of psychological closeness/distance that is, the feeling of emotional attachment felt between the self and close others. The current study examined perceptions of physical and psychological closeness between individuals and their best friends from high school, a tenuous relationship for freshmen. We hypothesized that feelings of psychological closeness to one's best friend will predict perception of physical closeness between them. Participants responded to a series of questionnaires assessing psychological closeness between their best friend and themselves, as well as a measure of physical closeness. Results indicate that greater psychological closeness inferred perceived physical closeness.

Mentor: Kristy Dean

HENRY HALL ATRIUM 59

## **Periodization Program for Collegiate Women's Rugby**

Presenter: Jeff Spoelhof, Jori Teshima

The purpose of this study is to determine the best periodization scheme to provide optimal performance for a collegiate level women's rugby player between the ages of 18 and 24. This study provides insight for a sport that has been in existence for only 40 years compared to men's rugby which has been in existence since the early 19th century. Because women's rugby has only existed for a short time period, thus having limited studies completing regarding training for this sport, several limitations occurred with this study. Women's rugby is typically a low population sport and is normally played in areas of higher income. Creating the best periodization scheme for a female collegiate rugby player should increase the ability of coaches to create effective performance enhancing programs for their athletes. This will ultimately lead to further research and development for training programs within this unique population.

Mentor: Amy Crawley

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 60

## **Toward the Synthesis of Cyclic Heterocyclic Polyamides as Tetraplex DNA Interactive Ligands Using Solid Phase Synthesis**

Presenter: Michael Agius

Higher-order DNA conformations can form within regions of DNA that are rich in guanines. Telomeric DNA located at the end of human chromosomes, is guanine-rich and can fold into tetraplex DNA. Compounds that should interact and stabilize telomeric DNA are being developed. Synthesis of heterocyclic compounds as monomeric units used for solid phase synthesis will be described. The intermediate monomeric units synthesized include Fmoc protected 4-amino-N-methyl-pyrrole-2-carboxylic acid and Fmoc protected 3-amino-benzoic acid. As long term goals, the monomeric units will be linked via polyamides by solid phase synthesis. The final cyclization reaction will be achieved via the use of peptide coupling reagents and obtained after cleavage from the resin.

Mentor: Toni Rice

HENRY HALL ATRIUM 61

## **The Terror Famine in the Ukraine 1932-1933**

Presenter: Dianna Johnson

The entire short history of the USSR was fraught with stories of terrorization people and mis-management by the Communist Party. In the period 1928 through 1934 the Soviet Government experimented to learn what the people could endure and what they would retaliate against. Propaganda and persuasion soon gave way to “dekulakization” and coercion in order to make the peasantry give up the autonomous village and replace it with the state-run collective farm. Finally, the Red Broom resulted in mass starvation and by 1934 the surviving peasants were almost totally collectivized. In the process of working out a successful policy, terror became one of the few constants of the regime, and hunger one of its most successful tactics. It is therefore reasonable and just to call the great 1932-1933 famine in the Ukraine and elsewhere in the USSR a “terror-famine.”

Mentor: Edward A Cole

HENRY HALL ATRIUM 62

## **A Proposed PLA Recycling Project Designed to Produce a Cleaner for the University Community**

Presenter: Ryan Flaherty

The purpose of this project is to demonstrate the feasibility of producing a green cleaner “in-house” using the Poly-Lactic Acid (PLA) cups currently in use on campus. By doing so the university may save money on cleaning supplies when compared to cleaners presently in use that are purchased from third-party vendors. Herein is reported an optimized process for PLA hydrolysis. We will also report a potential cost savings analysis for the university and potential uses for this cleaner.

Mentor: Matthew Hart

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

## HENRY HALL ATRIUM 63

### **Refrigerated Stability Study of CBC and WBC Parameters**

Presenter(s): Erika Narutsch, Amanda Faber, Shelby Wood

The purpose of this study is to determine the effect of refrigeration of blood stored in EDTA tubes on the parameters measured in a complete blood count as well as on the automated differential. Data will be collected on the Sysmex 2100 hematology analyzer at Greenville hospital in Greenville, Michigan. Each blood sample will be tested at zero, 12, 24, 36, 48, 56, and 72 hours. The parameters being tested are WBC, RBC, HGB, HCT, PLT, RDW, neutrophil %, lymphocyte %, monocyte %, eosinophil %, basophil %, NRBC-WBC, and reticulocytes. Our hypothesis is that the results of the tests will be similar at each time interval. Based on the results of this study, samples taken from patients may be tested for an extended period of time, particularly when doctors would like to add a test to the patient order after the blood has been drawn, thus preventing the need for additional blood draws, resulting in lower costs for the patient and faster reporting of results.

Mentor: Linda Goossen

## HENRY HALL ATRIUM 64

### **Target Ball: Determining the Relationship between Bilateral Transfer and Repetition**

Presenter(s): Dan Greer, Greg King, Troy Zeigler

The purpose of this study was to compare and contrast the level of improvement in subjects' motor skills through bilateral transfer and unilateral repetition. Past studies showed that training by means of either method has increased ability in subject performance. In this experiment, both methods were assessed under similar conditions to compare and contrast results. Between 30 and 40 college students were chosen as subjects, divided into four groups based on gender and learning method. This experiment had each subject throw a ping-pong ball at a board that resembled an archery target. The study had a pre-test, practice phase, and post-test for both transfer conditions. The bilateral transfer group performed the throwing action with their non-preferred hand, while the unilateral repetition group performed the same throwing action with their preferred hand. Using a t-test, the results of each subject's pre- and post-tests were analyzed to determine statistically significant differences.

Mentor(s): James Scott, Bradley Ambrose

## HENRY HALL ATRIUM 65

### **Is What You See What You Get? An Exploration of Body Composition and Body Perception in College Students**

Presenter(s): Bridgette McGuire, Jessie Miller, Stefan Hitchcock

Studies have found that while women tended to have more concerns than men about their own body perceptions, both strived for a better body image. Through analysis of subjects' body measurements and body perceptions, using specific anthropometric scales, others have concluded that females desired to be thinner while males hoped for a more muscular physique. A survey was administered to college-aged students to reveal the subject's gender, exercise frequency, and perceived body image. Next, body somatotype was measured utilizing the Heath-Carter index. The scale used to assess body image was quantified so that it was comparable to the Heath-Carter index results. The results of the Heath-Carter index were compared to the subject's body perception, via statistical analysis, in order to determine the difference between perceived body image and actual body type. Further difference testing was used to explore a connection between body perception and exercise.

Mentor(s): Bradley Ambrose, James Scott

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 66

## **Sex Differences in Parental Anti-Predator Responses During the Nestling Period in Tree Swallows**

Presenter(s): Rachelle McLaughlin, Lena Spadacene, Marci Baiz, Kyle Bibby, Liberty Hightower, Lisa Bol

Parental effort influences the survival of nestling birds. We examined sex differences in Tree Swallow parental responses to a potential human predator in 2009, and to a mounted raccoon model in 2010. Parents treated the human and model raccoon predator the same. Brood size, weather conditions, and time of day did not influence attack rates. There was no significant difference in the number of attacks made by males and females. Both sexes attacked more frequently during the second half of the nestling period. Females attacked consistently across the 5 min observation period, males did not. Females that attacked often during the first half of the nestling period also did so in the second half. Males did not show this pattern. Parental nest defense efforts were not coordinated. Male defense efforts may be related to male physical quality. Individual attack rates were not repeatable between years. Parents increased defense as nestlings got older, but male and female patterns differed.

Mentor: Michael Lombardo

HENRY HALL ATRIUM 67

## **Testing of Novel Antimicrobials to Fight Antibiotic Resistance**

Presenter: Brittany Wildgen

Infectious diseases continue to be internationally rampant and a leading cause of mortality even with the use of antibiotics and vaccinations. In an effort to combat emerging bacterial antibiotic resistance, we synthesize chemical compounds and test for high activity against Gram-positive bacteria, such as methicillin resistant *Staphylococcus aureus* (MRSA). Our leading active compounds are subjected to a minimum inhibitory concentration (MIC) test and results containing a MIC of 8ug/ml or less are then tested for minimal binding to human serum protein (HSP). We analyze our active novel compounds through IR and NMR spectroscopy in order to corroborate the structural identity. We continue to search for an antibacterial compound that preserves its minimum inhibitory concentration after being combined with human serum protein as this would be highly effective in destroying disease causing bacteria in the clinical setting.

Mentor: Robert Smart

HENRY HALL ATRIUM 68

## **The Effects of Auditory Distraction on Reaction Time**

Presenter(s): Joseph Presutti, Michael Phillips

General assumptions indicate that simple reaction time may be affected by certain auditory stimuli. Sounds such as traffic noise, crowd noise, and rock music have been purported to hinder reaction time, while sounds such as classical music and nature sounds may improve reaction time. This study analyzed the performance of subjects on reaction time tests under each auditory condition and also under a silent condition. By assessing the differences between these values, this study determined whether reaction time to a visual stimulus could be heightened or worsened due to exposure to auditory distraction. We utilized t-tests to determine whether these differences in performance are significant and to determine whether these data supported our hypotheses.

Mentor(s): Bradley Ambrose, James Scott

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 69

## **Periodization Program for Men's Collegiate Tennis**

Presenter(s): Deborah Dopp, Dustin Mier

Collegiate tennis is a competitive sport requiring a unique balance of muscular strength, muscular endurance, and cardiovascular ability. In competition, many tennis players find themselves fatigued in the final stages of a tennis match, thus causing impaired performance. The purpose of this study was to develop an advanced strength and conditioning plan for improving the fitness of a male collegiate tennis athlete. This study was performed through the use of a comprehensive literature review, and is limited in that the plan developed was theoretical, and as such no definitive statement as to its efficacy can be made. This study is significant in that the program developed could be applied to improve the performance of a collegiate male tennis athlete and that even though the program is targeted toward a collegiate male tennis athlete, the information could be generalized and applied by anyone with the specific goal of improving performance in the sport of tennis.

Mentor: Amy Clawley

HENRY HALL ATRIUM 70

## **Hole-in-One or Bust: The Effect of the Performance Environment on a Golf Putting Task**

Presenter(s): Katelyn Buchholz, Saltana Alsoofy, Chelsea Kobus

The purpose of this research was to determine the effect of the performance environment--with or without distractions--on a golf putting task. Some studies suggest the best golf putting scores are achieved when subjects are tested in a quiet location with no distractions. Others suggest that participants perform at their best when there is pressure associated with their tasks. Subjects were randomly assigned to an environment with or without distractions. We scored participants by the accuracy of their putts using a concentric circle scoring system. The data were analyzed using a t-test to investigate the differences between the scores for the distractions and no distractions groups. The independent variable was the performance environment, and the dependent variable was the participants' scores on the putting task. Based on the literature we adopted a null hypothesis.

Mentor(s): James Scott, Bradley Ambrose

HENRY HALL ATRIUM 71

## **Vasodilation and Mega Man Vitapack**

Presenter(s): Wade Weaver, Christopher Howard, Matthew Figlewicz, Chad Kuntz, Willaim VanDeCar, Teodora Fatchikova

Vasodilation is a desirable effect for athletes as it increases blood flow to muscles, thus enhancing oxygen delivery. The increased oxygen delivery may minimize the amount of lactic acid present in exercising muscle resulting in a concomitant delay in the onset of fatigue. The effect of the NO component of Mega Man vitamins, a presumed vasodilator, will be studied using a porcine heart model. The anterior interventricular artery will be dissected, cut into small rings, and mounted in an organ bath coupled to a force transducer. Dose responses to potassium chloride (vasoconstrictor) and sodium nitroprusside (vasodilator) will be recorded to assess vessel viability. If viable, the rings will be precontracted with potassium chloride followed by exposure to increasing concentrations of the NO supplement. Results from this study should resolve the validity of the manufacture's claim that Mega Man vitamins include a vasodilator postulated to improve athletic performance.

Mentor: Francis Sylvester



# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 72

## **The Bard in the Classroom: A Research and Interview-based Review of Teaching Methodologies**

Presenter: Katelyn Wood

As a classic playwright and poet, William Shakespeare has been and will continue to be a large part of a student's education. In an effort to discover, learn of, and analyze different methods of the pedagogy of Shakespeare in secondary education classrooms, I undertook a research- and interview-based project in order to expose myself to the different approaches utilized. Consisting of methodologies, the analysis of methods, and examples of various teaching techniques, this paper allows the comparison and analysis of how Shakespeare is taught. As an English major with an interest in history, I am combining my fascinations in order to critically analyze and learn about methodology in the field of education. Shakespeare is taught in middle schools and high schools, and as a future secondary education teacher, this project has broadened my horizons as well as give me practice in the field of educational research.

Mentor: Rachel Anderson

HENRY HALL ATRIUM 73

## **Uncovering Cryptic Diversity in the Invasive Aquatic Plant Species, Eurasian Watermilfoil, using DNA Fingerprinting**

Presenter: Heather Hayward

Natural resource managers have noted wide variation in the invasiveness of Eurasian watermilfoil (EWM, *Myriophyllum spicatum*) in different water bodies. Because EWM primarily reproduces asexually, many lake managers believe that genetic variation among populations is lacking and that variation in invasiveness results from environmental differences among lakes. Here, we use a DNA fingerprinting method (AFLPs) to test whether populations exhibiting different levels of invasiveness in Ontario, Canada exhibit genetic variation. We uncover at least four genetically distinct biotypes of EWM in our study lakes: two distinct forms of EWM and two distinct hybrid genotypes (EWM x native northern watermilfoil, *M. spicatum* x *M. sibiricum*). These results demonstrate that genetic variation - alone, or in combination with environmental variation - may underlie variation in invasiveness. Ongoing studies combine genetic and ecological information to further test this hypothesis.

Mentor: Ryan Thum

HENRY HALL ATRIUM 74

## **A Survey of the Economics of the Wars in Iraq and Afghanistan**

Presenter: Kelly Howell

Since the first declaration of war in regard to Afghanistan in 2001, and Iraq in 2003, there has been an unending debate as to the extent of the economic costs and/or benefits of these wars to the United States. The U.S. economy is currently at the forefront of the minds of most Americans, with a recession in swing and the national unemployment level hovering around 9%. This paper will address the research of some of the leading analysts and scholars and their compelling work in the area of these wars and their effects economically, and present a coherent picture of as many of the major costs and benefits of these wars as possible. Some potential costs/benefits are difficult to measure, such as increases or decreases in security. These wars have great implications for the U.S. economy and U.S. taxpayers. I will explore the question of whether they are stimulating or stunting the U.S. economy.

Mentor: Polly Diven

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 75

## **Identifying an Atypical Actin Binding Domain in the Fission Yeast Mid1 Scaffold**

Presenter: Cody Hager

The scaffolding protein Mid1, found in the fission yeast *S. pombe*, functions in the assembly and placement of the actin contractile ring, which is required for cell division. The placement and functionality of the division septum corresponds to the placement of the ring. Therefore, identifying contractile ring proteins that directly associate with Mid1 will contribute to our understanding of proper cell division and equal transfer of the cellular contents. Our preliminary results suggest that Mid1 contributes to the formation and placement of the actin contractile ring through direct association with F-Actin filaments. The main goals of this research project are to identify the actin binding domain in Mid1 and analyze the consequence of disrupting the interaction. To test this, we are using actin cosedimentation assays. After identifying the actin binding region within Mid1, mutants with alterations to the actin binding region will be generated and analyzed for cell division defects.

Mentor: Dawn Clifford Hart

HENRY HALL ATRIUM 76

## **The Coastal Norwegian Floods: The Effects of Global Warming**

Presenter: Matthew Dondanville

In my project, I would like to examine how these affects of Climate Change will directly affect the coastal regions of Norway. Norway is known for its beautiful coastal villages in the Fjords, but what they might become after sea level rise or glacial runoff might be ugly. Norway has a large glacial region and a warm-up in temperature might cause runoff that would devastate river basins, transportation, and cities. Norway has already seen some of these problems and Climate Change is just at the beginning. It is important to map out the low lying towns and see how the temperature increase and precipitation will affect their way of life; from their homes to their crops, all will be affected.

Mentor: Elena Liouimtseva

HENRY HALL ATRIUM 77

## **Chiral Silanes by Asymmetric Substitution at Silicon**

Presenter: Nicole Gibbons

We will present progress we have made towards the synthesis of chiral at silicon asymmetric molecules. Chiral silanes have potential as resolving agents, chiral ligands, chiral auxiliaries and in chiral polymers. We have been investigating nucleophilic asymmetric substitution using prochiral dihydro and dialkoxy silanes. Reaction of these with organolithium compounds in the presence of chiral diamines, leads to monosubstitution and chiral silanes in good yields and modest enantiomeric excess. Recently, Tomooka, et al.(1) have reported good enantioselectivity with 2,2-Bis((4S)-(-)-4-isopropylloxazoline)propane, (BIP) catalyst on cyclic dialkoxy silanes. We will be presenting a comparison of our previous results with sparteine as a catalyst to new results studying 2,2-Bis((4S)-(-)-4-isopropylloxazoline)propane (BIP) as a catalyst. (1) Kazunobu Igawa, Junko Takada, Tomohiro Shimono, and Katsuhiko Tomooka; J. Am. Chem. Soc. 2008, 130, 16132-16133.

Mentor: Randy Winchester

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 78

## **Towards the Synthesis of Novel Cyclic Heterocyclic Compounds to Interact with Higher-Order DNA**

Presenter: Tom Arusoo

Higher-order DNA conformations can form within regions of DNA rich in guanines. Telomeric DNA, located at the end of human chromosomes is guanine-rich and can fold into tetraplex DNA. Compounds that should interact and stabilize telomeric DNA are being developed to increase binding affinity and selectively over duplex DNA. Efforts towards the convergent synthesis of novel, cyclic compounds will be described in this presentation. Intermediate heterocyclic monomeric units were synthesized using a building block approach involving acid chloride-amine coupling reactions. The final cyclization reaction will be attempted via the use of peptide coupling reagents. These coupling reagents will be used in combination with the cation-template effect, to minimize polymerization reactions. WebMO calculations are being performed to help design energetically favorable compounds. The synthetic and computational results obtained to date will be presented.

Mentor: Toni Rice

HENRY HALL ATRIUM 79

## **Sink to Source? Effect of Climate Warming on Carbon Balance in Muskegon Lake**

Presenter: Kate Coveney

During the summer of 2010, we performed several experiments to determine the impact of rising temperatures on the metabolic balance of Muskegon Lake, a mesotrophic drowned river mouth lake in Muskegon, Michigan. Rising temperature is believed to have a positive effect on both plankton respiration (R) and gross primary production (P). We wanted to find out if one process was more temperature dependent than the other, and if so, how the balance of production to respiration (P/R ratio) would respond to changing climate. Based on the results of four experiments, we found that plankton R and P generally increased with temperature, but that respiration had a greater temperature dependence than production, resulting in a decrease in the P/R ratio with increasing temperature. Our results suggest that under projected scenarios of climate warming, lakes are likely to act increasingly as net carbon sources to the atmosphere - potentially reversing their current role as net carbon sinks.

Mentor: Bopi Biddanda

HENRY HALL ATRIUM 80

## **The Occurrence of Girls and Women's Sports Across Cultures: Testing Evolutionary Hypotheses**

Presenter(s): Brandt Smith, Justin Andrews

Numerous cross-cultural studies of sports have been conducted, but none have focused on girls and women. Therefore, for 200 cultures in the eHRAF, we coded descriptions of females' activities as: (a) games of chance, strategy, or physical skill (i.e. sport), (b) played by teams or individuals, (c) and played against females and/or males, and (d) for sports, as being combative or non-combative. We tested the following hypotheses: (1) females will engage in team sports less often than males; (2) sports that reveal femininity will be more popular than combative sports; (3) and female sports will occur more frequently in cultures where women have greater control of resources or politics. We found support for all hypotheses, including a complete absence of female vs. female team sports. This research provides the first cross-cultural summary of female sports and brings our own cultures' practices (i.e. widespread female vs. female team sports) into sharper relief.

Mentor: Robert Deaner

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 81

## **Physical Educators Playing with Technology: Creating and Evaluating Motor Development Screencasts**

Presenter: Susan Krizmanich

Research has demonstrated that there is a significant gap between assessment theory taught to pre-service physical educators and practice in the physical education setting. One of the most critical skills necessary in successful assessment is the ability to observe. Observational skills in physical education demand movement analysis and subsequent translation of this visual analysis into a series of criteria. The TGMD II provides criteria for motor skills taught to children in elementary school. This study sought to determine the effectiveness of pre-service physical educators utilizing screencasts of motor skills found in the TGMD II compared to pre-service physical educators who studied the images found in the TGMD II manual. The primary issue was whether pre-service physical educators who watch screencasts become skilled in observational techniques and thus are able to utilize these skills in the real world when observing children performing the TGMD II.

Mentor(s): Mary Schutten, Colleen Lewis

HENRY HALL ATRIUM 82

## **Periodization of the Male Collegiate Hockey Player**

Presenter(s): Stacy Williamson, Scott Rood

The purpose of this research was to produce a one year periodization model for strength and conditioning of the male collegiate hockey player. This research should expand the general knowledge base of strength and conditioning in the sport, as hockey is considered less popular and less studied than most sports. A comprehensive review of existing literature provided the cornerstone on which to build the periodization program. Additionally, training should be implemented in accordance to each individual athlete's needs analysis. Due to the hypothetical nature of this research, subject interaction was nonexistent and in turn placed a limitation upon the validity of the program. Current and prospective male collegiate hockey players are the primary beneficiaries of this research. Upon review of this program, coaches, trainers, parents, and players should all gain a deeper understanding of which energy systems and muscle groups are targeted within the periodized regime.

Mentor: Amy Crawley

HENRY HALL ATRIUM 83

## **The Impact of School-based Intervention on Healthy Behaviors for 6th Grade Students**

Presenter(s): Casey Folkertsma, Natalie McQuillan, Jonathan Howard, Carson Mahoney, Megan Hurley, Melissa Dugan, Farah Itani, Amber Calkins, Nicolas Fernandez, Krista Rapisarda

The prevalence of obesity in children has been steadily rising, with 18.1% of 12 year-old children obese in 2007-2008. Multiple school-based programs and interventions are currently being utilized to address the increasing obesity rates. The purpose of this class project was to develop and implement an educational program for 6th grade children addressing appropriate beverage intake, snacking behaviors, and physical activity. Two 6th grade classes (approximately 50 students total) at Bursley Elementary in Jenison, MI are the target population. We will provide the students with nutrition education based on developed materials during designated class periods. The effectiveness of the intervention will be measured using pre- and post-assessments. Increasing the awareness of the importance of healthy behaviors among these 6th grade students may encourage them to develop healthier lifestyles.

Mentor: Debbie Lown

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 84

## **A Comparison of Selected Effects of RBC Implementation on Two Units**

Presenter: Stacy Heggen

Relationship Based Care (RBC) is a care delivery model in nursing at Spectrum Health that has been promoted as a means of improving quality of care within direct care patient settings (Manning-Walsh, et al., 2004). RBC works by focusing on the relationships among self, team members, and patients and families (Koloroutis, Felgen, Person, Manthey, & Kinnaird, 2004). The purpose of this study is to analyze and compare the impact of RBC perceived by the staff of two units throughout the stages of RBC implementation. Specifically it is hypothesized that throughout the phases of RBC implementation, units will vary in their perceptions of quality of care, view of management, employee satisfaction, and report of tangible actions.

Mentor: Elaine Van Doren

HENRY HALL ATRIUM 85

## **An Adaptive Management Plan to Increase Nature Oriented Recreation and Education in a Public Park in West Michigan.**

Presenter: Jordan Moeggenberg

People all over the world, particularly in urban areas, lack the opportunity to become connected with nature. In west Michigan, public parks provide such recreational opportunities that allow individuals to enjoy and respect the outdoors. I hypothesize that improving trails and adding educational opportunities will increase recreation levels and the users respect for nature. An adaptive management plan will be developed that implements more opportunities for recreation and important educational features of the local ecosystem in Zeeland, Michigan. The results will be used to determine if these provided opportunities are beneficial in connecting the local population with their environment.

Mentor: Todd Aschenbach

HENRY HALL ATRIUM 86

## **Regioselectivity of Aziridine Ring Opening Reactions Using Hydroxyl Compounds**

Presenter: Ryan Enck

Thyroid hormone (TH) related disorders plague much of the world's population with limited treatment options. T1AM, a naturally occurring metabolite of the TH, is an effective agonist of the Trace Amine Associated Receptor 1 (TAAR1) and exhibits physiological effects that counter those of the TH. The existence of a regulatory relationship between T1AM and the TH is, therefore, likely. Elucidation of this relationship requires better understanding of TAAR1 regulation and could lead to more comprehensive treatment options. Previously our lab demonstrated agonist/antagonist regulation of TAAR1 using the two enantiomers of apomorphine. The project described herein examines the regioselectivity of aziridine ring opening reactions using hydroxyl compounds in both acidic and nucleophilic conditions. The goal of this project is to implement this chemistry to synthesize conformationally restricted analogs of T1AM that will exhibit TAAR1 regulations similar to that observed with apomorphine.

Mentor: Matthew Hart

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 87

## **A Comparative Analysis of Indian Landing (20BA02), a Log Cabin Site (20MU93), and Blendon Landing (200T73) Archaeological Sites**

Presenter: Matthew Schroeder

The research focus for this project is a comparative analysis of the artifactual data from three historic sites from the middle of the nineteenth century. The three contemporaneous sites from southern Michigan include a log cabin site (20MU93), Indian Landing (20BA02), and Blendon Landing (200T73). Indian Landing was a mission site to Native Americans, 20MU93 was a log cabin habitation/agricultural site of the nineteenth century, and Blending Landing was a logging camp. The goal of the analysis of these three sites is to see if there is a distinct archaeological signature identifiable from three similar sites from the same time period. Moreover, the comparative analysis will include a heavy emphasis on the historical artifacts specifically recovered from Indian Landing.

Mentor: Dale Borders

HENRY HALL ATRIUM 88

## **Potential Energy Surfaces of Oxygen Herzberg States During Collisions With Nitrogen**

Presenter: Scott Sarver

Photodissociation of ozone in the upper atmosphere is known to produce oxygen molecules in excited electronic states known as Herzberg states. These electronically excited oxygen molecules are removed through a largely unknown process involving collisions with gaseous nitrogen, probably resulting in oxygen molecules in the ground electronic state with very large amounts of vibrational energy. Investigation into this process is conducted through exploration of the potential energy surfaces of individual oxygen and nitrogen molecules in a variety of configurations. Potential energy surfaces are generated by electronic structure calculations carried out in the MolPro program. Potential energy surfaces constructed from the electronic structure calculations and conclusions about the collision dynamics indicated by these surfaces will be presented.

Mentor: George McBane

HENRY HALL ATRIUM 89

## **Co-suppression of endogenous Hdc expression by the heterologous transgene, pHdc-eGFP, in *Drosophila melanogaster***

Presenter(s): Chad Gier, Kelsey Crowley, Ryan Sawyer

The Hdc gene encodes the enzyme Histidine decarboxylase, which is responsible for histamine synthesis. Previous work has identified a region of the Hdc gene that induces expression in histaminergic neurons. Using a pHdc-eGFP transgene, which induces the expression of eGFP in histaminergic neurons, immunocytochemical analysis of larval brain tissue in pHdc-eGFP bearing flies has indicated that four copies of this pHdc-eGFP transgene induces a loss of histamine immunoreactivity in otherwise normal flies. Transpositions of the original pHdc-eGFP transgenes were performed to determine whether differently positioned pHdc-eGFP transgenes can still cause this co-suppression effect on Hdc expression. Histamine immunocytochemistry will be conducted on the newly generated 4-copy flies to confirm whether the suppression of Hdc is due to the specific location of the pHdc-eGFP transgene or due to the number of transgene copies in the *Drosophila* genome.

Mentor: Martin Burg

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 90

## **A Study of the Use of Preservative Tubes on the Accuracy of Routine Urinalysis Results**

Presenter(s): Sarah Axdorff, Bridgette Flynn

Time spent in transport can reduce quality and accuracy of laboratory test results as some analytes, particularly white cells and red cells, are not stable. The goal of this study is to eliminate the errors associated with transport with the use of a preservative storage tube and therefore improve the quality of the urine specimens being tested. The current transport and storage container is a sterile cup; the new storage and collection container is a tube with preservative boric acid and sodium borate. Fifty urine specimens will be divided into two aliquots - one a sterile cup and the second a preservative tube. Routine urinalysis on the IRIS IQ 200 will run on both samples and the results will be compared. The data from the study will be used to evaluate the quality of a new urine transport preservation method. It is hypothesized that the preserved specimen will yield more accurate results, thus providing a better option for urine transportation.

Mentor: Linda Goossen

HENRY HALL ATRIUM 91

## **Periodization Training Program for Olympic Male Swimmers for the 200 Individual Medley**

Presenter(s): Brittany Powell, Katie Bunnell

Did you know that at the 2008 Summer Olympics in Beijing, China the difference between second and third place in the 200 Individual Medley was one hundredth of a second? In the competitive world of Olympic swimming, receiving a gold medal or making the cut to participate in the Olympics is often the result of the athlete's training program. The purpose of this study was to do a comprehensive review of the literature to provide a specific macrocycle, periodized training regimen to improve the 200 Individual Medley times of the male Olympic swimmer. As this program was hypothetical, the generalizability of this research is limited. This program could be valuable to Olympic swimming coaches and their athletes as it provided a year-round training program using aerobic and anaerobic training adaptations to achieve a higher level of performance.

Mentor: Amy Crawley

HENRY HALL ATRIUM 93

## **Analysis of a Cyclic Peptide Library to Identify Proteins That Effect *hilA* and *fimZ* Expression in Salmonella Invasion**

Presenter(s): Philip Kaseska, Andrew Lux, Brad Geal

*Salmonella enterica* serovar Typhimurium is a gram-negative bacterium that produces a localized gastroenteritis upon ingestion of contaminated food or water. Pathogenesis demands Salmonella recognition of apt environmental conditions which activate a 40 kb region of DNA known as Salmonella Pathogenicity Island 1 (SPI-1). The expressed SPI-1 proteins manipulate normal host cell function and direct the uptake of the bacteria into targeted cells. The expression of the SPI-1 genes is controlled via the sensing of various environment conditions through multiple pathways. The central regulator of SPI-1 is the transcriptional activator *hilA*. Currently we have isolated 5 plasmids, producing cyclic peptides, which have shown to cause a reduction in *hilA* expression in *E. coli*. 3 out of the 5 plasmids have been quantified in Salmonella and negatively regulate *hilA* expression. The effects of the plasmids on *hilA* expression is currently being further analyzed through *in vivo* invasion assays.

Mentor: M. Aaron Baxter

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 95

## **Winter Home Range of the Southern Flying Squirrel**

Presenter: Melissa Cannan

The purpose of this study is to determine the home range of the Southern Flying Squirrel, *Glaucomys volans* (hereby SFS), in a winter climate. The study took place in the ravine system on the Grand Valley State University Allendale campus. Thirteen SFS were radio-collared then located using radio-telemetry throughout the winter. Locations were imported into ArcGIS to calculate the home range of each SFS. Home ranges will be compared between males and females as well as juveniles and adults.

Mentor: Paul Keenlance

HENRY HALL ATRIUM 96

## **A Phylogenetic Analysis of the African Plant Genus *Palisota* (family *Commelinaceae*) Based on Chloroplast DNA Sequences**

Presenter: Grady Zuiderveen

The plant genus *Palisota* (family *Commelinaceae*) consists of approximately 20 species and is distributed throughout the forests of tropical Africa. The genus exhibits several unusual morphological characteristics, and as a result has been difficult to classify based on morphology. Molecular phylogenetic studies have placed it near the base of *Commelinaceae*, but the exact placement of *Palisota* within the family is not clear. As the African continent has become more arid in recent geological times, the forests have receded, reducing the habitat for *Palisota* species and potentially impacting speciation and extinction rates within the genus. The goal of this study is to sequence the chloroplast-encoded gene *rbcL* in several additional species of *Palisota* and its relatives in order to: 1) determine the phylogenetic relationship of the genus with respect to other members of *Commelinaceae*; 2) evaluate phylogenetic relationships among species of *Palisota*; and 3) infer relative speciation/extinction rates within the genus.

Mentor: Timothy Evans

HENRY HALL ATRIUM 97

## **Den Tree Characteristics and General Ecology of the Southern Flying Squirrel (*Glaucomys volans*) in Western Michigan**

Presenter: Tamara Hillman

Southern flying squirrels (SFS) (*Glaucomys volans*) were studied using telemetry to investigate den tree characteristics and to estimate home range sizes in the Huron-Manistee National forest in the northwest corner of Newaygo Co, Michigan. Eight SFS were successfully radio collared, with a resulting average home range size of 7.88 ha (+ 2.91 SE). Den trees had significantly larger average diameter at breast height (dbh) than random trees ( $P < 0.001$ ), and squirrels showed a preference for sugar maples (*Acer saccharum*) over other available tree species. These findings provide important information for the management of SFS habitat by indicating the need for larger trees that can be used as den trees.

Mentor(s): Paul Keenlance, Joseph Jacquot



# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 98

## **Raising Awareness about Type III ABO Discrepancies: A Case Study**

Presenter: Ninive Costa

The purpose of presenting this case study is to raise awareness of Type III ABO discrepancies in Transfusion Medicine (TMED). Type III ABO discrepancy occurs when agglutination in testing is due to a red blood cell abnormality and does not signify a positive result. In this case study a discrepancy occurred with the blood of a patient needing a transfusion. The similarities in the laboratory results of this particular case and those of patients with Multiple Myeloma or Cold Agglutinin Disease provide evidence that red cell abnormalities have an effect on blood typing results. With knowledge of such errors, technologists may fix the problem and correctly type a patient's blood. Recognition of such discrepancies can facilitate future laboratory testing and reduce the number of false positives in ABO blood typing. Any manner in which transfusion errors can be avoided can improve the chances of accuracy in TMED and therefore have an immediate impact on a patient's life.

Mentor: Linda Goossen

HENRY HALL ATRIUM 99

## **Exploring the Equations of State for Multiple Component Universes**

Presenter: William Richardson

The Friedman equations are a set of second order differential equations which govern the evolution of spacetime for an isotropic and homogeneous universe. The traditional solutions to these equations all lead to a universe which is decelerating. However in 1998, observations of type IA supernovae lead astronomers to believe in an accelerating universe. In this project, we investigated the conditions (equations of state) for multiple component universes that satisfy an accelerating expansion. A focus of this project was the investigation of the equation of state for a hypothetical substance known as the Chaplygin gas. We also explored the equation of state for a possible universal fate known as the Big Rip.

Mentor(s): Brett Bolen, Rupam Das

HENRY HALL ATRIUM 100

## **Synthesis of Rigid Analogs of 3-Iodothyronamine**

Presenter: Alex MacDonald

3-Iodothyronamine ( $T_1AM$ ) is a bioactive metabolite of the thyroid hormones, thyroxine ( $T_4$ ) and 3,5,3'-triiodothyroxine ( $T_3$ ).  $T_1AM$  is a potent activator of the Trace Amine Associated Receptor (TAAR1) in vitro. Physiologically,  $T_1AM$  rapidly induces responses in opposition to those seen by  $T_3$  and  $T_4$ . Several potent agonists have been identified. However, reported antagonists have been modest at best. Previously, we have reported an interesting regulatory pattern for TAAR1 exhibited by structural mirror images, (R)- and (S)-apomorphine. R(-)-Apomorphine exhibited dose-dependent activation of TAAR1, while S(+)-apomorphine exhibited inhibition. Herein, we present the progress towards the synthesis of a proposed TAAR regulator attempting to mimic the conformationally restricted Apomorphine. Developing these compounds could not only lead to a better understanding of TAAR1 receptors' role in biology, but also to advancements in the treatment of patients with thyroid hormone related diseases.

Mentor: Matthew Hart

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

HENRY HALL ATRIUM 101

## **Effects of Asn152 Mutation on Substrate Selectivity of P99 Cephalosporinase**

Presenter(s): Aaron Lamphere, David Cech

Beta-lactams are a widely administered group of antibiotics that disrupt cell wall synthesis by inactivating bacterial transpeptidase enzymes. Unfortunately, an increasing number of bacteria resistant to beta-lactams have emerged that utilize beta-lactamases. These enzymes render the antibiotic inactive. Of particular concern is the appearance of extended-spectrum beta-lactamases. The class C beta-lactamase P99 is known as a cephalosporinase. Mutation of the highly conserved N152 residue has a substantial effect on substrate selectivity. Three of these mutants, N152S, N152G, and N152T exhibit a substrate selectivity switch, and the structural basis for this is not understood. Each mutant was successfully purified, and two of the mutants have been crystallized. Initial crystallization conditions are being optimized for improved diffraction. The X-ray crystal structure of an extended spectrum beta-lactamase may provide insight into how resistance develops.

Mentor: Rachel Powers

HENRY HALL ATRIUM 102

## **Correlation of Functional Movement Screens and Golf Swing Faults**

Presenter: Brian Schulte

The purpose of this study was to examine the correlations of various functional movements and common golf swing faults. Thirty six healthy male and female volunteers ages 14-55 were used for the study. Each subject was surveyed on physical activity and any injuries that affect their ability to play golf. Next, the subject was asked to perform 12 functional movement screens involving flexibility, strength, balance, and coordination through the Titleist Performance Institute (TPI) Level 1 golf fitness screening process. The performance of each screen was evaluated by a TPI certified professional. The subject then hit golf shots with a 5-iron while being videotaped. Their swings were then analyzed on Dartfish or V1 software to identify 14 possible swing faults as defined by the TPI. The data from the functional screens were translated into quantitative data and analyzed using SPSS software to investigate correlations with the swing faults.

Mentor: Heather Gulgin

KIRKHOF CENTER KC1

## **Correlation Study of Specific Gravity Between IRIS, iCHEM100 Automated Urinalysis Systems**

Presenter(s): Chris Kubont, Russell Duffin, Scott Maclellan

Urine specific gravity is used to measure the solute concentration and inversely the hydration status of the patient. Most specific gravity (SG) measurements are done using dipstick strips. These strips are currently analyzed using automated systems such as the IRIS and the iCHEM100. Though the instruments are essentially the same, there is always variability in the instruments that must be assessed before measurements can be reported out to physicians. The IRIS is the instrument of choice at Spectrum Health; however when urine samples are of low volume the iCHEM 100 must be used. The purpose of this study is therefore to demonstrate that the iCHEM100 has comparable results to the IRIS automated urine system when reading urine dipsticks. Through the analysis of 100 random urine specimens less than 48hrs old we intend to show that the iCHEM 100 a valid platform for urine SG measurements.

Mentor: Linda Goossen

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC2

## **The Correlation Between Vertical Jump Height and Horizontal Leap Length in Dancers**

Presenter: Erin Cooke

In the choreography of a dance performance, the grand leaps across the floor display the grace, skill, and control that often defines dance. There is little research to be found on the performance and improvement of these horizontal leaps. However, there is research and there are methods focused on improving vertical jumps across a variety of sports and other physical activities. In this study, we used video analysis to look for a connection between a dancer's vertical jump height and their horizontal jump length. This would possibly indicate that similar muscles and techniques were used in the performance of both kinds of movement, and therefore the methods used to improve the vertical jumps might also be useful in the improvement of horizontal leaps in dance.

Mentor: John Kilbourne

KIRKHOF CENTER KC3

## **Boogie Fever Beats Dancing**

Presenter(s): Jacob Rohde, Megan Drahos

The purpose of this study was to find if focused activity (stationary cycling) is perceived to be as exhausting as non-focused activity (swing dancing). Previous investigation indicates that non-focused exercise may produce lower rates of perceived exertion (RPE). Subjects for this investigation were taken from the Grand Rapids Original Swing Society and Grand Valley's Swing Dance Club. Subjects from each group were experienced dancers and over 18 years of age. Heart rate (HR) and RPE were recorded during non-focused activity. Following this the subjects completed the non-focused activity matching their HR to the focused activity while RPE was assessed. A t-test was used to determine the difference between the two sets of RPEs during the two activities.

Mentor(s): James Scott, Bradley Ambrose

KIRKHOF CENTER KC4

## **Say NO to Bottled Water: A Statistical Consulting Experience**

Presenter(s): Marco Benedetti, Carmen Carabulea

In a bid to decrease non-disposable water bottle usage in the Grand Valley community, Professor Jamie Langlois and her Graduate Assistant Sandra Meyers passed out free water bottles to university members willing to sign a pledge to stop buying bottled water. Our role in the project was to help refine, implement and analyze an online follow-up survey with the help of the Statistical Consulting Center. Further, we analyzed the data to determine the extent of the behavioral changes. The goal of this project is to decrease the use of non-disposable water bottles through the distribution of reusable bottles in the Grand Valley community.

Mentor(s): Neal Rogness, Jamie Langlois

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

## KIRKHOF CENTER KC5

### **Serotonin and Histamine Localization in the CNS of *Drosophila melanogaster***

Presenter: Kelsey Crowley

Histamine is present in cells of the *Drosophila* central nervous system (CNS), although the function of these cells has not been well established. The enzyme that catalyzes the formation of histamine is histidine decarboxylase (Hdc). Transgenic flies containing a gene fusion between the 5 transcriptional control region of the Hdc gene (pHdc) and the Green Fluorescent Protein (eGFP) have been shown to contain neurons that contained both histamine and the eGFP protein. This allows histaminergic cell visualization without the use of a histamine antibody, which is difficult to use in conjunction with other antibodies. The spatial relationship between histaminergic cells and cells containing another neurotransmitter, serotonin, was performed using immunocytochemical techniques with pHdc-eGFP larva. Results obtained suggest that the locations of histaminergic and serotonergic cells differ from each other, with more serotonergic cells being present in each segment of the CNS.

Mentor: Martin Burg

## KIRKHOF CENTER KC6

### **One Year Periodization of Collegiate Male Sprinters**

Presenter(s): Nathaniel Miller, Candice Wheat

Speed is a fundamental component of almost all sports. When training for the short sprint group attributes such as strength, speed, acceleration, power, and form are necessary to perfect so as to decrease sprint time. The purpose of this study was to provide a periodization schedule for male athletes at the collegiate level who wish to achieve low sprint times. Much research has been conducted in order to optimize these attributes in athletes. The macrocycle methodology presented herein consists of the training, physical preparation, and mental preparation necessary for a competitive collegiate sprinter. Because this macrocycle was theoretical, the validation of the regimen will be limited to the research of others. The collection of information and execution of proper periodization should be immensely beneficial for coaches of collegiate male sprinters in addition to speed training for other appropriate athletes.

Mentor: Amy Crawley

## KIRKHOF CENTER KC7

### **Does Accession to the European Union Affect Economic Growth?**

Presenter: Colton Lock

By analyzing data provided by sources such as Eurostat, OECD, the World Bank, and Transparency International, I investigate how accession to the European Union affects a country's economy. Variables such as location, economic structure, foreign investment, and government corruption can have a great effect on how a state's economy grows after accession to the European Union. By examining the average annual growth rate, along with other factors, one can explain how accession to the European Union has affected countries such as Poland, Romania, and Hungary.

Mentor: John Constantelos

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

## KIRKHOF CENTER KC8

### **Death Thought Accessibility as a Function of Ostracism and Self-Esteem**

Presenter(s): Hailey Wilmot, Samantha Heinlen, Brianne Schloegl, Jackie Main

Previous studies on terror management and mortality salience suggest that self-esteem and worldview (i.e. religious beliefs) are two buffers individuals use to cope with their own mortality (Schimel, Hayes, Williams, & Jahrig, 2007). Research has shown that death related thoughts are made conscious when such buffers are threatened (Hayes, Schimel, Faucher, & Williams, 2008). The present studies examine the relationship between independent variables: source of self-esteem (extrinsic/intrinsic) and peer relationship (based on ostracizing/inclusive/neutral stimuli); and the dependent variable, Death Thought Accessibility (DTA). A survey on Extrinsic Contingency Focus (ECF), personal writing exercise, and word completion task measured these variables. Results revealed that DTA was dependent upon an interaction of the independent variables. Specifically, among participants with extrinsic self-esteem, ostracized participants had higher DTA than those in the inclusive or neutral conditions.

Mentor: Todd Williams

## KIRKHOF CENTER KC9

### **Hispanic and Caucasian Mothers' Emotion Socialization Practices**

Presenter(s): Charalene Kiser, Megan Drahos, Lauren Beachum

Mothers' socialization practices of their children's emotions are guided by emotion norms that vary across cultures and ethnic groups. Because members of Hispanic culture endorse more interpersonal values as compared to the Caucasian culture we predict some differences between mothers' practices: Caucasian mothers may value individualistic emotion competence and Hispanic mothers may put higher emphasis on the relational emotion competence model. Thirty-five Hispanic and Caucasian mothers of 2-year old children were interviewed about their reactions to several imagined emotionally charged situations which involved their child. Responses were coded by three independent raters. First descriptive results point to ethnic differences in emotion socialization: Caucasian mothers suggested more action-based strategies, whereas their Hispanic-American counterparts utilized strategies that included discussion and moral consequences of emotional experiences.

Mentor: Wolfgang Friedlmeier

## KIRKHOF CENTER KC10

### **Determination of Phylogenetic Relationships among Members of the Plant Genus *Billbergia* (family *Bromeliaceae*)**

Presenter: William Lindberg

*Bromeliaceae* is a large and ecologically diverse plant family found nearly exclusively in the New World. The family, with approximately 3000 species, includes the pineapple and Spanish moss. *Billbergia*, a member of subfamily of *Bromelioideae*, has sixty four species all living in South America. Due to difficulties in using morphological and anatomical characteristics to establish phylogenetic relationships among species in *Bromeliaceae*, studies are underway to use molecular data for phylogenetic reconstruction. This study focused on the phylogenetic relationships of species within *Billbergia*. Two chloroplast-encoded genes, *ndhF* and *rbcL*, are being sequenced in species of *Billbergia* to determine if the genus is monophyletic and to infer relationships among species. Previous molecular studies of the genus have suggested that the genus is not monophyletic, and it is hoped that inclusion of *rbcL* and *ndhF* will provide a greater degree of phylogenetic resolution in the genus.

Mentor: Timothy Evans

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC11

## **Environmental Effect on Male Mating Success: The Importance of Song Exposure Versus Nutritional Stress During Development in Male Superb Lyrebirds.**

Presenter: Jason Street

Do females hold males to a minimum standard regarding the complexity of their song? Which has a larger consequence on the complexity of male song: the diversity of sounds available in the environment, or nutritional stress during nestling development? Previous research has shown that female choosiness is the primary selector for the complexity and accuracy of a bird's song. Additionally, it has been found that the degree of stress experienced by a developing male bird is correlated with their ability to learn songs. I propose a comparative experiment in which groups of developing male Superb Lyrebirds are exposed to one of three different environments: one with varying amounts of mimic-possible songs, a second with nutritional stress, and a third control environment. I hypothesize that the stress group will experience decreased mating success compared to the group with reduced exposure to song. Additionally, both groups will experience reduced mating potential compared to the control.

Mentor: Amy Russell

KIRKHOF CENTER KC12

## **A Comparison of Administrator Satisfaction with Contract Versus Self-Operated Food Service in Long-Term Care**

Presenter: Maria Ahern

Demand for long-term care continues to grow as more of America's population is aging. Food service in particular needs to be researched because the quality of the meal service provided at long-term care facilities has a profound impact on the resident's quality of life. Food service in long-term care facilities is either self-operated by the facility or contracted to an external company. A survey regarding the food service provider and satisfaction with the current food service program was sent to long-term care administrators in the state of Michigan. The study was conducted to determine whether long-term care administrators in Michigan were more satisfied with self-operated or contract managed food service. The analyzed data will help long-term care administrators make more informed decisions regarding which type of food service to employ at their facility.

Mentor: Lisa Sisson

KIRKHOF CENTER KC13

## **The Edible Body: Food and Sex as Pleasure, Disorder, and Commodity**

Presenter: Lena Drake

Food and sexuality are linguistically and culturally linked, especially through society's representations and perceptions of human bodies. "The Edible Body" explores the intersectionality of food and sex, through merged or juxtaposed poems about the pleasure, disorder, and commodity of the two topics. The presentation form of poetry is used to express researched knowledge, including extensive readings and structured interviews with both food workers and sex workers, in terms of emotions and small details of individual lives, rather than merely academic statements.

Mentor: Kathleen Blumreich

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC14

## **Regulation of Mouse Endothelial Cell Growth in Culture**

Presenter(s): Benjamin Meyer, Justin Vice, Ashley Berish

Intercellular exchange of molecules between neighboring cells through gap junctions is involved in cellular growth regulation. In vascular endothelial cells, the gap junction protein Cx37 is only present in non-dividing cells. Cx43 replaces Cx37 when the endothelium is damaged and these cells must divide. As a first step in addressing gap junction's role in endothelial cell growth regulation, this study will determine whether the growth of cultured mouse endothelial cells (bEnd.3) can be arrested by serum deprivation: 10% FBS was replaced with 2% to 0% FBS. Contrary to expectations, bEnd.3 cells continued to grow in low FBS media. However, the high glucose media these endothelial cells were grown in stimulates the secretion of growth factors. When the media was changed regularly (every 24 or 48 hrs) to reduce endogenous growth factor concentrations, the growth of these cells was slowed (even in 10% FBS) indicating that growth factor release contributes to the growth of bEnd.3 cells.

Mentor: David Kurjiaka

KIRKHOF CENTER KC15

## **Looking for Evidence of Predator Mediated Apparent Competition Between *Escherichia coli* and *Salmonella typhimurium* Using PRD1 Bacteriophage**

Presenter: Farah Itani

Apparent competition is an indirect interaction between two (or more) species who share a common predator. This ecological principle has been demonstrated through interactions between diverse organisms ranging from sea urchins to rodents but also in laboratory constructed microcosms. In apparent competition one of the host consumers is able to support a greater amount of predation, indirectly causing the decline of the other host consumer. By placing the pathogenically important bacteria *Escherichia coli* and *Salmonella typhimurium* with a common predator, we hope to demonstrate this principle. The predator is PRD1 bacteriophage, capable of infecting a broad range of gram negative hosts through the use of conjugative plasmids. Populations of *E. coli* and *S. typhimurium* will be compared when alone, in coexistence, and in the presence and absence of PRD1. Data collected thus far lead us to believe that with the use of PRD1, an indirect interaction exists between *E. coli* and *S. typhimurium*.

Mentor: Doug Graham

KIRKHOF CENTER KC16

## **Regulation of the Diaphanous-Related Formin, DAAM1 in Mammalian Cells**

Presenter: Brianne Docter

Diaphanous-related formins (DRFs) are involved in the regulation of the cytoskeleton and are highly conserved across many species. DRFs are regulated through a mechanism of autoinhibition, in which the two ends of the protein bind to each other to lock it in an inactive conformation. Under highly regulated cellular conditions, DRF autoinhibition is disrupted by the binding of other cellular proteins, which causes the activation of the DRF proteins. Here, we have studied the regulation of a specific DRF protein, DAAM1, which has been shown to be critical for cellular processes in neurons. Using a combination of site-directed mutagenesis, protein biochemistry, fluorescence anisotropy, and immunofluorescence imaging, we have constructed a constitutively active DAAM1 protein that sheds light on the location and function of DAAM1 in cells. In addition, we have identified specific amino acid residues on DAAM1 that are essential for its regulation.

Mentor: Brad Wallar

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

## KIRKHOF CENTER KC17

### **Child Competence Criteria of Caucasian and Hispanic-American Mothers**

Presenter: Nicole Summers

This study aims to compare the criteria of children's competence between Hispanic (HA) and European American (EA) mothers. N = 35 EA and HA mothers of 2-year old children were interviewed. Based on the Criteria for Competence Interview mothers were asked to describe children between 2 and 5 years who are doing-well and not doing-well. The open answers were transcribed, translated and coded by three independent raters. Preliminary results point to six global characteristics in child competence: achievement, conformity, self-direction, sociability, well-being, and emotional adjustment. Furthermore, HA mothers seem to favor conformity more whereas EA mothers favor self-direction. Due to the strong increase of the Hispanic population over the last two decades, knowledge about ethnic differences becomes vital for professional caregivers so they become aware that children with different ethnic backgrounds may display unique behavior based on the varying expectations within their families.

Mentor: Wolfgang Friedlmeier

## KIRKHOF CENTER KC18

### **Low-Head Dam Removal Causes Immediate Physical Habitat and Water Chemistry Degradation**

Presenter: Adrienne Gibson

This two year study focused on understanding the effects of the removal of the low head Nashville dam on the Thornapple River in Barry County, MI. A comparison of data taken from pre- to post-dam-removal indicated changes to the physical habitat, as well as water chemistry. In the reach directly below the dam there was an increase in fine sediment that accounted for an average cross-sectional channel aggradation of 26cm, from pre- to post-dam conditions. Nutrient limiting conditions also changed from pre- and post-dam-removal. Pre-dam-removal nutrient levels showed above-dam-sites to be phosphorus-limiting, and the sites below the dam to be nitrogen limiting. This changed after the dam was removed, when all of the sites appeared to be phosphorus-limiting. The most drastic nutrient limiting change occurred directly above the former dam, in which the N/P ratio was 22.00 before the removal of the dam, and then was found to be 7.90 after the removal of the dam.

Mentor: Eric Snyder

## KIRKHOF CENTER KC19

### **Variation in High School Sports Participation Across U.S. States**

Presenter(s): Allison Novak, John Frazier

Cross-cultural studies reveal that the sports played in a particular society reflect its functional priorities and values. For example, combative sports are more popular in societies that frequently engage in warfare. Here we explore whether this functionalist approach can explain variation in girls' and boys' high school sports participation across U.S. states. Using data from the National Federation of State High School Associations, we tested and found support for two hypotheses: (1) girls participation should be relatively higher in states where females attain relatively better economic and educational outcomes; and (2) masculine sports, especially, combative male team sports (e.g., football), are more popular in politically conservative states. These results highlight the meaningful variability within the U.S., and, apparently for the first time, relate it to the realm of sports.

Mentor: Robert Deaner



# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC20

## **Trait and Social Influences in the Link between Negative Thinking and Favorable Affect**

Presenter: Shawna Tanner

The link between negative thinking and psychological distress is well established, however, the extent to which this link reflects both a cross-situationally stable part of personality and influences of social context has not been directly examined. Using multivariate generalizability theory (Cronbach et al.), we estimated the extent to which negative thinking is comprised of trait and social influences. Further, we examined the links of these two influences with mental health. In our study, students rated negative thinking and affect when with or thinking about their mothers, fathers and closest peers. We found negative thinking to be significantly comprised of both trait and social influences. Some constructs were more strongly trait-like than socially influenced, while other constructs were equally trait-like and socially influenced. Additionally, the socially influenced aspect of negative thinking was just as strongly related to favorable affect as was the trait-like aspect.

Mentor: Brian Lakey

KIRKHOF CENTER KC21

## **Case Study: Kimberly Clark Acquisition of Jackson Safety Products**

Presenter: Paul Rahrig

Kimberly Clark, a world-wide manufacturing company, purchased Jackson Safety Products in 2009. This case study examined the strategy, negotiation, due diligence and integration phases of Kimberly-Clark Professionals' acquisition of Jackson Safety. Failures and successes associated with business acquisitions are presented. Finally, recommendations are provided to improve acquisitions processes in the future.

Mentor: Jaideep Motwani

KIRKHOF CENTER KC22

## **School Disciplinary Patterns by Student Ethnicity**

Presenter(s): Andrea Szura, Allyson O'Connor, Marilyn Porritt

Research has consistently documented that when compared with White peers, minority students are referred more frequently to the office, and often receive harsher punishments (Tobin et al, 2010). The purpose of the present descriptive study was to investigate school disciplinary patterns by student ethnicity. Data from a diverse group of schools will be presented, and findings will be discussed in relation to current implementation of school discipline practices.

Mentor(s): Anna Harms, Amy Campbell

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC23

## **T-Test for Proportions? Making Do When Your Software Can't Do Confidence Intervals for Proportions**

Presenter(s): Matthew Malloure, David Schlueter

In Introductory Statistics courses, students are taught how to calculate confidence intervals for the population proportion and the difference between two population proportions. However, statistical software packages often lack syntax for computing such intervals. We assume that if proportion data is recoded in a binary fashion, the resulting t-confidence intervals for one and two sample problems are equivalent to the corresponding z-intervals. We determine mathematically and by simulations, at what sample size, the t and z intervals can be considered equivalent for various confidence levels.

Mentor(s): Sango Otieno, Gerald Shoultz

KIRKHOF CENTER KC24

## **Computational Exploration of Rtt109 Conformers Important for Chromosome Stability**

Presenter: Patrick Loudon

Rtt109, a protein that acetylates histones, is required for chromosome stability. Autoacetylation of lysine 290 (K290) is required for Rtt109 function. Crystal structures have shown, however, that the K290 is 11 angstroms from a bound acetyl-coenzyme A, which donates the acetyl group. At this distance, the autoacetylation is impossible. In this study, molecular dynamics simulations are used to determine if conformations of the Rtt109 protein exist in which the autoacetylation is possible.

Mentor: Mary Karpen

KIRKHOF CENTER KC25

## **Impact of Hypergravity Exposure on the Mammary Gland Cytoskeletal Organization in the Rat**

Presenter: Kibrom Gebre-Egziabher

Differential and exponential growth of the mammary gland occurs during pregnancy under hormonal influences. This dynamic epithelial differentiation is dependent on an integral cytoskeletal support structure. Chronic exposure of pregnant rats to hypergravity (HG) diminishes postpartum mammary gland output that is independent of prolactin and glucocorticoid secretion. Therefore, the objective of this study is to determine the effects of HG exposure from mid- to late pregnancy on pre-partum distribution of the cytoskeletal components in the mammary gland. Pregnant rats were exposed to either 2g (HG) or 1g (control) from days 11 to 20 of gestation (G20). On G20, mammary tissue was collected and formalin-fixed. Immunolocalization studies of alpha-smooth muscle actin and tubulin using specific antibodies directed against these proteins in HG exposed and control rats are completed. Data from structure and component analysis will be presented.

Mentor: Osman Patel

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC26

## **Construction and Use of a Microbial Fuel Cell for Generating Electrical Power from**

**Municipal Waste Water**

Presenter: Katie Hekstra

A simple fuel cell has been described previously in the literature using consortia bacteria native to India. The India cell produced significant power from relatively mundane cell components, suggesting the possibility of using United States microbes to obtain a similar result for low cost. The use of consortium bacteria in an anaerobic fuel cell was investigated in this project using consortium bacteria native the the United States and an in-house constructed proton exchange membrane. This fuel cell was a proof of concept design toward the use of such a system in flow-through waste water treatment facilities. Power output is provided by microbial metabolism using a food source of municipal waste water. Output from the cell is treated waste water and electrical power. Power levels resulting from the model system were good, with an average voltage of 0.60 V/cell and a power density of 1.2 Watts per square meter. The future direction of this project is discussed.

Mentor: Cory DiCarlo

KIRKHOF CENTER KC27

## **Honey, I Moved the Kids: Division of Labor in a Biparental Cichlid Fish**

Presenter(s): Lindsay Stoyka, Allison Gaskell

Parental care is an important form of social behavior that increases offspring fitness. Unlike most fishes, convict cichlids form strong mate bonds and exhibit long-term, biparental care. Such parental care might yield specialized behavior, *i.e.*, division of labor, such that males and females contribute to offspring fitness in different ways. We quantified parental behaviors of males and females to determine whether they differed in (a) amount or type of contact with offspring and (b) time spent near offspring. Females remained near broods and exhibited contact behaviors with offspring more than males. Contact behaviors include mouthing, rubbing, and swish and spit. Because of these differences, females may contribute more to transmission of beneficial microbes, while males may specialize in defensive behaviors.

Mentor: Jodee Hunt

KIRKHOF CENTER KC28

## **What Big Claws You Have: Relationship Between Claw Morphology and Ecology in the Big Cats (*Felidae*)**

Presenter: Lisa Dust

Each big cat species has a unique way of catching, killing and eating prey based on its behavior and anatomy, particularly the mechanism of the forelimb in conjunction with the claws. The claw's morphology and range of motion is interrelated to the forelimb anatomy of the *Felidae*. Through the use of geometric morphometric analysis, differences in claw shape can be quantified and combined with ecological information to determine whether a relationship exists between claw shape and ecological parameters. Skeletal collections from the Field Museum in Chicago, IL were used to examine 15 species. Photographs were taken in lateral view and imported into the tpsDig and MorphoJ programs to place landmarks and run the analysis. Claws from each species were compared individually as well as grouped to examine variation within genera, creating a basis for determining ecological traits and killing style of extinct carnivore species.

Mentor: Christopher Noto

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC29

## **Effect of Altered Gravity on Rat Mammary Epithelial Cell Proliferation**

Presenter: Alexander Repeck

If the human race is ever to expand into space, humans will be required to reproduce in low gravity. Data collected to date reveals that altered gravity environment impairs lipogenesis in a lactating mammary gland. However, accelerated growth of the secretory epithelium of the mammary gland takes place during pregnancy. Therefore, the objective of this study is to determine the effects of hypergravity exposure from mid- to late pregnancy on pre-partum morphogenesis of the mammary gland epithelium. Pregnant rats were exposed to either 2g or 1g from days 11 to 20 of gestation (G20). Mammary tissue was collected at G20 and processed for antibody directed staining. Immunolocalization studies of Caspase 3 and P53 in HG exposed and control rats are completed and data from structure and component analysis will be presented.

Mentor: Osman Patel

KIRKHOF CENTER KC30

## **Episodic Starvation Versus Storm Winnowing of Shelly Interbeds: A Depositional Model for the Fairview Formation, Upper Ordovician of Northern Kentucky**

Presenter(s): Kase Knochenhauer, Michael Ochalek, Matthew Boike, William Monroe

The Upper Ordovician Fairview Formation, part of the Cincinnati Arch region, overlies the Kope Formation. Our samples were collected from northern Kentucky and will be analyzed using three hand samples and thin sections. Methods include a series of six point counts using a petrographic microscope, sample classification and fossil identification. In the literature opposing models have been proposed for shelly interbeds in mud in the Fairview Formation. The "storm winnowing model" proposes that the development of the shelly interbeds can be attributed to storm reworking. Alternatively, the "episodic starvation model" suggests that the shelly interbeds form over long periods of time with low rates of sedimentation of fine sediments. This is coupled with brief periods of high sedimentation rates, which deposits the mud. After deposition, storms erode the shell beds and mud layers. We will use our results to determine which model of deposition our data best supports.

Mentor: Patricia Videtich

KIRKHOF CENTER KC31

## **Unusual Appearance of the Synovial Membrane in Chronically Infected Bursae.**

Presenter: Kari De Vries

Bursae are synovial sacs generally positioned near and around joints in order to cushion the pressure and reduce the friction created by muscle tendons acting at the joint. A common affliction of these synovial structures is bursitis, an inflammation of the tissues that make the sac causing an increase in the production of synovial fluid. This condition is generally caused by injury, such as a sharp blow, or sustained pressure on the region of the bursa, such as kneeling for an extended period of time. Without treatment, the condition can become chronic resulting in significant changes in the tissues of the bursae. Presented here are examples of a chronically infected bursae where significant changes in the synovial membrane, the tissue that lines the bursa and makes the synovial fluid. The folds of the synovial membranes have become enlarged and have an exaggerated appearance. The bursa sac itself has become significantly enlarged from the overproduction of synovial fluid.

Mentor(s): Tim Strickler, Reed James, Dawn Richiert

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC32

## **Correlates with Boredom and Positive and Negative Perfectionism.**

Presenter: Corina Hinterman

Using Terry-Short et al.'s (1995) Positive and Negative Perfectionism Scale (PNP) and the Boredom Proneness Scale-Short Form (BP-SF), we intend to investigate the relationships between college students' perfectionistic tendencies in relation to boredom proneness. Much research has been done in the area of perfectionism and we aim to further the research by examining specific personality differences in students exhibiting positive and negative perfectionistic tendencies and boredom proneness characteristics. Previous research has shown that personality differences exist between positive and negative perfectionists (Terry-Short et al., 1995). We plan to examine the correlations between depression, procrastination, satisfaction with life, stress, agreeableness, control, boredom proneness, and positive and negative perfectionism.

Mentor: Lawrence Burns

KIRKHOF CENTER KC34

## **The Feasibility of Using C&S Preservative Tubes for Routine Urinalysis**

Presenter(s): Deborah Grebenok, Elise Kane, Sani Jahic

Studies have been performed on the use of preservatives with routine urinalyses. There has been some conflicting data from these experiments on the usability of preservatives with a urinalysis. Our study will provide additional information as to whether or not C&S preservatives affect the urinalysis results. Fifty random and de-identified urine specimens will be divided into two sets of storage containers - urine cups without preservative but refrigerated, and C&S preservative tubes at room temperature. The samples will be run through two urine analyzers, the AX 4280 and the IQ-200. The resulting data will help determine if urines in C&S preservatives give comparable results to refrigerated urines. If C&S preservatives can be used in place of refrigerated urines, this will provide a means for hospitals, clinics, and doctor offices to perform a routine urinalysis on specimens sent to them from afar.

Mentor: Linda Goossen

KIRKHOF CENTER KC35

## **Water Evaporation From Tropospheric Aerosols**

Presenter: Patrick Loudon

With the recent discovery of the ubiquity of organic material in tropospheric aerosols, it has been postulated that the rates of water evaporation and condensation into the aerosols could be affected by thin surfactant films, which could ultimately affect cloud formation. Nathanson et al. have begun to study the effect of water evaporation from sulfuric acid solutions through the short-chain surfactant, butanol. They have found that a nearly full monolayer of butanol fails to reduce water evaporation from the acid. This unexpected result raises many questions about the mechanism of water evaporation. We used molecular modeling to help answer some of these questions as it allowed us to examine the trajectory by which a molecule leaves the liquid at the molecular level. We also are able to study this problem under conditions closer to that of the troposphere because we are free of certain experimental limitations and we intend to do so in the future.

Mentor: Christopher Lawrence

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC36

## **Holocene OSL Age Estimates of Parabolic Dunes Along the Western Shore of Lake Michigan Door Peninsula WI, USA: Insights on the Coastal Dunes Geomorphic History**

Presenter: Jody Wycech

Aeolian geomorphology and geochronology was investigated for dunes on the northwestern shore of Lake Michigan at Whitefish Dunes State Park, Wisconsin. Three-meter LiDAR, aerial photographs, and field observations reveal a series of parabolic dunes and beach ridges superimposed on an 800 m wide strand plain that separates Lake Michigan from inland Clark Lake. The parabolic dunes show a paleowind direction of south-southwest. Particle Size Analysis (PSA) along with Ground Penetrating Radar (GPR) differentiate dune (~2.7% coarse sand) and beach (~18% coarse sand) sediment. Optically Stimulated Luminescence (OSL) samples were collected from paleo-beaches and dune crests. OSL ages of the dune crests ranged from 7.8 to 1.9 ka, correlating with the Nipissing Lake Level High (6.0-4.3 ka) and the Algoma Transgression (3.3-2.3 ka). The similarity between the dune and beach sediment age suggests rapid dune formation and stabilization.

Mentor: Min Qi

KIRKHOF CENTER KC37

## **Using Modified Optically Stimulated Luminescent Dosimeters to Accurately Measure Dose in Small Field Radiotherapy**

Presenter: Rachel Gerrits

It is important to accurately measure dose in small field radiotherapy, which is done using dosimeters. Twelve dosimeters optically stimulated luminescent dosimeters (OSLDs) were modified to be used as small-field dosimeters. Each one of the dosimeters was placed in one of twelve stereotactic radiosurgery fields, ranging in size from 5mm to 30mm, then irradiated with a 6MV photon beam on a Varian Trilogy linear accelerator at West Michigan Cancer Center. The irradiation process was repeated five times and the relative dose was calculated after each. The relative dose was calculated and compared to more standard dose measurement techniques: an unmodified OSLD, a micro-ionization chamber (MIC), and a silicon diode. The results show that the modified OSLDs, for small field irradiations, measured a more accurate value of relative dose when compared to the MIC and unmodified OSLDs but less accurate than the diode. OSLDs are shown to be viable small-field dosimeters.

Mentor(s): Douglas Furton, Paul Jursinic, James Reuter

KIRKHOF CENTER KC38

## **Mechanical Foundations of the Second Law of Thermodynamics**

Presenter: Douglas Coleman

Coffee creamer is readily seen to diffuse into coffee, but once mixed, never observed to separate back. The 2nd law of Thermodynamics describes this nonreversible event by stating a closed system not in equilibrium will evolve until it approaches its maximum value of entropy in which case the system has reached equilibrium and its macrostate will not change. Interestingly, the dynamical equations used to describe all macroscopic systems' microscopic constituents are time symmetric, implying the time reversed evolution of any process should also be physically possible. This study analyzes the works of Boltzmann, Gibbs, and others who have sought to derive or qualify the 2nd law in terms of the underlying time reversible microscopic dynamics. A poster will be exhibited to illustrate the foundations and paradoxes of Boltzmann's H-theorem, and to distill the literature regarding the pursuits of nonequilibrium statistical mechanics to describe entropy increase of irreversible processes.

Mentor: Milun Rakovic

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC39

## **The Effects of Ectoparasites on Tree Swallow Biology**

Presenter: Lena Spadacene

Ectoparasites live on their hosts and have the potential to affect an individual's survival and reproductive success. We examined the effects of ectoparasites on the biology of Tree Swallows nesting at GVSU from 1993-2010. We estimated louse loads by counting the number of holes chewed by lice in the feathers of each wing and the tail. We compared the number of holes found in four groups of breeding swallows: first-year females, after-hatching year females, after-second year females, and males. There was no significant difference in the number of holes of birds examined early in the season and those studied late in the season. First-year and after-hatching year females had significantly more holes than did after-second year females. After-second year females also had significantly fewer holes than did males. Swallows with more breeding experience had fewer louse holes. The number of holes may indicate the quality of individual swallows.

Mentor: Michael Lombardo

KIRKHOF CENTER KC40

## **Impact of Hypergravity Exposure on Pregnant Rat Mammary Lobular Dimensions**

Presenter: Dustin Helsel

Mammary gland output is determined by the number of secretory epithelial cells. Moreover, growth and differentiation of the mammary gland predominately occurs during pregnancy. Previous studies show that exposure to hypergravity (HG) during pregnancy impacts metabolic activity of the dam during lactation. Therefore, the objective of this study is to evaluate the effects of hypergravity exposure from mid- to late pregnancy on pre-partum dimensions of the mammary gland lobules. Pregnant rats were exposed to either 2g (HG) or 1g (control) from days 11 to 20 of gestation (G20). On G20, mammary tissue was collected and processed for immunohistochemistry. Tissue was formalin fixed and paraffin embedded for histological and immunohistochemical characterization of cellular structures using antibody directed staining and image analysis of structure, area and component analysis. Immunolocalization studies of HG exposed and control rats are completed and quantification data will be presented.

Mentor: Osman Patel

KIRKHOF CENTER KC41

## **A Preliminary Analysis of Suspended and Bedload Sediment in Ruddiman Creek**

Presenter: Latricia Rozeboom

Landuse within a watershed influences the response of rivers to rain events. The development of urban areas with impervious surfaces can affect stormwater volume, velocity, and sediment loads. The resulting disturbance from unstable hydrology and sediment transport has impacted the biota of Ruddiman Creek in Muskegon, Mi. The stream is located in a subwatershed of Muskegon Lake, a Great Lakes Area of Concern and is included on Michigan 303(d) List of Impaired Waters. The source of the unstable hydrology and sedimentation in Ruddiman Creek is under current investigation at Annis Water Resources Institute. To assess the nature and extent of the sedimentation problems, suspended sediment concentration(SSC) and bedload sediment (weight and grain size distribution) will be determined for baseflow and storm event samples taken over a 13 month period from six tributary and three storm sewer outfalls. The results of samples collected during Jan-Mar, 2011 will be presented.

Mentor: Richard Rediske

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC43

## **Blendon Landing Archaeology: Analysis of the 2010 GVSU Archaeological Field School**

Presenter(s): Diana Rutledge, Stefanie Gasko, Aaron Howe, Ross Lamberts, Kyle Legant

This poster presents the analysis of archaeological data from the Blendon Landing site (200T73) excavated by students in the 2010 GVSU archaeological field school. In addition we examined materials recovered from earlier excavations in the 1970s -80s. Blendon Landing is a mid-19th century logging community located at the south end of the Allendale GVSU campus. Statistical and spatial analyses of artifacts from the site are used to identify activity areas including possible structures. Historic documentation suggests there were over 40 structures at the site, but no standing architecture remains. Archaeological evidence of structures is abundant in terms of differential distributions of nails, brick, plaster, glass and mortar.

Mentor: Janet Brashler

KIRKHOF CENTER KC44

## **Does Gender Still Matter? Women Physicians' Self-Reported Medical Education Experiences**

Presenter: Katherine Butler

Many medical schools have developed programs to recruit women which has led to an increase in women attending medical schools. However, increasing participation has not eliminated gender bias in either the curriculum or the treatment of students. This research identifies areas for improving medical education in order to improve the delivery of health care for women. Semi-structured interviews were conducted with 25 women physicians. Gender role assumptions impact women physicians' experiences as medical students and in practice. Marginalities in women's health education exist impacting physicians' preparedness for treating female patients. Eight physicians reported having experienced or witnessed sexual harassment. Random assignment of mentors and students detracted from the meaningfulness of mentorship programs. Support from medical institutions to establish equitable environments will ensure diverse opportunities for women in the field as well as comprehensive women's healthcare.

Mentor: Julia Mason



# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC45

## **Hindu Text Bhagvad Gita and its Relation to Traditional and Modern Medicine**

Presenter: Janaki Shah

The objective of this study was to find a relation specifically between health science and religion. Finding a bridge between these two important topics may allow medical professionals to practice with a better understanding of how to approach and treat patients with a strong religious background. In the USA alone about 83% of individuals are affiliated with some form of religion. In this case The Bhagvad Gita a popular Hindu text was the topic of interest. The goal in this study was to observe the beliefs and values discussed in the The Bhagvad Gita and find a relationship with naturopathic and allopathic medicine.

Mentor: Sheldon Kopperl

KIRKHOF CENTER KC46

## **Student Perceptions on Genetically Modified Foods**

Presenter(s): Kurt O'Hearn, Tammy Weeks, John Smit, Sean Fisk

Many people have varying opinions about the controversial issue of genetically modified (GM) foods. Although scientific research so far has not found any long-term harm from GM foods, many people still have concerns regarding these foods. Over one-hundred and fifty students at Grand Valley were asked eight questions on a voluntary, anonymous survey. The questions involved topics such as the source(s) students depend on to get their information about GM foods and their opinions regarding GM foods. Of students surveyed, eighty-five percent supported the idea of GM foods in the United States being specifically labeled. Students with majors related to physical or life sciences were split between allowing and not allowing companies to patent their GM food creations; the majority of students with other majors thought that companies should be allowed to patent their creations. Furthermore, seventy percent of students believed they consume GM foods at least once a day.

Mentor: Osman Patel

KIRKHOF CENTER KC47

## **50 Years of Women in Sports at GVSU**

Presenter: Lisa Guiher

The fifty-year celebration of Grand Valley State University culminates several things; the passing of time, the growth of the university, and the journey to prominence for women's athletics. Over five decades, GVSU has created one of the most recognized women's sports programs in the country. This poster presentation will provide a historical and pictorial account of the development of the women's sports programs which began under the direction Joan Board in the early 1960s. Today, GVSU's women's sports programs are a source of pride for the university thanks to legacy of the women athletes, and especially Coach Board, who were determined to make women's sports successful against great odds.

Mentor: Dana Munk

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC48

## **Grand Valley Students Opinion and Knowledge of “Designer Babies”**

Presenter(s): Chelsey Colley, Whitney Dulla, Mallory Fuhst, John Maddox

Advances in science indicate that parents will be able to select traits and gender of their progeny in the not too distant future. This conundrum of “designer babies” is confronting the world and fueling major debate in both the public and scientific community about its implications. Students from Grand Valley State University were surveyed to explore their understanding of the topic and opinion on designer babies. A majority of college students had heard of the term designer babies, but very few had heard or read about it from primary literature. Most had heard about it from popular sources, such as Internet and print media. A considerable number of science-based senior students seemed to think that designer babies could be fabricated naturally and not necessarily through only test tubes. Finally, the majority of surveyed college students believe that by designing our babies we are acting as God and not allowing nature to take its course.

Mentor: Osman Patel

KIRKHOF CENTER KC50

## **Kent County Emergency Food System**

Presenter: Nichole Rydahl

There is little doubt the role Emergency Food Programs (EFPs) play in addressing hunger and food security throughout the US. Programs initially set up as an emergency response to the hunger crisis are now accepted or institutionalized as part of the overall food distribution system. This study seeks to address how \$2 million in grant funding made available to Kent County EFPs aided the community in reducing the stresses of hunger while providing more nutritious foods to those in need. Various EFPs applied for funding to improve transportation and logistical issues to increase the availability of nutrient rich foods. For example, Feeding America acquired a dedicated delivery truck with refrigeration to help ensure the timely and consistent delivery of fresh fruits and vegetables to neighborhood food pantries. We analyze the impacts of these initiatives through a survey of EFPs, assessing food pantry director perceptions to rate the relative success of these new initiatives.

Mentor: Stephen Borders

KIRKHOF CENTER KC51

## **The Effects of Mortality Salience on the Ability to Encode Information**

Presenter(s): Joshua Swem, Molly Cohn

Terror Management Theory says that the unique human capacity for self-awareness leads individuals to experience anxiety when they think of their own death. Past research has shown that reminders of death cause individuals to seek out information that supports their worldview while rejecting the contrary (Burke, Martens & Faucher, 2010). The current study extends these findings by examining whether reminders of death facilitates or inhibits the learning of new information. Participants with either creationist or evolutionary worldviews read an article written from a pro-creation perspective and completed reading comprehension questions. Half of the Ps completed a death (vs. paralysis) prime prior to reading the article and half after. We predicted that mortality salience would promote learning of worldview consistent information and hinder learning of the converse. We predicted that this would occur when Ps were given the death prime before the article, rather than after.

Mentor: Todd Williams

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC52

## **Manipulations to Influence Risk, Worry, and Health Behavior Intentions**

Presenter: Molly Stein

According to health behavior theories (*e.g.*, Janz & Becker, 1984), researchers interested in encouraging health behaviors should increase perceived vulnerability to a particular health threat. Although this could be accomplished by increasing worry or perceived risk, previous research has demonstrated that these constructs could interact to predict health behavior in a counter-intuitive manner such that those with high worry and high perceived risk will be least likely to engage in health-protective behavior (Zajac, Klein, & McCaul, 2006). In this experiment, we explored several manipulations that were designed to influence worry and perceived risk of cancer in college students. In addition to examining effects on worry and perceived risk (in comparison to a control condition), we also examined the interactive relationships of worry and risk on health behavior intentions. In this presentation, we will describe the manipulations and their respective effects.

Mentor: Amanda Dillard

KIRKHOF CENTER KC53

## **Reducing Death Anxiety in the Student Nurse Population to Improve Patient Care**

Presenter: Kathryn Childs

It is not uncommon for a nurse to be assigned to care for a patient who is dying. However, many collegiate nursing curriculums lack end-of-life course content and students continue to express fear and anxiety towards caring for a dying patient. This fear is multifaceted and is strongly influenced by the individual's fears about their own mortality. This project seeks to reduce death anxiety as expressed by student nurses, thus allowing them to provide a higher quality of care. An extensive literature review has revealed that debriefing with a mentor may be one of the best interventions to help student nurses cope with the death of a patient. However, self reflection exercises focused on personal attitudes towards death and personal expectations for care at the end of life may also be helpful in reducing anxiety. Incorporating similar end-of-life concepts into all courses throughout collegiate nursing curriculums could better prepare students for end-of-life patient care.

Mentor: Joy Washburn

KIRKHOF CENTER KC54

## **Development of a Modular Raman Spectrometer for the Analysis of Ice Samples**

Presenter: Lucas Apol

The exact phase nature of the quasi-liquid layer (QLL) of ice is the subject of interest because it affects both the nature and behavior of the ice surface and the partitioning behavior of dissolved solutes, including those of interest to climate scientists. Here we seek to develop a nondestructive spectroscopic probe of the QLL based on Raman scattering. A survey of possible molecular QLL probes was done in order to identify molecules capable of probing the QLL. Results of this survey are presented. We also began construction of a modular Raman spectrometer that has an adjustable angle and phase of incoming light. We hope to use this spectrometer to probe the QLL on ice samples.

Mentor: Stephanie Schaertel

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC55

## **Microbial Fuel Cell**

Presenter: Srecko Prodanovic

A microbial fuel cell is a closed system in which a microbe oxidizes a substrate and captures the electrons that normally pass through the organism's electron transport chain. In normal respiration, hydrogen ions are pumped outside of the cell as electrons are passed through a series of electron carrying proteins. The result is the generation of ATP. The microbial fuel cells in our lab utilize a mediator which captures these electrons during the oxidation of a metabolic substrate by the bacteria. These electrons are passed to the cathode resulting in an electrical current. With the system utilized in the lab, we experimented with a series of small fuel cells. Each individual fuel cell was optimized to produce an average current of ~500mV. This project was designed to develop a laboratory exercise for BMS 323 (Bacterial Physiology Lab) that illustrated the concepts of microbial respiration and demonstrated the capacity that microbes have to act as a potential source of green energy.

Mentor: M. Aaron Baxter

KIRKHOF CENTER KC56

## **Design of Novel Cyclic Heterocyclic Compounds to Interact with Higher-Order DNA**

Presenter: Eric Hansen

Macrocycles that bind to the ends of DNA, called telomeres, may be useful in treating cancer by limiting cell division. In this study, we explore a modular approach to designing macrocycles that can be synthesized using acid chloride-amine coupling reactions. By mixing and matching heterocyclic subunits, we constructed computational models of various macrocycles. The stability of these models was determined using semi-empirical calculations. Potentially stable models were used to direct experimentalists in their synthesis.

Mentor(s): Toni Rice, Mary Karpen

KIRKHOF CENTER KC57

## **Periodization for a Collegiate Wrestler**

Presenter: Dale O'Leary, Nathan Burke

Performing any event for only seven minutes may not seem like a long time to be competitive. For a wrestler however, seven minutes seems like an eternity. The physical conditioning of a wrestler is unique in that one must have exceptional muscular strength, flexibility, and endurance. Any imbalance among these could cost a wrestler the entire match. The purpose of this project was to provide a year-long training schedule for a collegiate wrestler that examines the training and nutrition needed to stay in competitive form year-round. A wrestler's training regimen needs to be examined, as well as the skills needed to improve performance. This study was purely theoretical and was not tested on any collegiate wrestlers or athletes. The training schedule shown may not suit all wrestlers and therefore cannot be generalized to fit the entire population. By following this program, wrestlers should have a better grasp on the training volumes and skills they must maintain throughout the year.

Mentor: Amy Crawley

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC58

## **Synthesis of TAAR Regulators Utilizing a Novel Urea Linkage**

Presenter: Kiely Rich

Unfortunately, there is still a worldwide problem dealing with poor thyroid conditions that limit the effectiveness of the organ's ability to maintain homeostasis. The trace amine associated receptors, also referred to as TAAR, are G-protein coupled receptors that bind with a thyroid hormone metabolite in the body producing immediate physiological effects such as decreased heart rate, body temperature, and metabolism. Our lab has been synthesizing novel ligands for TAAR that regulate its activity. Specifically, this presentation covers the creation of urea derivatives based on a potent activator for TAAR. Small molecule regulators could potentially balance the thyroid hormones effect on homeostasis in the body. These compounds will be evaluated in bio-assays to give us more clues about the molecular basis of TAAR activation and may lead to a greater understanding of its role in biology.

Mentor: Matthew Hart

KIRKHOF CENTER KC59

## **Kappa Opioid Regulation of Stress-Related Behavior**

Presenter: Erin Harshberger

Anxiety disorders affect roughly 40 million American adults in a given year. Those suffering from anxiety disorders often experience additional stress-linked illnesses, such as depression. This study examined the role of the kappa opioid system in regulating stress-related behavior. Behavioral stress responses were examined in male Wistar rats using the elevated plus-maze following i.p. administration of opioid agonist U-50,488 (0 or 10 mg/kg). Subjects were pretreated with the kappa opioid antagonist nor-binaltorphimine (nor-BNI) prior to testing in the elevated plus-maze (0 or 20 mg/kg). Injections of 10 mg/kg U-50,488 significantly decreased percent open arm time compared to controls and was reversed by pretreatment with 20 mg/kg nor-BNI ( $F(1,44) = 6.10, p < 0.05$ ). The results indicate a relationship between kappa opioid receptors and stress-related behaviors.

Mentor: Glenn Valdez

KIRKHOF CENTER KC60

## **Osteoporosis Prevention: Assessment of Osteoporosis Knowledge Test (Revised 2010)**

Presenter: Amy Axline-Hillard

Osteoporosis is a leading public health threat that afflicts millions of Americans and incurs billions of dollars to the U.S. health care system annually. Osteoporosis injuries and related costs will rise dramatically with an aging U.S. population. To improve this phenomenon, the Osteoporosis Knowledge Test (OKT) was developed and since revised to assess knowledge regarding osteoporosis. The OKT (Revised 2010) incorporates current research on osteoporosis risk factors, screening recommendation, exercise, calcium intake, and vitamin D requirements. A convenience sample of adults, who frequent Evergreen Commons in Holland, were recruited as participants in the research. This poster will report test-retest results using the KR 20 statistical test to determine the stability of the OKT (Revised 2010).

Mentor: Phyllis Gendler

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC61

## **Periodization of a Baseball Pitcher**

Presenter(s): Jared Curley, Rob Chase, Nick Mason

The purpose of this study was to provide a periodization model for elite baseball pitchers striving to improve performance. Due to very little information available about the efforts of strengthening and conditioning of pitchers this program is very valuable and potentially timely. The methodology provided demonstrates and examines the training, nutrition, and preparation of a typical competitive routine. Limitations of this research include that it has not been validated on actual subjects and therefore cannot be generalized to the population of pitchers as a whole. This effort is vitally significant as the information garnered could potentially influence how pitchers condition both in the off-season as well as in-season. Upon completion of this periodization program pitchers should generate better on-field success by being a leg-up in their strength and conditioning program.

Mentor: Amy Crawley

KIRKHOF CENTER KC62

## **The Effect of Prosody Salience on Reading Fluency and Comprehension**

Presenter: Andrea Mitchell

Prosody refers to the natural stress, inflection, and intonation typical of everyday speech. In written English, prosody is not characteristically highlighted beyond syntax and punctuation. The study exploits stylistic changes to print (e.g., CAPS) to elicit prosodic emphasis when reading sentences containing heteronyms. Heteronyms are words with identical spellings, but different meanings depending on the syllable that is stressed in their pronunciation (consider the different denotations of PROduce and proDUCE). Participants will read aloud sentences in which the stylistic stress is congruent or incongruent with the word's pronounced stress. Because prosthetic-stress-marking may notably aid students with lower reading proficiency, the National American Adult Reading Test will also be administered. Pronunciation accuracy, reading speed, and text comprehension will be measured to determine if STRESS-highlighting can facilitate the reading of potentially ambiguous written words.

Mentor: Jennifer Gross

KIRKHOF CENTER KC63

## **John Ball Zoo Animal Care Internship**

Presenter: Cassandra Wygant

Last summer I took part in an Animal Care Internship at John Ball Zoo. Animal Care Interns perform technical animal management work in the care and feeding of exotic and domestic animals, cleaning and maintenance of buildings, animal displays, and other animal enclosures. Interns also observe and report on the physical and behavioral condition of the animals. The internship required a basic knowledge of building cleaning materials and methods as well as knowledge of the principles, practices and techniques of animal husbandry. It required an ability and desire to learn proper animal management principles and practices as applied to mammals, birds, reptiles and aquatic life. One of the projects I took part in was raising a hatching of 10 new flamingos and watching them grow. I was also able to participate in research observing the use of a variety of enrichment diets for various species of animals.

Mentor: Terry Trier

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC64

## **Mortality Salience, Extrinsic Contingency Focus and the Desire for Social Connectivity**

Presenter(s): Ryan Kielbasa, Kirsten Powers

Terror Management Theory states that humans are plagued with anxiety surrounding the inevitability of their own death and have developed self-esteem to allay this anxiety. The Extrinsic Contingency Focus Scale (ECFS) was developed to measure how much one's self esteem is dependent on social sources. The present study sought to analyze the relationship between Extrinsic Contingency Focus (ECF), awareness of one's own death, and social connectivity. Given that those high in ECF derive self-esteem from meeting social standards, we hypothesized that their desire for social connectivity would increase during mortality salience. Study 1 shows that when mortality is salient, high ECF individuals choose to allocate more resources to social activities. Study 2 shows that high ECF individuals choose to sit closer to a potential conversation partner when mortality is salient. Furthermore both studies show that those lower in ECF seek less social affiliation when mortality is salient.

Mentor: Todd Williams

KIRKHOF CENTER KC65

## **Evaluation of Depositional Environments in the Upper Ordovician Kope Formation, Kentucky**

Presenter(s): Candace Vos, Bruce Shultz, Samuel Howard

The Kope Formation is located in northern Kentucky and southern Ohio. It is a major package of shale-dominated strata which lies between the limestone-dominated Point Pleasant (below) and Fairview (above) Formations. All three formations are part of the Edenian Stage (Cincinnatian Series) estimated to be 445.5 to 449.5 million years old (Upper Ordovician). The Kope and Fairview Formations are composed of cyclic beds of limestone and shale. Although the Kope Formation is treated as a single formation, recent studies suggest members and submembers better describes its cyclic nature. Three limestone samples were collected from the Kope at Lower Holst Creek, Kentucky, and analyzed for fossil and rock types. Two samples are likely from the Fulton Submember, whereas the third is from younger strata. Based on the literature, the samples likely formed in a storm-dominated environment. We correlate our samples with cycles identified in the Kope Formation.

Mentor: Patricia Videtich

KIRKHOF CENTER KC66

## **Negotiated Identities: Nepali Bhutanese in West Michigan**

Presenter: Trevor DeWaard

The language practices of one small community of ethnic Nepali-Bhutanese who were revoked citizenship in Bhutan, expelled into refugee camps in Nepal for nearly twenty years, and who now reside in Grand Haven, Michigan were of interest here. We examined the linguistic means by which Nepali-Bhutanese negotiate American English speaking culture while simultaneously retaining their Nepali-Bhutanese languages and culture. Data included recorded ethnographic interviews, participant observation, and written texts such as email, Facebook wall posts, and essays, and were organized on axes of grammatical indicators of identity, language loss, language perception and cultural identity formation through language. A potential benefit of this study is to aid ESL (English as a Second Language) tutors and teachers, social workers and the wider community of West Michigan in better serving, assimilating and welcoming this growing population.

Mentor: Kathryn Remlinger

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC68

## **Investigating Polymer Nanocomposites Using Positron Annihilation Lifetime Spectroscopy**

Presenter: Patrick McCarthy

By determining the characteristics of the porosity of a polymer, one can gain a greater understanding of its properties as a whole. We can alter the free volume and mobility of strands in a polymer without altering its chemistry through the incorporation of inorganic nanoparticles, forming a polymer nanocomposite (PNC). Positron Annihilation Lifetime Spectroscopy (PALS) provides an effective means of determining the characteristics of the porosity of a sample PNC. Positrons from a radioactive source (Na-22) are directed into a PNC, where they form positronium (Ps). There the Ps tends to localize in voids, where the size of the pore directly affects its lifetime. By measuring the mean Ps lifetime in a PNC, we gain insight into the sample's porosity, and as a result, the sample's properties as a whole. We have formed pristine samples of a DGEBA/DDS based polymer and have examined them using our constructed PALS system. These results and the basis of further studies will be discussed.

Mentor: Richard Vallery

KIRKHOF CENTER KC69

## **Searching for Temporal Patterns in Gene Expression Profiles**

Presenter: Olvi Tole

Before a researcher starts a project, he/she has to develop a hypothesis for the research. In medicine or biology research is often based on many measurements that have been obtained at different points in time. The biologist looks at these values not as individual points, but as a progression over time. Our program will help the researcher find these patterns in large sets of data. A researcher will be able to communicate between three different computer programs: one which stores selected microarray data from the National Center for Biotechnology Information's Gene Expression Omnibus (NCBI GEO), one that allows translating the temporal measurements into time intervals, and one that allows the researcher to define temporal concepts like peaks based on those intervals. Then she can search for genes that exhibit that particular pattern within the previously selected data pool. We present a web-based interface that makes the first of those programs easier for the researcher to use.

Mentor: Guenter Tusch

KIRKHOF CENTER KC70

## **Mapping the Reactivity Surface of Metal-Olefin Reactions**

Presenter: Joshua Davis

Metal-olefin complexes are intermediates in a wide variety of industrial reactions. Interestingly, the metal-olefin bond is not always symmetric. The purpose of this study was to understand how the asymmetry of the metal-olefin bond affects the rate of nucleophilic attack by measuring the rate of attack across a series of 12 metal-olefin complexes, previously made in our lab. Unfortunately, the majority of our time was spent in methods development. Solutions of metal-olefin complexes are air-sensitive, complicating the accurate measurement of their concentration. In addition, several of our solvent systems were found to react directly with our metal-olefin complex, making them unusable. In the end, we settled on  $\text{CH}_3\text{NO}_2$  and  $\text{C}_2\text{H}_4\text{Cl}_2$  as the most compatible. Using these we worked out the method for running the kinetics experiments, but the preliminary data shows there are still some stability problems in solution.

Mentor: Stephen Matchett



# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC71

## **Investigating the Effects of BIBR1532 and Related Analogs on Telomerase Activity in Human Prostate Cancer Cells**

Presenter(s): Thomas Rogers, Rusheeswar Challa

Unlimited cellular proliferation of cancer cells is associated with the maintenance of telomeres in DNA. Telomeres are double stranded repeats of TTAGG sequence that cap the ends of chromosomes and provide genetic stability and immortality to cancer cells. Telomerase, the enzyme that adds telomeres and its inhibition has become an attractive target for new cancer therapeutics. Synthetic telomerase inhibitor, BIBR1532, has shown growth arrest in tumor cells. In our study BIBR1532, a mixed-type competitive inhibitor, and two synthetic analogues (WS6-48, WS4-43A) were tested for anti-proliferative and migratory activity on metastatic prostate cancer cells. Preliminary studies indicate these compounds are highly active against proliferation. Studies are currently underway on their effects on migration and telomerase activity. If these studies show promising results, we will further research the effect that BIBR1532 and its synthetic analogues have on other metastatic cell lines.

Mentor: Suganthi Sridhar

KIRKHOF CENTER KC72

## **Soft Tissue Anatomy of the Hindlimb in the Rhesus Macaque (*Macaca mulatta*)**

Presenter: Lauren Smith

Rhesus macaques are one of the most readily used primates within a laboratory setting, but despite their importance there is a limited amount of information on the basic anatomy of macaques in the scientific literature. Given my interests in movement and locomotion I undertook a full, photographically-documented dissection of a macaque hindlimb. My results documented for the first time the presence of an anserine bursa deep to the insertion of the sartorius, gracilis, and semimembranosus on the tibia, which likely aids to decrease friction during knee flexion. I have also noted an adipose pad between the tendocalcaneus and the calcaneus, tibia and fibula. This likely reduces friction during contraction of the triceps surae during locomotion. In conclusion, through the dissection of even a single rhesus macaque lower limb specimen I have been able to provide greater detail on the anatomy of the region and expanded our understanding of soft-tissue features present in the species.

Mentor: Justin Adams

KIRKHOF CENTER KC73

## **Cognitive Depletion in the Classroom: The Potential Moderating Effect of Physical Fitness**

Presenter(s): Jordan Duff, Natalie Cotela, Michele Verellen

Engaging in prolonged attentional control tasks is mentally and physically depleting. What can safeguard against this depletion effect? Recent studies have shown that cardiovascular exercise increases mental functioning, such as improved executive functioning and attentional control. We tested the hypothesis that cardiovascular fitness protects against the mental depletion typically experienced from sustained attentional control during demanding tasks. Participants self-reported their weekly amount of exercise and we tested their spatial memory in a narrative comprehension task before and after a cognitive demanding task: sitting in a 35-minute lecture. Results showed some evidence for depletion on spatial memory, however there was not strong support for moderating effects of cardiovascular fitness. Results will be discussed regarding the strength model of self-control and the role of cardiovascular fitness in mental functioning.

Mentor: Kathryn Remlinger

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC74

## **The Benefits of Interruptions**

Presenter(s): Julia Wright, Hannah Nicholson, Kelsey Walukonis, Tony Schnotala

How do individuals deal with interruptions during tasks with heavy cognitive load? Although interruptions are generally regarded as disruptive, it is possible that in some highly complex task circumstances interruptions serve an adaptive function to supplement limited memory stores. To investigate this, we used a simulation game in which participants played detectives investigating a series of complex crime scenes. We manipulated the presence of interruptions to examine circumstances under which interruptions can be beneficial or harmful to task performance. The interruptions were irrelevant to the current case, but vital to the adequate completion of suspended cases. Initial findings show that although interruptions may disrupt local performance on the task being interrupted, global performance, measured by total evidence collected, is aided by interruptions. The results have implications for basic research on prospective memory as well as applied issues of team functioning.

Mentor: Benjamin Swets

KIRKHOF CENTER KC75

## **Basic Emotion and Early-Learned Verbs**

Presenter(s): Katie Hammond, Joel Mounts

How do you feel when you drop something? While previous research centering on the embodiment perspective has investigated such components as body parts in verb meaning, this study seeks to describe the systematic relation between 102 verbs and emotions. The first survey asked undergraduates to connect 102 early-learned verbs and 7 basic emotions (joy, love, anger, etc). The second survey asked 3-to 5-year-olds to connect the same verbs with 5 everyday emotional words (happy, sad, etc). At a threshold of 50% agreement, 64% of the verbs were associated with a single emotion and 38.4% with a pair of emotions in adults. In children, the results indicate a tie: 50% of the verbs were related to a main emotion and 50% to a pair of emotions. A Mann-and-Whitney test comparing emotion and shape resulted in a U-value.

Mentor: Josita Maouene

KIRKHOF CENTER KC76

## **Student Learning in Wave Mechanics Through an Inquiry-Based Approach**

Presenter: Kristin Barber

Results from Physics Educations Research suggest that when teaching by telling is utilized many students walk away from wave mechanics with misconceptions intact. The purpose behind our experiment was to compare the effectiveness of two different approaches to teaching in discussion sections, focusing specifically on student learning of transverse wave motion. The experiment was conducted in Winter 2011 at GVSU in multiple classes of General Physics II (PHY 221). In the control group, students worked in small groups on a worksheet geared towards application of material covered in lecture. The experimental group instead utilized a tutorial that had students apply the material and then guided them to confront and resolve their own misconceptions. We measured students' performance on pre-assessment and post- assessments that took place before and after the teaching activities mentioned above.

Mentor: Bradley Ambrose

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC77

## **Physiological and Psychological Characteristics Associated with Performance in College Female Athletes**

Presenter: Courtney McCotter

Some articles state the physiological characteristics of athletes in a single sport, and other articles examine some psychological characteristics. This research will use somatotype assessments, and assessments of flexibility, power, agility, and muscular strength to create a more holistic physical comparison between female varsity athletes at Grand Valley as well as examine the competitiveness of these athletes. The psychological measures include a Sport Orientation Questionnaire (SOQ) for competitiveness, a Sport Motivation Scale (SMS), and a 2-question self-evaluation of their athletic performance. The results of this study should paint a very general picture of the physiological aspects of a given female athlete within a given sport and display the differences between various sports. Also, the psychological measures will show if any relationship exists between the participants' competitiveness/motivation and their athletic performance. Preliminary results will be presented.

Mentor: Christina Beaudoin

KIRKHOF CENTER KC78

## **Stratigraphic and Geologic History of the Point Pleasant Formation (Middle Ordovician) of Ohio and Kentucky**

Presenter(s): Thomas Riddering, Tiffany Hackett, Clayton Lipski, Jeremy Espinoza

Outcrops of the Middle Ordovician Point Pleasant Formation, composed mostly of argillaceous limestone, calcareous shales and layers of brachiopod coquina, are found in southwestern Ohio and northern Kentucky. The formation is gradationally overlain by the Upper Ordovician Kope Formation and gradationally underlain by the Middle Ordovician Lexington Limestone. Samples were collected near Brooksville and at Lower Holst Creek on Highway 9 in northern Kentucky. Multiple point counts will be done on thin sections of our samples using a petrographic microscope with emphasis on fossil assemblages and deformed calcite grains. We will be searching for crystal plastic deformation structures within the calcite grains consistent with very low temperature deformation to support the hypothesis that the deformation in the Point Pleasant Formation was caused by down slope motion of sediments in a submarine setting.

Mentor: Patricia Videtich

KIRKHOF CENTER KC79

## **Yes, You Can Serve Two Masters: Reflexivity and Mystery Shopping in Hospitality Education**

Presenter: Erin Pruitt

The study pilots the use of reflexivity in studying the meaning of hospitality service and quality. In addition, student assessments of quality are used in providing feedback to restaurant businesses in Grand Rapids on the quality of their product. The survey, used to guide reflection, is divided into 4 sections: the outside, inside, the meal, and staff interaction. Twelve questions in each section rate the various components of participants' experience on a 4 point scale, poor to excellent. Eighteen students reported on their dining experience at 36 establishments ranging from fast food to formal dining, located mainly in Grand Rapids. This component reports on the areas of excellence and those needing improvement. Student research reports indicated that the reflexive experience provided excellent learning, observation and perception of high quality service. While no man can serve two masters (Matt 6:24), it is evident that the activity can serve the dual purposes for which it was intended.

Mentor: Michael Scantlebury

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC80

## **A Statistical Consulting Experience: Determining Indicators of MCAT Scores and Medical School Admission Rates**

Presenter(s): David Schlueter, John Frazier

One of the many services that the College of Liberal Arts and Sciences provides is counseling for students who intend to pursue admission to medical or dental school. JoAnn Litton, the Senior Academic Advisor of the Pre-Professional programs for CLAS, was interested in determining reliable predictors of MCAT scores and medical/dental school admission rates based on past applicants who have used the services of CLAS Academic Advising Center. As statistical consultants, it was our job to analyze a dataset provided by the Advising Center containing multiple academic measures in order to find and report which variables were most reliable.

Mentor(s): Neal Rogness, Jo Ann Litton

KIRKHOF CENTER KC81

## **Honey, I Ate the Kids! Life History Strategies, Fish Behavior, and Management of a Research Cichlid Colony**

Presenter(s): Christopher Scheiber, Amanda Haupt

Many fishes express indeterminate growth and flexible resource allocation to growth and reproduction. Unlike most fishes, convict cichlids (*Cichlosoma nigrofasciatum*) form strong mate bonds and exhibit long-term, biparental care. Because of these characteristics, we selected convict cichlids as our model to study the effects of parental behavior on microbial transmission. Despite careful consideration of their natural history, our initial experimental set-up and husbandry routine often resulted in unexpected outcomes, such as parents eating their broods within days of spawning, that interfered with research objectives. By applying ideas about the evolution of life histories and reproductive strategies to our experimental subjects, we adjusted our experimental protocol and caretaking procedures, produced the samples we needed, and gained fresh insights about practical aspects of fish reproductive strategies. In our poster, we will share this cautionary tale and its outcomes.

Mentor: Jodee Hunt

KIRKHOF CENTER KC82

## **Unusual Variant of Gonadal Artery Origin from Accessory Renal Arteries**

Presenter: Russell McDaniel

Demonstrated anatomy shows that the gonadal arteries are typically a symmetrically paired set of vessels that arise from the abdominal aorta, inferior to the renal arteries. During embryonic development, the gonadal arteries are formed from paired segmental arteries that vascularize mesomeres (tissue destined to differentiate into gonads). Presented is an example of an unusual variant whereby gonadal arteries arise from left and right accessory renal arteries. Not only does the appearance of this variant demonstrate an unusual developmental pattern, it also presents a challenge to surgeons attempting transplantation of kidneys.

Mentor(s): Dawn Richiert, Tim Strickler, Reed James

# Poster Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER KC83

## **Dolomite Classification and Origin in the Silurian Brassfield Formation of Northern Kentucky**

Presenter(s): Zachary McCurley, Scott Simonson, Adam Davis

The Silurian Brassfield Formation is dominated by dolomite, which initially formed as limestone in a reef-associated depositional environment, and is exposed in Kentucky, Tennessee, Ohio and Illinois. Although the formation is found throughout this region, only an exposure in northern Kentucky will be quantitatively analyzed. Classification of three samples from this outcrop will be made by performing 300 point counts of thin sections. Specifically, crystal size and shape of dolomite will be quantified. These data may suggest the temperature at which the dolomite formed, and therefore its origin. Initial visual analysis suggests the majority of the dolomite crystals are planar-subhedral to euhedral. Fossils have also been identified, mostly in a chert nodule from the Brassfield.

Mentor: Patricia Videtich

KIRKHOF CENTER KC84

## **Visual Learning and Discrimination of Abstract Shapes by Crayfish**

Presenter: Matthew Boeve

When multiple sensory stimuli are detected, there is the potential for a learned association to form between the stimuli. The animal may learn and show a response originally associated with one stimulus when it now detects the second stimulus. We have tested the learning capabilities of crayfish by testing the ability to associate abstract visual shapes with food stimuli. The conditioning trials involve giving the crayfish a five-minute acclimation period in the testing tank and then releasing them for twenty minutes to explore and have the opportunity to view the visual symbol in the presence of a food stimulus. Eventually the food stimulus is removed after continued exposure to the stimuli and if a learned association between the visual symbol and food stimulus occurs, we would expect crayfish to spend a greater amount of time near the learned "reward" symbol even when food is absent. From our results, they appear capable of learning abstract visual symbols.

Mentor: Dan Bergman

KIRKHOF CENTER KC85

## **Poverty Has A Woman's Face: Evaluating Social Construction of Poverty and Its Local Implications**

Presenter: Callista Cook

This study assessed the local implications of poverty and its effects on women within the Grand Rapids, Michigan community. The main goals of this two-part study were to both advocate and educate the campus community as well as implicate activism. This first part of the study consisted of bringing in a speaker to discuss poverty, and the realities that it consists of. This educational discussion did not solely consider the implications of poverty on women alone, however, research has shown that poverty is a critical issue for women. This is especially so for single mothers and women who are victims of abuse. The second part of this study consisted of establishing a local drive on the campus to collect basic needed items for local women's shelters. This study assesses the development of advocacy and activism in the college community, strategy, and distribution of both knowledge and resources.

Mentor: Michael Scantlebury



## Oral Presentation Abstracts

NOTES 9:00 AM - 5:30 PM

# Oral Presentation Abstracts

BEGINNING AT 9:00 A.M.

9:00 AM

KIRKHOF CENTER 1104

## **Analyzing the Cost of Switching to Compostable Tableware for the Amway Grand Hotel**

Presenter: Thad Cummings

Fossil fuel-based disposable products create unnecessary waste in today's landfills. New technology has made it possible to manufacture plant-based compostable products with a lower carbon footprint than conventional disposable products. This study was conducted to determine whether a business could switch from fossil fuel-based disposable products to plant-based compostable products without an increase in cost as well as reduce their carbon footprint. The cost analysis and environmental analysis was done on the Amway Grand Hotel in Grand Rapids, Michigan. The savings by switching from trash removal to composting removal saved Amway Grand enough money to purchase the plant-based compostable products at a lower cost and decrease their carbon footprint.

Mentor: C. "Griff" Griffin

KIRKHOF CENTER 1142

## **Garlic Mustard (*Alliaria petiolata*) influence on decomposition rates in Cass County, Michigan.**

Presenter: Ann Gracz

Invasive species have become a problem in West Michigan Garlic Mustard (*Alliaria petiolata*) is an invasive species that is known to have allelopathic impacts on plant communities I hypothesize that the allelochemicals released by Garlic Mustard alter nutrient cycling which ultimately affects decomposition rates. A scientific report will be developed by conducting a field experiment that measures the decomposition rate of Oak (*Quercus alba*) and Sugar Maple (*Acer saccharum*) leaves, Garlic Mustard leaves and stems, as well as a wooden stick and filter paper, in Cass County, Michigan. Results will demonstrate whether Garlic Mustard influences nutrient cycling.

Mentor: Todd Aschenbach

KIRKHOF CENTER 2201

## **Religion, Medicine, and the Birthing Experience**

Presenter: Samantha Nichols

Religion and medicine have a long history together. In the past cultures used religion to understand death and illness and medicine occurred through the religion's attempt to heal. It was not until modern medicine that the two fields split. Today religion is still an important part of the healing process and it is from different religions that we get old ways to heal patients when new innovated ways fail. An understanding of how to improve patient adherence to treatment plans can also be found through religion. Judaism and Hinduism are focused on to give an understanding of the differences in living styles and why some patients refuse or do not follow treatment plans. There is a look at making birth a spiritual experience through understanding the needs of women. Through religion it is taught that birth is not a disease that needs treatment but a part of the life. It is important to incorporate different fields of knowledge into medicine, to create a better environment for healing.

Mentor: Sheldon Kopperl

# Oral Presentation Abstracts

BEGINNING AT 9:00 A.M.

KIRKHOF CENTER 2215

## **Timeliness of Antibiotic Administration in Neutropenic Patients at Risk for Sepsis**

Presenter: Meghann Sikora

Infection is a complication in patients receiving treatment for cancer. The promptness of treatment of cancer patients with an infection is imperative as greater than 50% of patients with severe neutropenia will die if untreated during the first 48 hours of infection. The purpose of this study was to analyze the relationship between infection and timeliness of antibiotic administration in neutropenic cancer patients with stratification based on admission status, caregiver characteristics and ordered blood cultures. A chart review study of hospitalized oncology patients diagnosed with neutropenia was used. Information obtained included: admission status, laboratory values, antibiotic information, clinical presentation, medical co-morbidities, and nurse characteristics. In addition, a survey was sent to all nurses involved in the care of patients requesting information regarding educational status, oncology certification, and years of experience.

Mentor: Theresa Bacon-Baguley

KIRKHOF CENTER 2216

## **Phragmites (*Phragmites australis*) Mapping and Control in Muskegon County, Michigan**

Presenter: Anthony Straley

Invasive species contribute to the destruction of critical wetlands in Muskegon, Michigan. The invasion of Phragmites (*Phragmites australis*) drives out native wetland species resulting in reduced biodiversity. I hypothesize that with proper identification and mapping of existing Phragmites (*Phragmites australis*) stands and critical wetland areas, the invasion can be properly controlled. An adaptive management plan will be developed that identifies where existing Phragmites (*Phragmites australis*) stands and critical wetland areas overlap. Results will be used to focus invasive species control and critical wetland preservation. Existing Phragmites (*Phragmites australis*) stands will be monitored for future spread.

Mentor: Todd Aschenbach

KIRKHOF CENTER 2259

## **The Social Psychology of Love and Attraction**

Presenter: Princess Braxton-Davis

Love is a universal emotion that has become the basis of marriage and family for many societies which researchers continue to explore. This research will add to the knowledge of interpersonal romantic attraction, further exposing love's complex nature. Dr. Earl Naumann's survey in his book, Love at First Sight, served as a model for the survey utilized in this study. A total of 206 students at a Midwestern university were surveyed. Midwestern university students were sampled in two ways: first an e-mail was sent to the professor of every third class from the Spring semester schedule with at least 10 students in each class, and second, students were asked to participate in the study around campus. Students were at least 18 years of age. They were asked to identify what characteristics drew them to their partner or person of interest. Keywords: interpersonal romantic relationships, romance, attraction, love, dating .

Mentor: Cheryl Boudreaux



# Oral Presentation Abstracts

BEGINNING AT 9:00 A.M.

9:00 AM CONTINUED

KIRKHOF CENTER 2263

## **Urban Agriculture**

Presenter: Holly Stratton

Urban agriculture is the practice of growing food in urban areas. As a research team member of the Keller Future Center Urban Farming Demonstration Project, I participated in a seven week intensive project to discover what urban agriculture possibilities could be implemented within the confines of the greater Grand Rapids area. We broke into three working groups and came up with four concepts to this end. Each group had their own mission statements to work from and we proposed the creation of an agricultural truck, using a parking garage to cultivate vegetables, having an “agro-hub” for farmers to connect to each other, as well as having a do-it-yourself kit. We presented the ideas and one of them, the kit, is in the process of becoming a reality. The focus of the paper is to show urban agriculture through the sociological imagination and relate it to our community.

Mentor: Joseph Verschaeve

KIRKHOF CENTER 2266

## **Knowledge of the HPV Vaccine: A Survey of GVSU Freshmen Students**

Presenter(s): Chelsey Chizick, Amy Brinch, Alisha Foley

The purpose of this study was to assess knowledge of college freshmen attending Grand Valley State University regarding the indication, purpose, safety, efficacy, and cost of the human papilloma virus (HPV) vaccination. Knowledge of the vaccine was measured by administering a 16 question anonymous online survey. An Analysis of Variance (ANOVA) found no significant differences in mean survey scores between participant demographic variables. Chi-square analysis revealed only one significant difference ( $p = 0.006$ ) pertaining to the purpose of HPV vaccination between sexually active and non-sexually active participants. This suggests that more non-sexually active participants were aware that the vaccine is most effective if administered before onset of sexual activity. Results from this study indicate that the majority of participants lacked general knowledge regarding the HPV vaccination, and future educational efforts need not be targeted towards specific demographic groups.

Mentor: Andrew Booth

KIRKHOF CENTER 2270

## **Management of Obesity in Childhood by Area Clinicians**

Presenter(s): Ashley Strotbaum, April VanDenburg, Leah Tarrant

The Center for Disease Control and Prevention reported childhood obesity prevalence increased 7.4% over three decades. Pediatric clinicians are important in managing obesity. However, studies revealed only 50% of pediatric practitioners routinely counsel children about obesity. A nationwide survey showed a lack of confidence in pediatric practitioners about managing obesity. Fortunately, most clinicians are interested in learning how to manage obesity. Recently, childhood obesity resources for local practitioners became available. Thus to understand how local clinicians feel about childhood obesity is imperative. Objective: The goal is to assess local pediatric clinicians' current practice, confidence, barriers and opportunities for improvement with childhood obesity. West Michigan pediatric clinicians through Spectrum Health will be surveyed about experiences, attitudes and treatments for childhood obesity and opinions for a obesity referral center. Results and Conclusions: Pending better environment for healing.

Mentor: Andrew Booth, William Stratbucker, Phyllis Curtiss

# Oral Presentation Abstracts

BEGINNING AT 9:30 A.M.

9:30 AM

KIRKHOF CENTER 1104

## **User Perceptions of Current Wilderness Conditions at Nordhouse Dunes**

Presenter: Jeffrey Beurkens

The Nordhouse Dunes Wilderness, part of Manistee National Forest, is the Lower Peninsula's only primitive wilderness in NWPS. Wilderness is any tract of land that has not been significantly altered by man and has been set aside by Congress to preserve ecosystem values and to provide recreation opportunities and solitude. Surveys were administered to users exiting the NDW to assess group size and type, activities within NDW, and whether current wilderness conditions match the expectations of users. Results show that most users felt that frequency of interactions with other groups were acceptable, although some were bothered by large groups. Most were neutral or disagreed that NDW should limit group size or total users within NDW. Results showed higher dissatisfaction related to campsites than overall encounters. This data suggests NDW meets expectations of most users, but issues like campsite layout and size limitation for certain age groups would enhance overall user satisfaction.

Mentor: C. "Griff" Griffin

KIRKHOF CENTER 1142

## **A Benefit-Cost Analysis of the Composting Program at Grand Valley State University, Michigan.**

Presenter: Katherine Bauer

Composting pre- and post-consumer waste reduces the volume of waste submitted to landfills, while providing a nutrient rich organic layer for soils. In the fall of 2009, Grand Valley adopted SPURT as an alternate waste disposal program for compostable materials. I hypothesize that Grand Valley purchasing and running their own compost facility would benefit them economically, and provide a beneficial learning experience for students. A benefit-cost analysis procured by compiling past data from our campus, along with data from other campuses that have implemented this program will provide insight to determine whether or not composting on campus would be beneficial.

Mentor(s): Ethan McCann, Todd Aschenbach

KIRKHOF CENTER 2201

## **Teaching Play Activities to Children with Autism: Comparing Adult and Peer Models**

Presenter: Lisa Shattuck

Video modeling is a behavioral strategy that has been shown to be effective when teaching skills to children with autism. Few researchers have investigated whether peer or adult video models are better. Anecdotal evidence implies that children may learn better from their peers than from adults. Evidence also suggests that children with autism may not detect a difference in the models and will learn equally well from either peers or adults. Using a multiple baseline across participants with alternating treatments design, this study assessed modeled and unmodeled play behaviors and verbalizations in preschoolers with ASD following the implementation of a video-modeling intervention.

Mentor: Jamie Owen-DeSchryver

# Oral Presentation Abstracts

BEGINNING AT 9:30 A.M.

9:30 AM CONTINUED

KIRKHOF CENTER 2215

## **Museum Education: Understanding the Artist through K-12 Studio Practice**

Presenter(s): Elizabeth Dixon, Linda Walker, Taylor Medellin

Grand Valley State University Art Education students prepared, and held several art studio workshops at a local museum based on Jim Dine's, contemporary sculpture current exhibition. Preparation included visit of the exhibition and discussion with the curator. Research was conducted on the artist, experimentation of various K-12 art medium and design of meaningful art practice at a museum setting for intergenerational visitors. Data was collected by students' personal reflections, review of visual documentation and survey from the workshop participants. Data was then reviewed weekly for the purpose of improving projects and/or developing new ones based on an emerging idea/practice. The research advocates for service based art education practice that is based on contemporary art and relevancy to provide meaningful art making and art appreciation.

Mentor: Katalin Zaslavik

KIRKHOF CENTER 2216

## **Comparison of Cardiovascular Diastolic and Systolic Function of 2010 Metro Health Grand Rapids Marathon Runners**

Presenter(s): Melissa Meyer, Ashley Wharton, Susan Raaymakers, Marylynn Gaastra

The purpose of this study was to use two dimensional speckle tracking and tissue Doppler echocardiographic measurements of strain and strain rate to detect changes in cardiac function after running a marathon. Thirty-one runners of the 2010 Grand Rapids Marathon underwent echocardiographic assessment before and after the race. Participants of this study included 18 males and 13 females with an average finishing time of 245 minutes. Measurements pre- and post-race were analyzed using paired t-tests with alpha set at 0.05. Results will be presented.

Mentor: Wallace Boeve

KIRKHOF CENTER 2259

## **An Adaptive Management Plan for American marten (*Martes americana*) in Missaukee County, Michigan**

Presenter: Leslie Skora

Human consumptive uses of the landscape have created a devastating effect on ecosystems. The logging era in Michigan removed thousands of acres of old growth forests fragmenting wildlife habitat. These effects are seen in Missaukee County Michigan where species dependent on forest ecosystems have declined. I hypothesize that by re-establishing more historically natural conditions to the landscape, plants and animal species such as the American marten (*Martes americana*) will increase. Creating an adaptive management plan for the preservation of the American marten will help preserve a functioning ecosystem for the benefit of a diversity of plant and wildlife species.

Mentor: Todd Aschenbach

# Oral Presentation Abstracts

BEGINNING AT 9:30 A.M.

9:30 AM CONTINUED

KIRKHOF CENTER 2263

## **Michigan Job Sector Change**

Presenter: Cody Rose

The Michigan job market has been quite volatile. Over the last 5 decades we've seen fluctuation in agricultural, manufacturing and service jobs. The objective of this research is to display this shrink and growth or change of job sectors (primary, secondary, tertiary) in the state of Michigan. Occupation data for the state can be obtained from the censuses. Computer programs will be written and implemented to manipulate the data as desired. Google Earth/Maps will be used to display the data since Google Earth provides quality, labeled maps that are incredibly interactive. The viewer then becomes a user and is able to search for places of interest or discover places and cities by just zooming and panning. The data can be saved and viewed by decade online through a browser by anyone. Also, ArcMap will be used to create print maps.

Mentor: Wanxiao Sun

KIRKHOF CENTER 2266

## **The Function of Food in Latin American Literature**

Presenter: Ashley Moore

In literary work, readers can recognize certain devices employed by the author to reflect on the human condition. Through these literary devices, the author can express creativity, emotion, history, politics, or problems of gender and race. One of these themes is food, because it can embody part of a culture and community through its artistic representations. In my proposal, I will analyze the function of food as a metaphor, establishing comparisons in four Latin American narratives: "Leccion de comida (1971) by the Mexican author Rosario Castellanos, Historia de arroz con habichuelas (1983) by the Puerto Rican author Ana Lydia Vega, Carne quemada (2007) by the Spanish author Rosa Montero, and Los amantes (1996) by the Argentine author Silvina Ocampo. In these narratives, food fulfills a diverse role, ranging from a critique of the patriarchal system to the metaphoric separation of love. Food also succeeds in critiquing postcolonialism and being an erotic form of communication.

Mentor: Zulema Moret

KIRKHOF CENTER 2270

## **An Adaptive Management Plan for Whippoorwill (*Caprimulgus vociferus*) Habitat Restoration in Gladwin County, MI**

Presenter: Marie Rathburg

Fragmentation and degradation of habitat can decrease certain bird populations. In Gladwin County Michigan, the Whippoorwill (*Caprimulgus vociferus*) is one of the declining populations. I hypothesize that habitat improvement for Whippoorwill should increase their populations. I will create an adaptive management plan to restore Whippoorwill habitat on my family's property in Gladwin stay and breed. Restoration efforts should reduce the negative impacts associated with fragmentation and degradation of bird habitat.

Mentor: Todd Aschenbach

# Oral Presentation Abstracts

BEGINNING AT 10:00 A.M.

10:00 AM

KIRKHOF CENTER 1104

## **Beaver Activity Implications on Fish Community Assemblage**

Presenter: Alan Perzanowski

Beaver ponds can be home to many fish species and supports the rearing of young-of-year trout. Beaver impoundments have numerous benefits to an ecosystem as well. Beaver ponds create wetlands which are among the most productive ecosystems in the world. Beaver dams increase biodiversity and improve water quality, maintain constant stream flows during droughts and by reducing flood damage, as well as stabilize the water table. Sylvan Creek is a small cold water stream located in Manistee County, MI This creek contains limited connectivity to other water bodies and is a primarily closed system. The purpose of this study is to compare fish assemblage and species abundance between immediately following a disturbance and six months post-disturbance. Fish species richness will be greater after reconstruction of the dam. Brooke trout density will increase in response to the rebuilt dam.

Mentor: C. "Griff" Griffin

KIRKHOF CENTER 1142

## **Diet Analysis of Stocked Brown Trout vs. Rainbow Trout within the Muskegon River, MI**

Presenter: Sara Damm

Recreational fishing is economically and socially essential to western Michigan. Brown trout (*Salmo trutta*) and rainbow trout (*Oncorhynchus mykiss*) are highly valuable stocked species requiring more scientific research of their diets. This scientific report will include data from 343 stocked trout specimens collected in spring of 2010 from Muskegon River, MI, and will be statistically analyzed to determine variations between diets of the two trout species. I hypothesize that there will be no significant differences in diets between species. Results will be used to better understand stocked trout's diets to benefit the fishing industry in west Michigan.

Mentor: Todd Aschenbach

KIRKHOF CENTER 2201

## **Developing Evolutionary-Based Domain-Specific Loyalty Scales**

Presenter: Kraig Shattuck

Loyalty has been researched in many areas, but little attention has been paid to whether loyalty is a unitary construct or differs across domains. We suggest that loyalty will differ across domains in accordance with the challenges our ancestors faced during their evolutionary history. We test this hypothesis by developing seven psychometric loyalty scales, each putatively assessing a different domain, and investigating whether there is significant individual variation across them. The proposed domains are loyalty to group, friend, romantic partner, kin, nation, sports team and brand. We found good internal consistency for all seven scales, and factor analysis indicated that the scales were distinct, supporting the hypothesis of distinct loyalty domains. This research illustrates the utility of an evolutionary perspective and should help future studies identify the contextual and dispositional factors contributing to loyalty.

Mentor: Robert Deaner

# Oral Presentation Abstracts

BEGINNING AT 10:00 A.M.

10:00 AM CONTINUED

KIRKHOF CENTER 2215

## **A Comparative Analysis of Social Movements in the Balkans**

Presenter: Kevin Dearnley

Contrary to what some research has shown, the emergence of a social movement in a country does not always translate into political change. A social movement can be organized around goals such as reforming the electoral process or removing a dictator from power, but size alone does not guarantee success. This paper expands upon the current social movement literature by examining several characteristics of two movements in the Balkans: Otpor in Serbia and Vetvendosje in Kosovo, in order to show which characteristics contribute to success. This paper examines the factors that influenced Otpor's success and show how Vetëvendosje's differences as a social movement may explain its failure thus far. The first factor to be examined is the structure of the social movements. The second factor is the action orientation of social movements. Various tactics that these groups have used will also be examined. The third factor is the political environment in which the groups operated.

Mentor: Heather L. Tafel

KIRKHOF CENTER 2216

## **Accelerating the Computation and Verification of Molecular Collision Models**

Presenter: Kurt O'Hearn

Our project constituted a case study in computational science: applying parallel computing techniques to mathematical models for solving a scientific problem. The problem involved a physical chemistry model that evaluated simulations of molecular collision experiments. The collision model was implemented via a 15,000-line FORTRAN-77 simulation. This project was chosen for parallelization because of its extreme computational complexity and significant execution time. We targeted two new and different technologies to parallelize the simulation: OpenMP and CUDA FORTRAN. Nearly linear speedup was measured in the OpenMP parallel version executing on a 16-core multiprocessor. Experimental data indicates speedups should continue to scale well with an increasing number of processors. Results from the CUDA FORTRAN parallel version executing on a graphical processing unit are still pending, but we predict greater speedups will be observed since modern GPUs contain hundreds of stream processors.

Mentor(s): Christian Trefftz, Greg Wolffe

KIRKHOF CENTER 2259

## **Evaluating Bottom of the Pyramid Projects**

Presenter(s): Stephanie Ly, Tim DuBois

This project summarizes the literature about, and builds a theoretical framework that classifies, Bottom of the Pyramid (BOP) projects. BOP is a concept coined by the late Dr. C.K. Prahalad in his book, *The Fortune at the Bottom of the Pyramid*. He argues that poverty can be reduced and eliminated through free markets, and that business is the best way to move people out of poverty. As is true with many buzzwords such as "green" or "organic", it is not clear what a true BOP project entails. This project reviews the literature and learning about the BOP concept, provides a theoretical framework for classifying BOP projects, and using it, classifies dozens of projects which claim to be BOP.

Mentor: Carol Sanchez

# Oral Presentation Abstracts

BEGINNING AT 10:00 A.M.

10:00 AM

KIRKHOF CENTER 2263

## **Neurobehavioral Effects of Methylmercury Exposure in Young Zebrafish**

Presenter: Stefan Goetz

Methylmercury (MeHg), a ubiquitous environmental toxin, has been implicated in neuropsychological disorders in humans, particularly when exposure occurs while the nervous system is undergoing development. Zebrafish (*Danio rerio*) has become a useful vertebrate model to investigate the effects of developmental exposure to environmental toxins. The current study investigates the neurobehavioral effects of MeHg exposure in young adult zebrafish using an active avoidance paradigm. Young adult zebrafish were exposed to 0.0  $\mu$ M, 0.003  $\mu$ M, 0.01  $\mu$ M, 0.03  $\mu$ M, and 0.1  $\mu$ M of MeHg and then conditioned to swim from a lighted (CS) compartment to a dark compartment to avoid receiving a body shock (US) in a shuttle-box with opaque, manually raised dividers. The training session took place on Day 1 of the experiment. To assess the zebrafish's learning and memory of the training session, zebrafish were then tested during a second session on Day 3 of the experiment.

Mentor: Xandra Xu

KIRKHOF CENTER 2266

## **A Student Statistical Consulting Experience: Analysis of Water Data**

Presenter(s): Ryan Hinkley, Eric Howard

Each year since 1986, the GVSU Annis Water Resources Institute has offered hands-on water quality sampling cruises for students in Grades 4-12, college students, and the general public. The water quality data from the cruises is for educational use only. The 2010 data set from Lake Michigan, Spring Lake and Muskegon Lake was subjected to statistical analysis. The purpose of the analysis was to define trends and help create tools for potential middle and high school teachers to use in future student coursework.

Mentor(s): Janet Vail, Neal Rogness

KIRKHOF CENTER 2270

## **A Study of Lady Gaga's Brand, Branding Techniques, and Their Application to Other Brands**

Presenter: Megan Carter

Lady Gaga is an American pop artist who went from singing in clubs to international stardom in about 18 months, an unusually short period of time for the music industry. She is also known for her eccentric costumes and behavior. Information about exactly how she reached her level of popularity, how she promotes herself, and what purpose her eccentricity serves, however, is closely guarded. The author uses research on advertising and branding, in addition to published interviews with Lady Gaga, to answer these questions by studying her as a brand. Theories about the strength of her brand, why it appeals to people, how it contributes to her success, and what other brands can learn from her will be presented.

Mentor: Frank Blossom

# Oral Presentation Abstracts

BEGINNING AT 10:30 A.M.

10:30 AM

KIRKHOF CENTER 1104

## **Private Land Owner Support for Public Conservation Plans**

Presenter: Lucas Cotton

The level of success of any conservation plan is limited by the willingness of all managers to support the practices outlined within the plan. The goal of this project was to develop a document that could be distributed to private land owners within and around the Barry State game Area that would encourage them to manage their land in ways that are consistent with the conservation goals of the game area. The contents of this document were determined based on current land uses and management goals of the private land owners. It includes information on the species in and around the game area and management practices that would be beneficial to those species. Also included is a brief description of some resources that are available to land owners to help them meet their conservation goals.

Mentor: C. "Griff" Griffin

KIRKHOF CENTER 1142

## **An Adaptive Management Plan for Reducing White-Tailed Deer (*Odocoileus virginianus*) Herbivory in Ottawa County Parks, MI**

Presenter: Stephanie Podein

White-Tailed Deer populations are causing significant changes to forested parks in Ottawa County, MI. Excessive deer herbivory of understory vegetation threatens to decrease biodiversity and eliminate ground cover for wildlife. I hypothesize that increased hunting pressure along with deer exclosures will decrease herbivory in Ottawa County. An adaptive management plan will be created that includes deer exclosures to inhibit herbivory along with follow-up monitoring of understory vegetation. Results will be used to make an effective deer control program for the DNRE that will restore understory biodiversity to the forested ecosystems in Ottawa County, MI.

Mentor(s): Heather Rueth, Todd Aschenbach

KIRKHOF CENTER 2201

## **Applying Anthropology to Water Quality Assessment: An Investigation of pH and Nitrates in Drinking Water**

Presenter: Jordan Sparks

This study examines demographic factors that influence perception of drinking water quality. A goal of the research was to assess pH and nitrates in drinking water, compare the results to both regional and national levels and critique current public policies in an effort to improve water quality awareness. There are three hypotheses: 1) pH and nitrate levels will exceed the maximum contaminant level, 2) households will be satisfied with their drinking water and 3) perception of water quality is positively correlated with educational level and household income. Drinking water samples (n=105) and demographic data were collected in West Michigan. Six samples exceeded a pH of 8.5 with only one nitrate sample above the safety range. The second and third hypotheses were not supported. Many people had no comment on their drinking water. Most respondents had the same college educational level. Household income did not have an influence on people's perception of their water quality.

Mentor(s): Heather Van Wormer, Elizabeth Arnold



# Oral Presentation Abstracts

BEGINNING AT 10:30 A.M.

10:30 AM CONTINUED

KIRKHOF CENTER 2215

## **Plato and Poetry: A New Interpretation**

Presenter: Andy Sanford

A widespread view of Plato's thought on poetry is that Plato was extremely hostile to poetry and that he wanted it banned from the state. It seems certain that Plato believed that poetry could corrupt the minds of the citizens and give them a false view of the gods. I explore what I think are three reasons for rejecting the ubiquitous view and accepting a more nuanced view of Plato's aesthetics. The use by Socrates in the REPUBLIC of a feverish city to demonstrate how justice is to be found in the city is an ironic method for arriving at a concept of justice. Plato has the interlocutors discuss the training of guardians for the feverish city as well and includes the humanities as significant for their training. I argue in this paper that the proposed ban on poetry must be understood in the context of the sick city which Socrates is using as a pedagogical device aimed at triggering insight into how justice can be realized.

Mentor: Mark Moes

KIRKHOF CENTER 2216

## **The Lived Experience: Pulmonary Arterial Hypertension and Intravenous Prostaglandin Therapy**

Presenter: Phyllis Boone

A descriptive phenomenological study proposed to obtain a subjective description of the experience of living with intravenous prostaglandin treatment for pulmonary arterial hypertension. It was intended to determine what kinds of elements are common to the experience, to develop an aggregate structure from the individual descriptions, and add to what is known about this phenomenon. The stories told by participants could help to determine how nurses can assist future patients to live optimally within the confines of a palliative treatment for this incurable illness. No participants responded to recruitment efforts by the researcher. The current state of nursing science about the experience was synthesized. The utility of phenomenological exploration for nursing practice was discussed. Barriers to research recruitment following the Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule were examined. Approaches to overcome these barriers were determined.

Mentor(s): Linda Scott, Patricia Schafer

KIRKHOF CENTER 2259

## **The United States and Israel**

Presenter: Kaylie McLeay

The focus of this thesis will be to explore the relationship between the United States and Israel and the reasons for which the United States holds the state in such interest as to provide the current levels of support, both financially and diplomatically. In doing so, it will examine the impact of public opinion, or lack thereof, as well as the power held in interest groups and lobbyists in the United States. Furthermore, it will look at how the bureaucratic process can impede change in an ever-changing world, and disallow the United States to evolve in line with the political environment of the world.

Mentor: Polly Diven

# Oral Presentation Abstracts

BEGINNING AT 10:30 A.M.

10:30 AM CONTINUED

KIRKHOF CENTER 2263

## **Beyond Pleasure: Plato and the Good**

Presenter: Nicholas Maki

In Republic IX, Plato claims that the philosopher would live the most pleasant life, learning being the greatest pleasure. However, Plato is not explicit as to what the life of an accomplished philosopher would be like. Some have posited that the philosopher, once he has acquired knowledge of the good, continually relearns it, experiencing residual pleasure in this. While this approach works for ordinary pieces of knowledge, Plato's description of the nature of the good puts it in another class. Looking to the aviary model of coming to know in the Theaetetus, I argue that, while the philosopher does have the most pleasant life overall and experiences ordinary pleasures in ways that no one else can, he transcends the ability experience the greatest of intellectual pleasures upon completing his knowledge of the good. Once obtained, knowledge of the good is of such a sort that it would never be released from mental grasp, making the pleasure of learning it a once-only experience.

Mentor: Kelli Rudolph

KIRKHOF CENTER 2266

## **The Density of the External Medium Affects Gravity Sensing in Plants.**

Presenter: Naila Kovacevic

The generally accepted model for plant gravity sensing invokes sedimenting, intracellular particles (statoliths) as gravity sensors. However, statolith-free plant cells, tissues and organs respond to gravity. We developed a new model for plant gravity sensing in which the entire protoplast acts as the gravity sensor. We can distinguish between the statolith model and the new gravitational pressure model by changing the density of the extracellular medium surrounding statolith-containing cells. The statolith model predicts that density of the external medium will not affect gravity sensing. The gravitational pressure model predicts that changing the density of the external medium will affect gravity sensing because it will change the buoyancy of the protoplast. We find that changing the density of the external medium does affect gravitropic curvature. These data are inconsistent with the statolith model for plant gravity sensing but are predicted by the gravitational pressure model.

Mentor: Mark Staves

KIRKHOF CENTER 2270

## **The Geomorphic Settings of Known Archaeological Sites in the Lower Grand River Valley, Ottawa County, Michigan**

Presenter: Nathaniel Hansen

To predict undiscovered archaeological sites in the Lower Grand River, we mapped known archaeological sites using color and infrared aerial photos, digital raster graphics, and digital elevation models. We interpreted the geomorphic settings of each site using this preliminary geographic information system. We found both spatial and temporal patterns in site location. The Lower Grand River Valley is cut into Quaternary glacial sediments that formed in front of the retreating Laurentide ice sheet roughly ~16,000 to 13,000 years ago. The valley has been occupied by different cultures shortly after it was ice free. The frequency of sites in the valley decreases from higher elevations to lower elevations. The majority of the sites are from the Woodland and Historic periods and they occupy all geomorphic surfaces. Most sites that are associated with resource gathering and camps are found in the uplands, while more permanent settlements are located within the valley.

Mentor: Patrick Colgan

# Oral Presentation Abstracts

BEGINNING AT 11:00 A.M.

11:00 AM

KIRKHOF CENTER 1104

## **Analyzing the Cost of Retrofitting a House to L.E.E.D. Standards**

Presenter: Jordan Gallagher

Climate change is linked to human activities including pollution, erosion, deforestation, and the use of non-renewable resources. To combat some of these issues the United States Green Building Council (USGBC) developed Leadership in Energy and Environmental Design (LEED). LEED is a third party verification system that provides guidelines and verification for this type of building/retrofit certification. LEED offers green alternatives to conserve material and energy associated with building and/or maintaining buildings and houses. My report shows the costs, benefits, and requirements of LEED certification for the retro-fitting of a house in northern Michigan. By comparing costs and limitations of LEED vs. conventional practices I can provide homeowners a look at the advantages and disadvantages of using each method. Mentor: C. "Griff" Griffin

KIRKHOF CENTER 1142

## **An Adaptive Management Plan for Johnson Grass (*Sorghum halepense*) and Cheat Grass (*Bromus tectorum*) Control in a Central Oklahoma Nature Center**

Presenter: Sharcy Ray

The introduction of invasive species often has negative consequences for ecosystem health. Invasive grasses like Johnson Grass and Cheat Grass have been known to out-compete native plants leading to a reduction in species diversity in prairie ecosystems. This adaptive management plan will assess the impacts of mechanical and chemical control methods on invasive grasses, as well as the overall plant diversity of four meadows in a central Oklahoma nature center. Percent cover of plant functional types was measured in summer of 2010, and results will be used to assess treatment options for future management of invasive plant species in meadow ecosystems.

Mentor: Todd Aschenbach

KIRKHOF CENTER 2201

## **Group and Individual Performance on a Creativity Task: The Constraining Effects of Examples**

Presenter: Chelsea Sage

Research has demonstrated that individuals provided with examples in a creative idea generation task tend to fixate on the most salient aspects of the examples and incorporate those features into their own creative work. The purpose of this study is to ascertain the extent to which this occurs within the context of groups. The process by which groups generate creative products under two conditions was investigated: with examples provided and without. Groups were compared to participants working alone. Participants were asked to draw new creatures and toys either after having seen examples or not. Participants who saw examples before beginning to draw created toy drawings with more features of examples than those who did not. Individuals also created toy drawings with more fixated features than groups. The first three creature drawings that groups created were compared to the second group of three. Those who saw examples created first three creatures with more fixated features.

Mentor: Christine Smith

# Oral Presentation Abstracts

BEGINNING AT 11:00 A.M.

11:00 AM CONTINUED

KIRKHOF CENTER 2215

## **The Successful Retreat of the Soviet New Economic Policy**

Presenter: Philip Snyder

This paper examines the New Economic Policy of the Soviet Union, established after the failures of War Communism in 1921 and, as a “road to socialism,” dismantled by Stalin’s Second Revolution in 1928. By 1921, Soviet Russia faced economic and social collapse, particularly among the discontented peasantry, who were abused by the State through forced grain requisitioning. However, considered a retreat at the time by many Party leaders, The New Economic Policy restored stability, appeased the discontented peasantry, and set the country on a path toward growth by reestablishing capitalism in the villages.

Mentor: Edward A Cole

KIRKHOF CENTER 2216

## **Analysis of Outcome Measures in Patients with a Fragility Fracture Treated with Forteo**

Presenter(s): Justin Shields, Jesse Kogelman

It is estimated that 10 million Americans have osteoporosis with an additional 34 million having a low bone mass density putting them at risk for the development of osteoporosis. The pathology of osteoporosis revolves around a disruption in bone metabolism which involves a cyclic process of bone resorption (breakdown) and bone formation. These processes, bone resorption and bone formation, can be monitored through serum and/or urine bone markers. One of the treatments for individuals who have sustained a fragility fracture due to osteoporosis is Forteo®, a recombinant human parathyroid hormone. The purpose of this study was to determine the change in bone mineral density and physiologic markers for bone metabolism in patients diagnosed with osteoporosis who were treated with Forteo®.

Mentor: Theresa Bacon-Baguley

KIRKHOF CENTER 2259

## **Educational Intervention Program for Acute Otitis Media**

Presenter(s): Jessica Miller, Laura VanPelt, Brad Johnson

Acute otitis media diagnosis has an incidence of 5 million cases per year, thereby creating a heavy burden on the health care system. A quality improvement program that involved an evidence-based, educational intervention during pediatric well-child visits was planned. Nine pediatric clinics that make up the CHAP program in Grand Rapids, MI participated. Infant caregivers were educated and were given a prescription for otic analgesic drops. A survey was used to evaluate the range of implementation strategies among the practices as well as the perceived effectiveness of the intervention. Results showed 77.8% of the clinics performed the educational intervention at the 9 month well-child visit, while 85.7% of the sites felt that families thought the intervention was at least somewhat helpful. Suggestions for improvement were provided and the effectiveness was perceived as favorable. Additional patient-level data will be needed to determine true effectiveness of these interventions.

Mentor: Wallace Boeve

# Oral Presentation Abstracts

BEGINNING AT 11:00 A.M.

11:00 AM CONTINUED

KIRKHOF CENTER 2263

## **Domestic and International Educational Inequity**

Presenter: Annie Hakim

Research question: What are the primary factors affecting the quality of the U.S. secondary education system, and how have these factors caused the U.S. to fall behind the secondary education systems of other countries? My presentation will summarize the current challenges and flaws within the U.S. education system. Specifically, I will address how the U.S. domestic achievement gap (associated with socio-economic status and race), along with teaching methods, teachers' unions, testing formats, and curriculum contribute to the U.S. falling behind other countries in secondary education. Aside from utilizing articles and books to outline this problem, I will also refer to personal interviews conducted with individuals working to tackle this problem through America's public, private, and non-profit sectors.

Mentor: Polly Diven

KIRKHOF CENTER 2266

## **2011 Nursing Student Policy Summit**

Presenter: Cynthia Vander Moren

The American Association of Colleges of Nursing 2nd Annual Student Policy Summit took place on March 20-22 at the Fairmont Hotel in Washington DC. This 3-day program highlighted the importance of nurses' involvement in policy processes. It was an opportunity to collaborate with nursing peers, national nursing leaders, and Congressional staff to learn about health care policy and advocacy. The Summit included keynote speakers from the Department of Health and Human Resources, the American Association of Colleges of Nursing, and the American Nurses Association. We learned about topics including: civic responsibilities, Capitol Hill staff responsibilities, nursing research in health policy, and national nursing roles. My presentation will include a brief overview of the Summit, its objectives, and what I have learned about nursing's role in policy advocacy.

Mentor: Linda Scott

KIRKHOF CENTER 2270

## **An Adaptive Management Plan to Improve Canoeing Recreation along the Grand River in West Michigan**

Presenter: Logan Schendel

Nature deficit disorder refers to the trend suggesting that children are spending less time outdoors. Grand Valley students are suffering from this, and one way to get them outdoors is to improve local canoeing opportunities. I hypothesize that improving recreational canoeing opportunities will result in students spending more time outdoors. An adaptive management plan will be developed to assess and improve recreational canoeing along the Grand River through the identification of potential canoe landing sites, and establishment of river improvement projects. Results will be used to develop a program for the improvement of recreational canoeing and help to get students outside.

Mentor: Todd Aschenbach

# Oral Presentation Abstracts

BEGINNING AT 11:30 A.M.

11:30 AM

KIRKHOF CENTER 1104

## **Analysis of Illegal Use and Suitability of Camping in Nordhouse Dunes Wilderness**

Presenter: Nathaniel Higginson

Nordhouse Dunes Wilderness (NDW) is, like many such areas, under constant threat of overuse. It is the only wilderness in Michigan's Lower Peninsula, which attaches to it an added pressure as well as value for those seeking primitive and pristine natural areas in its vicinity. This study will, using ArcGIS software to create overlays, evaluate which areas of NDW are receiving the highest use, analyze overall camping suitability, and determine the likelihood that a region will be subject to illegal activity. This analysis will help to show which areas should be most closely monitored and/or restored to maintain their value as wilderness.

Mentor: C. "Griff" Griffin

KIRKHOF CENTER 1142

## **An Adaptive Management Plan for Increasing Waterfowl Habitat at Harbor Island in Grand Haven, MI**

Presenter: Sean Stratil

Wetlands have many key ecological functions that have a profound impact on today's society. Wetland fragmentation and land degradation play a role in wetland destruction in West Michigan. I hypothesize that my restoration ideas can improve wetland health and duck habitat. My adaptive management plan will use GIS mapping software to create a map of invasive species locations, duck box positions and also planting locations of new vegetation. This plan could be implemented in order to improve fragmented and degraded wetlands in West Michigan.

Mentor: Todd Aschenbach

KIRKHOF CENTER 2201

## **What Makes an Arctic Plant Predictable?**

Presenter: Robert Slider

Recent documentation of Climate Change's impacts on arctic ecosystems have demonstrated that the Arctic will react to warming more rapidly and dramatically than other regions. As arctic plants respond to Climate Change, shifts in their phenology, growth, and reproduction will impact several major processes. Thus, predicting arctic plant responses to warming is critical to understanding how local and global systems will respond to climate change. Previous work has shown that growth and reproductive traits of some plants can be predicted using temperature and other abiotic factors. This study investigated whether plants' morphology or other properties could explain why some species respond to these abiotic factors while others do not. Preliminary analysis suggests that soil temperature is the best predictor of the majority of growth and reproductive traits across growth forms, indicating a common response to this environmental factor despite species' morphological differences.

Mentor: Robert Hollister

# Oral Presentation Abstracts

BEGINNING AT 11:30 A.M.

11:30 AM CONTINUED

KIRKHOF CENTER 2215

## **Mindfulness: Seeking a More Perfect Approach to Coping with Life's Challenges**

Presenter: Corina Hinterman

In a preliminary investigation of mindfulness and various coping strategies associated with healthy and dysfunctional forms of perfectionism, we explored questions related to Hamachek's (1978) proposition of 'normal' or positive perfectionists as being able to accept less-than-perfect outcomes in certain circumstances. It was our hypothesis that higher levels of self-esteem would be associated with positive perfectionism, increased mindfulness, less categorical and more dynamic styles of problem-solving, and utilization of more adaptive problem-solving strategies. Further, it was our expectation that positive perfectionists would also experience a greater degree of life satisfaction. This study provides a plausible explanation of how positive perfectionists are able to disengage from non-productive efforts, and to achieve a particular goal and/or switch tactics when necessary by using proactive coping skills.

Mentor: Lawrence Burns

KIRKHOF CENTER 2216

## **Assessing the Reliability of a Geriatric Knowledge Tool for Graduating Healthcare Providers**

Presenter(s): Michele Vuillemot, Kathryn Fahlstrom, Julia Hoekstra

More than 28 million United States Baby Boomers will begin turning age 65 in 2011. Still, there is not a universal instrument available to reliably measure the geriatric knowledge of direct care providers. The purpose of this pilot study is to aid in the development of a reliable and valid tool which measures the geriatric knowledge base of graduating healthcare providers. Item-analysis was performed on a multiple-choice tool to identify potential questions in need of modification and responses were analyzed to determine Cronbach alpha as a measure of the tool's reliability. Results will be shared for various subgroups of interest.

Mentor(s): Andrew Booth, Theresa Bacon-Baguley, Lisa Woolsey, Neal Rogness

KIRKHOF CENTER 2259

## **Integrated Spaces: Linking CAD & GIS In Geographic Survey of Grand Valley State University (Allendale) Campus**

Presenter(s): Matthew Dondanville, Nathan Walker, Paul Bussey

Our GPY307-01 Winter 2011 team has taken on the task of assembling, organizing, updating & presenting a complete dataset of all current & previous CAD drawings & related data, into a comprehensive GIS. The purpose of our project was to, primarily, update and geocode all of the campus records that are currently held in digital CAD format; and convert them so they could be managed in a Desktop GIS. This project focused on acquiring existing CAD records, overlaying it on a current orthophoto, then updated any gaps or missing information before converting CAD data into GIS file formats. We worked directly with Grand Valley State University facilities services to create our current map product. We were able to understand the conversion process, and developed a methodology on how to integrate our maps with Google Earth, and other Internet Map Servers.

Mentor: Edwin Joseph

# Oral Presentation Abstracts

BEGINNING AT 11:30 A.M.

11:30 AM CONTINUED

KIRKHOF CENTER 2263

## **Wheelchair Sports in Therapeutic Recreations**

Presenter(s): Bethany Gieseler, Jennifer Marx, Suzanna Mohny, Brianna Ferguson, Dominique Bradshaw, Katy Fisher, Samantha Resendez

Using thematic content analysis this study explores the best practices associated with using wheelchair sports in the practice of therapeutic recreation.

Mentor: Kari Kensinger

KIRKHOF CENTER 2266

## **Mapping Hardwood Trees on GVSU Allendale Campus Using GIS, GPS, and Multimedia**

Presenter(s): Alexander Ebenstein, Emma Vanacker, Jared Boeve, Hayden MacIntosh

Hardwood trees provide important ecological and aesthetic qualities to their surroundings, both of which are essential to staff at Facilities Services. The purpose of this study is to locate, identify, and map the hardwood trees on Grand Valley State University's Allendale Campus that are maintained by GVSU Facilities Services. By doing so, the hardwoods can be better managed and maintained, as well as provide useful information regarding surrounding vegetation and the planting of future trees. We used Global Positioning Systems (GPS) technology (including GPS cameras) to identify and map the location of each tree. The raw data was organized in a desktop GIS for display via an Internet Map Server (IMS) and Google Earth. Maps included hotlinks of geocoded pictures of individual pictures, and other interactive on-line multimedia products.

Mentor: Edwin Joseph

KIRKHOF CENTER 2270

## **Health Risk of Indoor Radon Gas in West Michigan: An Applied Anthropological Study**

Presenter: Nathan Egner

This paper examines the correlation between radon gas and its effect on diseases like cancer. Dr. Azizur Molla's students in culture disease class collected data from over 500 households in West Michigan area from the fall of 2008, summer of 2009, winter of 2009 and winter of 2010. A radon testing device was used to measure the radon level in the air at those households. A survey was also given to the head of household to obtain information concerning the knowledge of the person on radon gas, health of the members of the household, general information about the household, and demographic information. Descriptive statistics will be presented on the data collected. In addition, selected findings will be presented from the statistical analysis that was performed to investigate the relationship between the radon gas levels in the air and other variables like health in this study.

Mentor(s): Phyllis Curtiss, Azizur Molla



# Oral Presentation Abstracts

BEGINNING AT 12:00 P.M.

12:00 PM

KIRKHOF CENTER 1104

## **Determining the Spatial Spread and Rate of Dispersal of the Invasive Species *Pinus sylvestris* L. on a Michigan Dune Ecosystem**

Presenter: Kaitlyn Lemon

The invasive species *Pinus sylvestris* L. (Scotch Pine) was first introduced into West Michigan in the 1940s when large tracts of land were replanted to reduce soil erosion. Due to the reproductive and genetic properties, Scotch Pine has the ability to colonize an area and increase in population at a rapid rate; this population increase and ease of spread negatively effects ecosystem diversity. This study looks at the spread of Scotch Pine out of the pine plantation and into surrounding natural hardwood forests at the Kitchel-Lindquist Dune Preserve. The resulting map and analysis examines the rate of dispersal and the stage of colonization, which will be used to aid the Kitchel-Lindquist Dune Preserve board in creating a Scotch Pine removal plan.

Mentor: C. "Griff" Griffin

KIRKHOF CENTER 1142

## **Effects of Education Versus Opportunity on Waste Reduction Success among University Campuses in Michigan**

Presenter: Nurzhan Tokzhumanov

Recycling is a fundamental component of modern waste reduction. Grand Valley State University (GVSU) has successfully operated a recycling program since 1990 and is a third year participant in the national RecycleMania tournament. I hypothesize that education and awareness have a greater impact than opportunity on student participation in recycling programs. My research will include observations of educational programs and number of recycling receptacles established throughout Michigan universities together with data on waste minimization on a weekly basis at various campuses. Results will be used to develop an adaptive management plan for effective waste management and recycling programs at GVSU that reduce destructive impacts of waste on local environments.

Mentor(s): Shaily Menon, Todd Aschenbach

KIRKHOF CENTER 2201

## **Effects of Permafrost Thawing on Land Use and Structural Integrity in the Polar and Sub-Polar Region of North America**

Presenter: James Scott Maginity

Historically, land use in the polar regions of the North American continent has been limited to nomadic hunter-gatherer indigenous people. The 20th century saw an influx of outside settlement in the region that has drastically changed the population dynamics of the area. Novel designs using permafrost as an element of design were created that allowed settlements to develop. Because of these changes in infrastructure, two-thirds of people living in the arctic now live in settlements of 5,000 or more. I used MAGICC/SCENGEN climate modeling software to determine areas where significant warming could result in thawing of permafrost. I also used demographic information to find the areas of greatest population. I entered the collected data into the GIS software ArcMap to locate regions of greatest vulnerability based on population and type of structures present. This forecast can be used to target areas that will require preemptive action to prevent such catastrophes.

Mentor: Elena Liouimtseva

# Oral Presentation Abstracts

BEGINNING AT 12:00 P.M.

12:00 PM CONTINUED

KIRKHOF CENTER 2215

## **Geographic Mapping of Rain Gardens, Bioswales, and Water Retention Ponds**

Presenter(s): Ricardo Benavidez, Matt Farber, Alan Cole, James Chittisane, Stephen Hoekwater

Grand Valley State University's (GVSU) Allendale campus includes a large area of impermeable surfaces. This causes a significant problem with surface water runoff during precipitation events. In the past, the University built a network of pipes that redirect water into the ravines network east of the campus. Studies have shown that this particular solution produces severe erosion of the ravine banks. A more effective storm water plan includes several rain gardens, bioswales and water retention ponds. The purpose of our study was to use GIS and GPS Technology to identify and delineate the precise locations of all of the rain gardens, bioswales, and water retention ponds on GVSU's Allendale Campus to benefit further studies. Field data was collected using high precision GPS units to capture geographic features, and digital cameras for panoramic views. We used ArcGIS to develop our final maps, and converted them to KML (Keyhole Mark-up Language) for display on Google Earth.

Mentor: Edwin Joseph

KIRKHOF CENTER 2216

## **Latinas in Higher Education**

Presenter: Andrea Gomez Cervantes

Little research has focused specifically what draws Latinas to obtain a college education. There may be various factors affecting the decision-making process of college enrolment for young Latinas. This study will examine the college decision-making process of Latinas through the educational institution. Theoretical frameworks including Cultural and Social Capital, Symbolic Interactionism, and Critical Race Theory will be used to process and understand results uncovered here. I employ the Educational Longitudinal Study data set, focusing on Latina female students in tenth grade during the year of 2002. Mixed results from the secondary data set demonstrate that within the school institution the role of teachers in the decision of college attendance for young Latinas is complex and unclear. The results of this study indicate that further research on Latinas' experiences in the educational institution is needed to better understand the decision-making process for higher education.

Mentor: Lisa Hickman

KIRKHOF CENTER 2259

## **Sensory Stimulation and Therapeutic Recreation**

Presenter(s): Shelby Harrigan, Alex Hutchins, Arielle Beliveau, Jessica Eagle, Smita Abraham, Nina Naveira, Terri LaLonde

Using thematic content analysis, this study examines best practices and uses of sensory stimulation in the field of therapeutic recreation.

Mentor: Kari Kensinger

# Oral Presentation Abstracts

BEGINNING AT 12:00 P.M.

12:00 PM CONTINUED

KIRKHOF CENTER 2263

## **Social Commentary in Northanger Abbey**

Presenter: Andrew Kuck

This paper attempts to analyze the social commentary of Jane Austen's early novel, *Northanger Abbey*. Austen had the rare ability to observe temporary customs of her age and see in them that which was universal. Her perception cuts through culture and identifies the human characteristics that underlie culture. Austen uses the actions of her characters to portray her perception of humanity. This paper reduces those character actions to ideas. Furthermore, those ideas lead to an overall ethic that evolves from Austen's insights, which in the context of the story sometimes appear peripheral. But this paper focuses on only her social commentary, and therefore uncovers in the narrative a theme that lays bare the plot. The uncovered theme reveals Austen's belief that the human soul has an independent identity, but that the environment can entangle the soul and suppress it. Relating that truth to reality sheds light on the well-known phenomenon of social interaction.

Mentor: Christine Rydel

KIRKHOF CENTER 2266

## **An Analysis of Historic Ceramics at Blendon Landing**

Presenter: Drew Vista

Blendon Landing, located in the middle of Ottawa County at the south end of the Grand Valley State University (GVSU) campus, is a historic site that was home to people who worked at the Blendon Lumber Company during the mid-nineteenth century. Analysis of ceramics from the site is one means of establishing a clearer understanding of everyday life of those who once inhabited Blendon Landing. Analysis focuses on the socioeconomic status of daily life in one southwest Michigan lumber community. Historic ceramics based on ware type, color, and decoration. Analysis of the historic ceramics reveals aspects of socioeconomic status and other dimensions of life such as status of households in a Michigan lumber community during the mid-nineteenth century. In addition, ceramics from this site may be compared to other historic sites in the region.

Mentor: Janet Brashler

KIRKHOF CENTER 2270

## **Predicting Long-Term Tundra Plant Community Change in Response to Warming**

Presenter: Jeremy May

Arctic plants are adapted to low temperatures and temperature increases can cause dramatic changes in these plant communities. It has been shown that short-term warming experiments cause increased growth; however, as warming continues this growth may not be sustainable; thus, long-term community change may be difficult to predict. This study monitored four tundra sites in Alaska that has been done since the 1990s. In particular, we looked at how the plant communities changed over 11-13 years of warming. Communities were sampled after 1-2 (initial) and 4-6 years of warming (secondary) and changes were used to predict what the plant community assemblages looked like after tertiary warming. Initial warming responses were poor predictors of tertiary warming responses; however, secondary warming responses were accurate predictors. Therefore, when using observed community change to predict future community change, it is important to partition out initial and secondary warming response.

Mentor: Robert Hollister

# Oral Presentation Abstracts

BEGINNING AT 12:30 P.M.

12:30 PM

KIRKHOF CENTER 1104

## **User Impacts on Nordhouse Dunes Wilderness**

Presenter: Kathleen Sexton

Recreational use of wilderness areas puts pressure on the biophysical features of wilderness. Some of these impacts may be irreversible. This analysis was conducted to interpret data collected at Nordhouse Dunes Wilderness (NDW) during the summer of 2009. This data was cataloged using ArcInfo to create maps of NDW relating to use and user impacts, campsite locations, and biophysical features. Average campsite size, distance from campsite to a trail or other campsite, and fire ring size were some of the results of the interpreted data. I expect to find that campsite selection and use was largely based on the presence of preferred biophysical characteristics such as vegetation, slope, and proximity to water, as well as the presence of an existing fire ring.

Mentor: C. "Griff" Griffin

KIRKHOF CENTER 1142

## **Line Graphs**

Presenter: Nicholas Smith

A graph is a mathematical representation of connections between nodes. The line graph transforms this representation to another graph where each connection becomes a node. As an example, if the original graph represented friendships among a group of people, the line graph would represent mutual friends between friendships. In this talk, we will describe properties of line graphs and present an application of line graphs in job assignment.

Mentor: Feryal Alayont

KIRKHOF CENTER 2201

## **The Concept of Infinity in Ancient Greek Mathematics**

Presenter: Elizabeth Parker

It was for a long time believed that the Greeks did not deal directly with actual infinity, considering it less than rigorous, and instead preferred a concept of unlimited extendability. However, the recent interpretation by Dr. Reviel Netz of an argument found in Archimedes' Method of Mechanical Theorems has resulted in a recognition that the Greeks acknowledged and were capable of using actual infinity in mathematical argument. With this in mind, the paper will examine the infinitary arguments presented prior to Archimedes' work in Euclid, specifically book XII of the Elements, with a view to establishing the context behind Archimedes' use of actual infinity. This work will have ramifications for future research planned on the later interpretation of Euclid's infinitary arguments and their successors in the calculus of Newton and Leibniz.

Mentor: David Austin

# Oral Presentation Abstracts

BEGINNING AT 12:30 P.M.

12:30 PM CONTINUED

KIRKHOF CENTER 2259

## **Therapeutic Recreation and Brain Injuries**

Presenter(s): Amy Ayotte, Kendra LaPres, Benjamin Coleman, Lindsey Beeler, Angie Parsons, Ashley Horton

Using thematic content analysis, this study explores the best practices in therapeutic recreation when working with individuals who have experienced a brain injury.

Mentor: Kari Kensinger

KIRKHOF CENTER 2263

## **Analysis of Two Charging Styles of NiMH AA Batteries**

Presenter: Samuel Bowerman

A study of charging capabilities of Nickel Metal-Hydrate AA batteries was conducted using two different circuit designs: a half-wave rectifying circuit and a full-wave rectifying one. Even though the expected decrease in charging time was not achieved, an interesting discovery arose in that the batteries charged in the half-wave rectifier had a lower lifespan than the batteries of lower energy ratings that were charged using a full-wave rectifier.

Mentor: Ross Reynolds

KIRKHOF CENTER 2270

## **A Geographic Information Systems Analysis of Grand Valley State University's Sidewalk Network**

Presenter: Kheran Joseph

A graph is a mathematical representation of connections between nodes. The line graph transforms this representation. This project is an expansion of a 2010 study that focused on handicapped routes as compared to walking routes between academic buildings on the GVSU Allendale campus. In the 2011 phase of the project I digitized the entire sidewalk network as line features, identified Points of Interest (POI), and captured panoramic pictures. These were exported as Keyhole Markup Language (KML) files and imported into Google Earth. The POIs were also geocoded and integrated into Google Earth for public access.

Mentor(s): Wanxiao Sun, Edwin Joseph

# Oral Presentation Abstracts

BEGINNING AT 1:00 P.M.

1:00 PM

KIRKHOF CENTER 1104

## **Analyzing Patterns of Beak Deformity in Wild Birds Populations in North America**

Presenter: Rachelle McLaughlin

Birds with beak deformities have been documented throughout the literature, although occurrences are rare and not usually extensive within populations. Sudden emergence of deformities in large clusters of animals may indicate a dramatic change in the ecosystem. The goal of this study is to analyze data on wild populations of birds with beaks deformities and determine potential causes of the problem. This will be accomplished by generating a table of data collected from the literature and conducting statistical analysis to find patterns in occurrence. Susceptibility, influenced by life history traits and habitat features, will be analyzed to compare effect sizes of different variables across studies. The ideal outcome would be to find correlations between these deformities and environmental or physiological triggers. Results will be beneficial in formulating hypotheses in future research on populations with high proportion of individuals with deformed beaks.

Mentor: C. "Griff" Griffin

KIRKHOF CENTER 1142

## **Spotted Knapweed Control and Native Plant Establishment at the Bass River Recreation Area**

Presenter: Timothy Botting

The invasive spotted knapweed has infested the Bass River Recreation Area in Ottawa County, Michigan. We tested the effects of herbicides and hand pulling on knapweed densities, as well as native plant establishment in the area. We hand-pulled mature knapweed from 24 out of a total of 48 5-m by 5-m plots. The removed and residual knapweed biomass was quantified as well as the presence of native forbs and grasses on all plots. In 2010, hand pulling had started to reduce mature knapweed densities on mowed-only plots, while densities actually had increased on herbicide-treated hand-pulled plots as new seedlings began to mature. Juvenile knapweed densities generally decreased on all plots except non-pulled mowed-only plots. Native forbs and grasses have become established on most plots but are still several years away from becoming a dominant and diverse community. Initial results suggest that hand pulling will provide effective knapweed control when applied consistently through time.

Mentor(s): Neil MacDonald, Todd Aschenbach

KIRKHOF CENTER 2201

## **Applying GIS Technologies to Monitor the Coniferous Tree Population of Grand Valley State University's Allendale Campus**

Presenter(s): James Scott Maginity, William Treat, Jon Lautenbach, Matt Larsen

A major issue facing the Facilities department of Grand Valley State University is the monitoring and treatment of disease and pests affecting the conifer tree population on the Allendale campus. This can be a time-consuming task due to the amount of coniferous trees on campus and the vast area to be managed. The objective of this project was to create a GIS database of the locations of coniferous trees on campus using hand-held GPS units and uploading the data into ArcGIS as discrete points. We then overlaid this layer on a base map of campus so that the trees can be managed using a desktop GIS. The database we created is invaluable for the management of coniferous trees on campus because it allows Facilities staff to track the propagation of disease or insect infestation as well as providing an efficient method for monitoring treated trees both within a desktop GIS and Internet Map Server.

Mentor(s): Steve Snell, Edwin Joseph

# Oral Presentation Abstracts

BEGINNING AT 1:00 P.M.

1:00 PM CONTINUED

KIRKHOF CENTER 2215

## **US Health Care Reform: What Lies in the Hearts of our Citizens**

Presenter: Luis Torres

This paper explores the perceptions of West Michiganders about United State's health care reform. Dr. Molla's fall 2010 students in Culture and Disease class used informal interview and participant observation methods to collect data from 350 on-campus and off-campus volunteers. A quantitative and qualitative analysis will identify factors influence people's justification for supporting the law as well those for rejecting the reform. The initial analysis shows people are not well informed about the healthcare reform. It will expose what lies in the heart of our citizens. The findings will be useful for policy makers, program personnel and concerned stakeholders.

Mentor: Azizur Molla

KIRKHOF CENTER 2216

## **Did Dad Lick the Kids Today? Transmission of Microbes Through Parental Care in a Teleost Fish (*Cichlosoma nigrofasciatum*).**

Presenter: Monica Zipple

Social behavior evolves by natural selection only if benefits outweigh costs. A little-studied benefit of group living is transmission of beneficial microbes. Unlike most fishes, convict cichlids have biparental care and contact with offspring that might promote microbial transmission. If parents exhibit division of labor, one may be more likely to transmit microbes. We (1) quantified parental behaviors of males and females to determine whether they differed in amount or type of contact with offspring; (2) collected samples of parental slime coats, embryos and fry to compare the microbes associated with each, comparing samples from subsets of broods receiving parental care to others where parental contact was prevented. Females touched offspring more often than males. Fry receiving parental care bear microbes similar to female vs. male parents, and to parents vs. siblings that did not receive care; thus, parental care is an important source of microbial transmission.

Mentor: Jodee Hunt

KIRKHOF CENTER 2259

## **Autism and Therapeutic Recreation**

Presenter(s): Tina Chirco, Jill Haske, Megan Nadolny, Lauren Armstrong, Dean Waldron, Kayla Jeltema

Using thematic content analysis, this study explores the best practices in therapeutic recreation when working with individuals who have autism.

Mentor: Kari Kensinger

# Oral Presentation Abstracts

BEGINNING AT 1:00 P.M.

1:00 PM CONTINUED

KIRKHOF CENTER 2263

## **C-C Chemokine Receptor 5 and HIV: Therapeutic Potentials of the Delta 32 Base Pair Deletion**

Presenter: Amanda Antczak

The Human Immunodeficiency Virus, a retrovirus discovered in 1981, has reached pandemic status worldwide. Without an existing cure or vaccine, a majority of the world's population remains at risk for infection and more than 35 million people to date have died from AIDS. Resistance to the virus, however, has been discovered in 10% of the world's population in the form of an allelic base pair deletion located on C-C chemokine receptor 5. Those homozygous for the base pair deletion are resistant to HIV while heterozygotes have displayed delayed onset of HIV infection. The CCR5 mutation and observed resistance to HIV in those bearing the base pair deletion represent exciting possibilities for the prevention and treatment of the virus. A new class of pharmaceuticals termed CCR5 antagonists, as well as CCR5-32 stem cell transplantation, hold therapeutic promise not just for HIV but also other chemokine mediated diseases, including rheumatoid arthritis, autoimmune myocarditis, and cancer.

Mentor: Steven Hecht

KIRKHOF CENTER 2266

## **Aldo Leopold's Land Ethic and the Great Lakes**

Presenter: Andy Sanford

Using Aldo Leopold's essay *The Land Ethic* I argue that Leopold's land ethic provides a consistent and dynamic paradigm for how we perceive and protect the natural environment. The land ethic implies that people interested in conservation must develop an understanding of what is necessary for conservation through experience with nature. Experiencing nature allows us to enter into a relationship with the land and develop sound judgment in our ecological decision-making. Invasive species have become an area of concern for ecologists, industrialists and those who use the Great Lakes recreationally. In examining the cost of ecological damage to the Great Lakes ecosystem caused by the 140 species of invasive plants and animals now present in the lakes we are faced with many ethical questions. This essay attempts to understand the moral paradigm which is necessary to effectively manage the Great Lakes ecology in light of these questions.

Mentor: John Uglietta

KIRKHOF CENTER 2270

## **Prévost's Manon Lescaut and Her Transition to the Operatic Stage**

Presenter: Lily Guerrero

Prévost's 1731 novel, *L'Histoire du chevalier des Grieux et de Manon Lescaut*, was a controversial publication during its time. While the title includes both des Grieux and Manon, the latter is the character of interest for most readers. Many composers have fallen in love with this dangerous literary figure and Manon's story has culminated in operas composed by Jules Massenet, Giacomo Puccini, Hans Werner Henze, and Daniel Auber. What is it about Manon that inspires composers to adapt Prévost's written word to the operatic stage? Are these adaptations successful works of the operatic repertoire? Does Manon's seemingly fickle nature become a caricature when transferred to the libretto, or do artistic teams successfully capture this femme fatale? I will delve into these questions and other related topics to uncover the infatuation composers have with Manon, and their commitment to the integrity of Prévost's original Manon in their theatrical renditions of the character.

Mentor: Kathryn Stieler



# Oral Presentation Abstracts

BEGINNING AT 1:00 P.M.

1:30 PM

KIRKHOF CENTER 1104

## **Digestion Dependant Winter Foraging of Northern Pike in Michigan's Lower Peninsula Lakes**

Presenter: Patrick Laarman

Although metabolism slows in winter months, northern pike *Esox lucius* will feed opportunistically on the largest available prey. My research compares the stomach contents of pike from lakes consistently producing pike  $\geq 40$  (as evidenced by Michigan Department of Natural Resources and Environment's Master Angler Awards) to lakes that do not consistently produce pike  $\geq 40$ . During the study I visited a number of lakes in Michigan's Lower Peninsula and asked anglers to donate stomachs. Anglers had already harvested pike and were not influenced prior to my approach. Stomachs were collected during the winter months of 2010-2011. Dissection of stomachs indicated if pike had completely digested the previous prey item(s) before feeding again. While empty stomachs could result from a shortage of prey, I theorize that empty stomachs actually indicate pike are successfully feeding on the largest possible prey and have no nutritional or caloric need to feed again until digestion is complete. informed about the healthcare reform. It will expose what lies in the heart of our citizens. The findings will be useful for policy makers, program personnel and concerned stakeholders.

Mentor: C. "Griff" Griffin

KIRKHOF CENTER 1142

## **Beyond Gettysburg**

Presenter: Stephanie Wiltse

Abraham Lincoln's Address at the Dedication of the Gettysburg National Cemetery is one of the most well known speeches in American history. The implications of this speech, however, go far beyond simply consecrating the battleground. The address at Gettysburg functions, most importantly, as a call to American citizenry to continue the work which Union soldiers died performing on that Pennsylvania battleground. This directly called its immediate audience; however, it directly calls its twenty-first century audience as well. The painstaking work of rewriting the text of the American republic belongs to all who would claim citizenship from her. Today, we are called to do our small but vital parts in rewriting the draft of the republic of 2011, just as Lincoln called at Gettysburg for those American citizens to do their small but vital parts in rewriting the draft of 1863. This is the ultimate legacy of Gettysburg.

Mentor: Dr. D. Ihrman

KIRKHOF CENTER 2201

## **Code Blue: An Exploratory Study on Crime Prevention and the Role of Emergency Telephones on Grand Valley State University's Allendale Campus**

Presenter: Donald Curry

The purpose of this study was to map current crime data on the Grand Valley State University Allendale campus and establish a network of Blue Light phones in order to reduce the number of crimes. Using police incident reports, a dataset was created to get a more comprehensive look at on campus crime. Data from 2006 to 2010 was used to map crime on campus. The maps identify areas where there is more crime than other locations. The locations where high levels of crime or sexual based crimes have been committed are where the Blue Light phones are normally placed. The findings of this study are that most on campus crimes are committed in parking lots in particular parking Lot D on the North end of campus. Other locations with high concentrations of crime are Laker Village Apartments, Mackinac Hall, The Fieldhouse and Padnos Hall of Science.

Mentor: Roy Cole

# Oral Presentation Abstracts

BEGINNING AT 1:30 P.M.

1:30 PM CONTINUED

KIRKHOF CENTER 2215

## **Adventure Therapy and Therapeutic Recreation**

Presenter(s): Sandy Ung, Audrey Stout, Joey Shier, Kayla Smogoleski, Mary Allis, Erika Stoike, Chaille Hathaway

Using thematic content analysis, this study explores the best practices associated with using adventure therapy in therapeutic recreation.

Mentor: Kari Kensinger

KIRKHOF CENTER 2216

## **Identity and Culture: Autoethnographic Research on Psychological Acculturation**

Presenter: Kayleen Schepper

Studying abroad in Cape Coast, Ghana led to my first exposure to psychological acculturation, a catalyst of personal and cultural identity exploration as a consequence of contact between individuals of two dissimilar cultures. Drawing from research on identity formation, racial identity, cultural identity, and whiteness studies, I have attempted to creatively capture my experiences in a novella. The project is meant to be an autoethnographic contribution to the greater academic discussion on identity and psychological acculturation. The finished novella is also a tool to educate its readers in Ghanaian culture, racial issues, and racial and cultural identity. Additionally, I hope to promote travelling and encourage personal and cultural identity exploration, which is becoming exceedingly important in our globalizing society.

Mentor: Amy Masko

KIRKHOF CENTER 2259

## **Ethical Statistical Methods: How Improper or Biased Tests can Result in Public Panic**

Presenter: Ryan Hinkley

In 1998 a statistical study was done that tried to prove a link between the Measles, Mumps and Rubella vaccine (MMR) and Autism Spectrum Disorder (ASD). The initial study also claimed that the MMR was linked to gastrointestinal disease. Dr. Andrew Wakefield's study has since been debunked, but the ramifications of his study have caused panic in parents in both the UK and in the USA.

Mentor: John Gabrosek

# Oral Presentation Abstracts

BEGINNING AT 1:30 P.M.

1:30 PM CONTINUED

KIRKHOF CENTER 2263

## **Gene Expression Profile of Human Prostate Cell Lines (+/-CD82) through Microarray Analysis**

Presenter: Pushpaja Dodla

KAI1/CD82, a member of tetraspanin super family, is a prostate tumor metastasis suppressor gene. CD82 expression is either decreased or completely lost during tumor progression and has been identified in several other cancers as well. The exact mechanism by which CD82 regulates metastasis suppression is still unclear. Microarray studies done previously in our lab on prostate cancer cell lines (PC3; +/- CD82), have identified genes regulated by CD82. Alternatively, we performed microarrays on normal prostate cell lines (PEC 31), along with another set of PC3 tumor cell lines (+/- CD82) to compare the results observed from our previous arrays. The 100 most common and significant genes from all three arrays were compared and the top ten genes identified to be involved in metastasis are currently being validated by qPCR protocols. Results from these studies will allow us to identify the genes and/ proteins regulated by CD82, identify downstream signaling pathways and decipher a role for CD82 in metastasis tumor suppression.

Mentor: Suganthi Sridhar

KIRKHOF CENTER 2266

## **Constructing Rectangle Visibility Layouts for Rectangle Visibility Graphs**

Presenter: Todd Peterson

In graph theory, a graph is a set of nodes and the connections between those nodes. We will look at graphs called Rectangle Visibility Graphs (RVGs), which are graphs that can be represented as a set of rectangles in the plane with connections represented by visibilities between rectangles. RVGs have an important application in VLSI chip design, where rectangle layouts can model the layout of a chip where components have a necessary set of connections. We will look at whether or not all graphs are RVGs, and then explore some of the ways rectangle visibility layouts can be constructed for a given graph where possible. A new algorithm for constructing rectangle layouts for certain graphs will be presented.

Mentor: Feryal Alayont

KIRKHOF CENTER 2270

## **Reading The Great Gatsby through the Eyes of Nick Carraway**

Presenter: Barbara Jandernoa

Nick Carraway, the narrator in F. Scott Fitzgerald's masterpiece *The Great Gatsby*, serves as a nuanced instrument for portraying the novel's characters and their interactions. His salient quality as a habitual listener allows them to open up to him, permitting the reader to get to know them through his eyes. Therefore, Nick's beliefs and perceptions shape the way that the personalities and interactions of his fellow characters appear to us. Nick lets us see *Gatsby* in a more complex light than we otherwise could. Winifred F. Bevilacqua's "In Ecstatic Cahoots': Nick's Authoring of *Gatsby*" supports this notion. Bevilacqua uses the work of Mikhail Bakhtin to develop her thesis: "I argue that Bakhtin's theories in *Author and Hero in Aesthetic Activity* (1924-1927) give us the concepts and patterns that best enable us to understand Nick's strategies in the strand of his narrative that traces the process by which he achieves and gives form to his understanding of *Gatsby's* inner self."

Mentor: Avis Hewitt

# Oral Presentation Abstracts

BEGINNING AT 2:00 P.M.

2:00 PM

KIRKHOF CENTER 1104

## **A Developing Retention Ponds to Reduce Volume of Water Input to Storm-Sewer System from GVSU Parking Lots.**

Presenter: Scott Marecek

Grand Valley State University has an ongoing monitoring program to measure the quality and quantity of water from parking lot runoff into storm-sewers which eventually ends up in Little Mac Ravine and the Grand River Watershed. This research will discuss the design and implementation of the monitoring methods to include current storm flow and expected results after construction and diversion to retention ponds with regard to volume of water.

Mentor: C. "Griff" Griffin

KIRKHOF CENTER 1142

## **Patient/Provider Electronic Mail Communication**

Presenter(s): Katherine VanderLaan, Juddson Baldwin, Claude Leblanc

Access to information technology has increased dramatically in the past decade, with electronic health care changing medical practice. Included in this change are consumers expecting convenience and access to their healthcare provider through electronic communication. Key questions include how and when communication should be used between provider and consumer. Historically, providers resisted use of, citing concerns with: increasing workloads, lack of reimbursement, limited diagnostic ability, as well as privacy, security, and liability issues. This study seeks to understand Michigan healthcare providers attitudes towards the use of Internet communications with their patients and identify the barriers and facilitators to their use. Internet-linked survey to all Physician Assistants that are MAPA (Michigan Academy of Physician Assistants) members. Approximately 800 surveys will be distributed in March, 2011.

Mentor: Wallace Boeve

KIRKHOF CENTER 2201

## **Beliefs and Comprehension: The Relationship Between Beliefs About Scientific Topics, the Reason We Hold Those Beliefs and Comprehension of Scientific Evidence**

Presenter: Andrew Taylor

In this study we are interested if reading strategies vary depending on 1) whether students believe or disbelieve the topic of a science text, or 2) whether they hold that belief for evidence-based or affective reasons (belief basis). Subjects with prior beliefs regarding the effectiveness of spanking read a text that argued either for or against the issue and sentences were categorized as being consistent with the main position of the text, neutral, or inconsistent. Subjects performed a sentence recognition task in which half of the sentences were from the text, and the other half were not. There were no differences as a function of belief consistency. However, there were belief basis differences. Evidence based subjects, compared to affect based, had higher false alarm rates to sentences that were inconsistent with the text position. We interpret this pattern as suggesting that evidence-based subjects attempt to create a balanced understanding of the evidence being presented.

Mentor: Michael Wolfe

# Oral Presentation Abstracts

BEGINNING AT 2:00 P.M.

2:00 PM CONTINUED

KIRKHOF CENTER 2215

## **Oedipa and 'Agency Panic' in *The Crying of Lot 49***

Presenter: Timothy Schilling Jr.

Oedipa Maas' search for the meaning behind Tristero makes her anxious and paranoid about her reality. This paranoia and anxiety is brought upon by the ubiquitous influence of major corporations, mostly through mass media. Timothy Melley describes the paranoia and anxiety of postwar authors as symptomatic of what he refers to as 'agency panic'. Postwar authors skeptically interrogate Enlightenment notions of free will in postwar America, and fear that institutions control the everyday actions of individuals more than many might wish to admit. Oedipa Maas is threatened by the overwhelming power of an entity that is more powerful than her. Her anxiety and paranoia comes from the fear of major corporations gradually arrogating her agency.

Mentor: Dr. D. Ihrman

KIRKHOF CENTER 2216

## **Revealing the Truths and Fallacies of Orientalism through Sahar Khalifeh's *Wild Thorns***

Presenter: Kirsten Werner

Palestinian-American author Edward Said is famous for documenting the phenomenon he calls Orientalism, in which he describes the demeaning perception that the West holds of the East. Perpetuated through much of western material culture, this orientalist perception stigmatizes the East with negative stereotypes, transforming the Orient into an inferior region. This substandard representation acts as the foundation for the relationship between the Occident and the Orient, and allows the West's continued domination over the East. According to Said, this hierarchical relationship will remain until individuals write back to this orientalist perception and reveal other aspects of eastern culture. Accordingly, Palestinian writer Sahar Khalifeh follows Saidian theory in her novel, *Wild Thorns*, as she takes what Said calls the voyage in and writes back to this orientalist perception, depicting the complexities of eastern society through her main characters Usama and Adil.

Mentor: Coeli Fitzpatrick

KIRKHOF CENTER 2259

## **An Examination of Using EWMA Charts for Monitoring United States Geospatial Data**

Presenter: Marco Benedetti

Geographic Information Systems (GIS) are a very helpful tool used to accumulate and present data. Although they are useful in displaying patterns and making inference about them, they can be misleading without the proper statistical methods. The authors will examine how Moran's I statistic changes for patterns of increasing spatial depression. They will also demonstrate how to create an "Exponentially Weighted Moving Average" (EWMA) control chart for global spatial statistics and monitor these charts over time. In the event that a control chart signals [WHAT?], one can then examine the local spatial statistics to determine the source of the signal. In an effort to examine the power associated with these monitoring procedures, the authors will also simulate the effect of an increase in one, two or three regions in the United States. The results of these simulations will be used to characterize the effects of shifts in the spatial dispersion across the United States.

Mentor: Paul Stephenson

# Oral Presentation Abstracts

BEGINNING AT 2:00 P.M.

2:00 PM CONTINUED

KIRKHOF CENTER 2263

## **Indian Ocean Trade: 200 BCE - 300 CE**

Presenter: Akshay Sarathi

From C. 200 BCE - 300 CE, a major maritime trade network flourished across the Indian Ocean, connecting diverse regions and economies. As these cultures were affected by interregional social, economic, and political forces, their participation in this trade network reflected changing realities. From a world history perspective, this network is important because of its long its long duration and relative stability (compared to trans-Afro-Eurasian land routes). From the beginning of the Common Era, the Mediterranean, Egypt, Persia, India, and South East Asia all housed complex urban civilizations that supported merchant communities that invested in this maritime trade. What changed over time were the participants themselves, not the regions or cultures to which they belonged, or the goods traded. An investigation of Indian Ocean trade thus offers an ideal opportunity to study the nature of continuity and change within a range of social classes, not just that of the political elite.

Mentor: Craig Benjamin

KIRKHOF CENTER 2266

## **A Puzzlement of Modern Myth: Orientalism in the Anna Leonowen's Story Story and Rodgers and Hammerstein's The King and I**

Presenter: Daniel Rhode

Throughout human history and around the world, myths have arisen to carry on the values and stories of cultures. Many times these myths are inspired by extraordinary true events, but as time goes by, truth becomes secondary to storytelling. In Thailand, King Mongkut and King Chulalongkorn have been elevated to semi-deity status because of their role in modernizing Siam. A parallel myth has developed in the West around Anna Leonowens, a Western teacher who taught in King Mongkut's court from 1862 to 1867. Leonowens is elevated in the West to be viewed as an essential part of Siam's modernization. In this paper, I trace the historical story and cultural myth of Anna Leonowens as it developed in American art up to the Rodgers and Hammerstein musical the King and I. I will thoroughly analyze the compositional decisions made by Rodgers and Hammerstein to depict Siam (or Thailand) and show how Orientalism operates in 20th-century American musical theater.

Mentor: Lisa Feurzig

KIRKHOF CENTER 2270

## **The Expanding Role of Certified Nurse-Midwives: A Journalistic Exploration of Current Roles and Future Directions**

Presenter: Kristin McBarnes

Evidence indicates midwifery care has been successful in improving health outcomes for women and babies. In 2010, the Affordable Care Act (ACA) passed which increases access to affordable health care and includes provisions that apply to women and children. This journalistic investigation explored the roles of Certified Nurse-Midwives (CNMs) in healthcare and the impact the ACA may have on their practice through a systematic review of literature. Practicing CNMs were interviewed to discuss their roles in healthcare and how they feel the ACA will impact these roles. Literature suggests that CNM roles are broad and include prenatal and postnatal care, gynecologic care, primary care and community care. The care CNMs provide coupled with successful health outcomes places them in a position to expand their practice under the ACA. Expansion options include developing models to increase CNMs in hospitals, encouraging the use of birth centers, and increasing CNM autonomy in gynecologic care.

Mentor: Joy Washburn

# Oral Presentation Abstracts

BEGINNING AT 2:30 P.M.

2:30 PM

KIRKHOF CENTER 1104

## **Changes in Lake Trout Population Dynamics Due to the Impact of Introduced Desirable Non-Native Salmonids.**

Presenter: Mike Dilloway

In the Great Lakes; population dynamics are changing due to introduction of desirable non-native salmonids such as rainbow trout, chinook and coho salmon. Length/age relationship data from the Ontario Ministry of Fisheries, Little River Band of Ottawa Indians and MDNRE, were analyzed to explore changes in lake trout population structure. Indicators of these changes include, slower growth rates, smaller age classes and lower individual frequency than water bodies where desirable non-native salmonids do not exist. A control lake was identified to explore lake trout populations that do not have to compete with desirable non-native salmonids. Cross examination of Lake Nipigon, the control lake, with trout populations from Lake Michigan and Lake Superior can provide better understanding of the impact non-native species introduction has had Great Lakes lake trout population structure.

Mentor: C. "Griff" Griffin

KIRKHOF CENTER 2201

## **The Increase in Recent Years of Desertification in Northern China: Local and Global Impacts**

Presenter: Nathan Krings

The existence of large deserts in Northern China and Mongolia is an important historical phenomenon that has long affected human life. However, as human activity has increased in these areas in modern times, their aridity has also increased. Desertification in the region has led to changes in local lifestyles and settlement patterns, while at the same time having an impact at the global level through the long range transport of contaminated desert dust. The purpose of this research is to examine the anthropogenic forces that contribute to desertification in the region and the effects of increasing desertification at the local level, as well as its overall impact upon global climate change. The extent of dust storms originating in the region are illustrated using satellite imagery. Recent conservation efforts and policy decisions in regarding the issue are also investigated in detail, as are the socioeconomic changes that have resulted.

Mentor: Kin Ma

KIRKHOF CENTER 2216

## **Cuban Involvement in Angola and Ethiopia during the late 20th century**

Presenter: Matt Musser

Cuba's military intervention in Angola (1975) and Ethiopia (1977) has commonly been interpreted as evidence that Cuba was acting as a proxy to the Soviet Union, the "proxy-theory." These interpretations supporting the proxy theory are driven by lingering Cold War fears, as well as an East vs. West mentality. These ideologies and fears have marginalized the Cuban and Soviet perspectives in Angola and Ethiopia. By re-examining the Cuban and Soviet perspectives, political agendas, and actions in relation to the United States in Angola and Ethiopia the proxy theory can be rejected. Central to rejecting the proxy theory is understanding Cuba's revolutionary past, which lead Fidel Castro and all of Cuba to share a strong sense of commitment to the Third World's struggle against imperialism and colonialism. Cuba's commitment to the Third World's struggle and humanitarian aide in Angola and Ethiopia demonstrate Cuba's independent foreign policies and thus rejects the proxy theory.

Mentor: David Stark

# Oral Presentation Abstracts

BEGINNING AT 2:30 P.M.

2:30 PM CONTINUED

KIRKHOF CENTER 2259

## **Catherine Morland Grows Up**

Presenter: Nick Macksood

“Catherine Morland Grows Up” chronicles the journey of the heroine of Jane Austen’s *Northanger Abbey*, Catherine Morland, specifically her trials and the circumstances which she experiences in order to develop into a mature young woman. The essay delves into the sources of Catherine’s immaturity and the negative consequences that result as well as the turning point which results in Catherine’s recognition scene that leads to her enlightenment that begins the gradual development of her conscious. My essay (and the novel) describes Catherine’s traits that delay her maturation. If we use her as an example and resolve our own problems, we find that our lives too can break the bonds that deter us from realizing what we can truly become.

Mentor: Christine Rydel

KIRKHOF CENTER 2263

## **Rectangle Visibility Graphs**

Presenter: Martha Rozsi

Rectangle and bar visibility graphs are special type of graphs with applications in the computer world with computer chips and circuit board design. The rectangle visibility graphs represent a configuration of rectangles in the plane with connections between rectangles if a horizontal or vertical line can be drawn between them without cutting through another rectangle. Similarly, bar visibility graphs correspond to configurations of horizontal bars with connections established by vertical lines between a bar to another. In this talk, we will see how rectangle and bar visibility graphs correspond to certain graph families in discrete mathematics. The relationship between rectangle and bar visibility graphs is also discussed.

Mentor: Feryal Alayont

KIRKHOF CENTER 2266

## **The Future, Tomorrow: Comparing War Communism to Marx’s Program**

Presenter: Michael Martin

This paper compares War Communism, the first manifestation of communist policy in Russia, with the ideological plan laid down in Marx’s *Communist Manifesto*. The paper seeks to show that, although war communism on paper resembled pure Marxist doctrine, in practice it failed to do justice to the ideas of Marx.

Mentor: Edward A Cole



# Oral Presentation Abstracts

BEGINNING AT 3:00 P.M

2:30 PM CONTINUED

KIRKHOF CENTER 2270

## **Genetic Approaches to Assessing the Impact of Wind Turbines on Eastern Red Bats**

Presenter: Min Lee

Wind turbines are a conservation threat for wildlife, particularly birds and bats. In North America, hoary bats, eastern red bats, and silver-haired bats are the bat species primarily affected, however, basic elements of the life history of these species are unknown. We present results detailing the demographic trends of eastern red bat populations in response to conservation pressures from wind farms. Mitochondrial data reveal a large, panmictic, and growing population; however, inference from these data are limited to the females of the species and are subject to sampling error. We explore the utility of the autosomal chymase locus to evaluate the presence of sex-specific dispersal and to provide a multilocus estimate of effective population size and population growth rate. These data will provide the genetic and demographic background necessary to understand the potential biological and ecological impacts of increased wind power development on eastern red bat populations.

Mentor: Amy Russell

3:00 PM

KIRKHOF CENTER 1104

## **Nonsocial Threats Activate Belonging Regulation Processes**

Presenter: Brianna Middlewood

A well-functioning belonging regulation system should be sensitive to a range of threats implicating social connection including nonsocial ones. We hypothesized that possible failure on an upcoming task would initiate belonging regulation, as evidenced by activation of the interdependent self, and would facilitate behavioral attempts at social reconnection. In Study 1, participants received loss or gain-framed standards for their performance on an upcoming visual task, then completed a lexical decision task including independent, interdependent, neutral, and nonwords. In Study 2, participants received loss or gain-framed standards for their performance on an upcoming anagram task, and were led to believe they would complete this task individually or with other participants. This research confirmed that potential failures instigate social reconnection strategies, including activation of the interdependent self (Study 1) and enhanced performance in interdependent contexts (Study 2).

Mentor: Kristy Dean

KIRKHOF CENTER 1142

## **Observations of Jupiter and the Sun by Means of a Software Defined Radio**

Presenter: Samuel Bowerman

A modified version of NASA's Radio JOVE project was developed. A software defined radio (SDR) was utilized to widen the frequency band beyond the limits of the project JOVE observations, and a portable antenna design was employed. Recorded observations were made of Jupiter and the Sun during December of 2010.

Mentor: Douglas Furton

# Oral Presentation Abstracts

BEGINNING AT 3:00 P.M.

3:00 PM CONTINUED

KIRKHOF CENTER 2201

## **Analysis of Outcome Measures in Patients with a Fragility Fracture Treated with Forteo and Supplemented with Prescriptive Vitamin D**

Presenter(s): Colene Srackangast, Bryan Goetz, Austin Kuipers

Osteoporosis is defined by the National Osteoporosis Foundation as a disease characterized by low bone mass and structural deterioration of bone tissue, leading to bone fragility and increased susceptibility to fractures. The cause of osteoporosis is linked to a disorder in the normal bone metabolism. Bone tissue normally undergoes a cyclical process of breakdown (bone resorption) followed by bone formation. Disruption of this cycle can lead to a low bone mineralization and osteoporosis. Both calcium and vitamin D play a crucial role in bone formation. Without sufficient vitamin D levels, calcium cannot be absorbed in the GI tract and bone mineralization decreases. One of the treatments for osteoporosis is Forteo® (teriparatide). The purpose of this study was to determine the change in bone mineral density and physiologic markers of bone metabolism, in those individuals who were treated with Forteo® for osteoporosis and were also prescribed vitamin D based on their pretreatment vitamin D levels.

Mentor: Theresa Bacon-Baguley

KIRKHOF CENTER 2215

## **Assessment of Risk Factors for Post-Rewarming Rebound Hyperthermia in Cardiac Arrest Patients Undergoing Therapeutic Hypothermia**

Presenter: Kevin Wolf

Cardiac arrest (CA) remains a serious health problem in the United States. Prognosis is dismal for CA victims, since those who are resuscitated risk debilitating neurological injury. Fortunately, there has been promising research on the neuroprotective ability of mild therapeutic hypothermia (TH) in out-of-hospital CA patients. TH is most effectively implemented using endovascular cooling devices, however, their incidence of post-warming rebound hyperthermia is alarming, as high as 74% of patients in one study (Pichon et al., 2007). Given the high frequency of post-warming rebound hyperthermia and the known deleterious effects caused by hyperthermia, further investigation of the risk factors associated with rebound hyperthermia in CA patients receiving therapeutic hypothermia is warranted. This study is an ongoing retrospective, cohort, chart-review analysis with Spectrum Health. Results are TBD.

Mentor: Theresa Bacon-Baguley

KIRKHOF CENTER 2263

## **Social Commentary in Northanger Abbey**

Presenter: Andrew Kuck

This paper attempts to analyze the social commentary of Jane Austen's early novel, Northanger Abbey. Austen had the rare ability to observe temporary customs of her age and see in them that which was universal. Her perception cuts through culture and identifies the human characteristics that underlie culture. Austen uses the actions of her characters to portray her perception of humanity. This paper reduces those character actions to ideas. Furthermore, those ideas lead to an overall ethic that evolves from Austen's insights, which in the context of the story sometimes appear peripheral. But this paper focuses on only her social commentary, and therefore uncovers in the narrative a theme that lays bare the plot. The uncovered theme reveals Austen's belief that the human soul has an independent identity, but that the environment can entangle the soul and suppress it. Relating that truth to reality sheds light on the well-known phenomenon of social interaction.

Mentor: Christine Rydel

# Oral Presentation Abstracts

BEGINNING AT 3:00 P.M.

3:00 PM CONTINUED

KIRKHOF CENTER 2259

## **Traditional Chinese Medicine and its Implementation in Medical Practices in the United States**

Presenter: Anna Schaar

The purpose of this presentation is to propose how theories and methodologies of traditional Chinese medicine can be applied to medical practices in the United States. Through literature review and relating my own experience in Beijing, China I describe how the United States may benefit from Chinese medical practices. In addition, I researched current studies at highly regarded medical establishments on the effectiveness of methods such as acupuncture and herbal remedies as treatment options. By examining Eastern and Western approaches to medical practice and how preventative care is integrated into each, we may be able to raise quality of life and lower the cost of health care. However, I acknowledge that the effectiveness of Eastern medical practices is still met with skepticism. In response to this, measures such as further research, evaluation, and clinical trials will need to continue in order to successfully integrate traditional Chinese medical practices with Western medicine.

Mentor: Jane Toot

KIRKHOF CENTER 2263

## **An Analysis of the Narration in Jane Austen's "Northanger Abbey"**

Presenter: Madelyn O'Brien

This presentation explores the narrative personas of Jane Austen's *Northanger Abbey* and how the narration can affect the readers' perception of the illustrated events, characters, and society. It argues that there are two narrative voices; one voice makes opinionated comments directly to the reader and one voice relates the story objectively. The biased narrative persona can influence the readers and the impartial persona allows readers to gather their own conclusions about events, characters, and society. *Northanger Abbey* demonstrates the importance of the narrator as a character whose voice acts as a mediator between the reader and the action of any story.

Mentor: Christine Rydel

KIRKHOF CENTER 2266

## **Bulgakov's Two Devils**

Presenter: Ashley Fallon

The devil is a prominent figure in two of Mikhail Bulgakov's works, the well-known novel *The Master and Margarita* and the earlier and lesser-known *Diaboliad*. Although in each the devil visits Soviet-era Moscow and interacts with a number of Muscovites, despite similarities in motif and theme, *The Master and Margarita* and its devil do not simply reexamine the ideas found in the earlier work. The two devils portray two uniquely different manifestations of the devil. Woland, the refined and relatively intellectual devil of *The Master and Margarita*, often serves as a benefactor to Margarita, while the devil of *Diaboliad*, a harsher and more chaotic figure, torments the clerk Korotkov and eventually drives the man to suicide.

Mentor: Christine Rydel

# Oral Presentation Abstracts

BEGINNING AT 3:30 P.M.

3:00 PM CONTINUED

KIRKHOF CENTER 2270

## **Factors Influencing Physician Assistants to Practice in the Upper Peninsula of Michigan**

Presenter(s): Kelly Ehemann, Kaili Walker

Rural areas are abundant throughout the country and they suffer from a shortage of medical practitioners. This shortage causes these areas to be medically underserved. The recruitment and retention of practitioners to these areas continues to be a major problem. Although many studies have been performed on physicians in rural areas, there is a lack of research on physician assistants (PAs). In addition to this lack of research, certain geographical areas, like the Upper Peninsula (U.P.) in Michigan, also lack research data regarding recruitment and retention efforts. The purpose of this study was to discover information regarding the most influential factors that recruited current PAs to the U.P., as well as retention factors that influenced them to remain there. This study looked at job satisfaction, family factors, lifestyle factors, and environmental factors of the current PAs who are practicing in the U.P. Data collection, data analysis, and results of this study are pending.

Mentor: Wallace Boeve

3:30 PM

KIRKHOF CENTER 1142

## **Mosaic Collaboration Project Between Grand Valley Ceramics Program and East Kentwood High School**

Presenter(s): Jessica Schultz, Lisa Maleski

Three of Grand Valley's art education majors who emphasize in ceramics planned and organized a collaborative ceramic mosaic project between the GVSU ceramics program and an after school multicultural art club at East Kentwood High School. The objective of this four month project was to highlight and celebrate the diversity of the East Kentwood student body, which consists of more than fifty nationalities. The three GVSU students also invited the art club to experience the campus of Grand Valley for a day and to directly observe raku firing, an alternative firing method, with the ceramics facilities. It was the eighth K-12 collaboration for the ceramics program. Since then, the project has extended to other art emphasis areas. This presentation will offer information about the planning and preparation involved to take on a project of this size, as well as the benefits of such an endeavor.

Mentor: Hoon Lee

KIRKHOF CENTER 2216

## **The Master and Margarita: The Writer's Plight**

Presenter: Philip Snyder

This paper examines Mikhail Bulgakov's uses of metaphor and symbolic imagery to criticize the Soviet government's treatment of writers and artists in his novel, *The Master and Margarita*. Through his characters, Bulgakov demonstrates the suppressive conditions of the Soviet literary world and provides a unique perspective into the Russian soul.

Mentor: Christine Rydel

# Oral Presentation Abstracts

BEGINNING AT 4:00 P.M.

3:30 PM CONTINUED

KIRKHOF CENTER 2259

## **Evaluation of Recanalization Rates of Cerebral Aneurysms Treated with Bare Platinum Coils Versus those Treated with Matrix2 Bioabsorbable Coils at a Large Volume Institution**

Presenter(s): Brittan Masters, Timothy Goralski, Boe Bissett

Subarachnoid hemorrhage from ruptured saccular aneurysms is the fourth most common cerebral vascular disorder. In the past, treatment was accomplished primarily by surgical clipping of the aneurysm. At present time, the most notable advancement in treatment has been techniques which result in the early obliteration of aneurysms, particularly via endovascular approaches utilizing a coil. Although endovascular procedures have been shown to be successful, they do have some limitations which have to do with the composition of the coil. Impaction and recanalization of saccular cerebral aneurysms is a common problem in endovascular coiling, especially with utilization of bare platinum coils. With the advent of bioabsorbable coil, such as the Matrix2, it may be possible to decrease the likelihood of impaction and recanalization, resulting in an increase in success rates. The purpose of this study is to compare the recoil rates between bare platinum and Matrix2 bioabsorbable coils.

Mentor: Theresa Bacon-Baguley

KIRKHOF CENTER 2263

## **Made in Grand Rapids: The Furniture Manufacturers Association's Search for Protection in Legal Recognition**

Presenter: Eric Baumgarten

The furniture manufacturers of Grand Rapids enjoyed distinction among the national furniture community for several decades during the Gilded Age and Progressive Era. By the Great Depression the firms of Grand Rapids had either begun to go bankrupt or move south out of necessity. The city's traditional narrative focuses upon the 1930s as the period of restructuring in economic decline. This research shows that the furniture manufacturers began recognizing the economic pressure far earlier by 1910 and is expressed in presenting the records of the Furniture Manufacturers Association of Grand Rapids. The presentation will focus upon the group's creation in 1911, and a suit between that Association and a set of Cleveland vendors, decided in 1919. The evidence collected shows that these furniture firms suffered too greatly at the changing industrial and marketing trends of the Progressive Era, and that these companies experienced their economic crisis earlier than had been formerly recognized.

Mentor: Matthew Daley

KIRKHOF CENTER 2266

## **The Development and Function of the Cheka, 1917-1922**

Presenter: Ashley Fallon

The Cheka, an acronym for the Russian name of the All-Russian Extraordinary Commission for Combating Counterrevolution and Sabotage, was the first incarnation of the Soviet secret political police. This paper seeks to chronicle the organization's development and basic activities from its inception in 1917 until it was renamed in 1922. Responsible for enforcing the Bolshevik seizure of power and eliminating or neutralizing opposition, given the right to use nearly any means necessary in fulfilling its ends, consisting especially on the local level largely of poorly educated men often with criminal backgrounds, the Cheka laid the foundations for institutionalized terror in the Soviet Union and itself became responsible for a still unclear number of deaths in the name of furthering and protecting the Revolution.

Mentor: Edward A Cole

# Oral Presentation Abstracts

BEGINNING AT 4:00 P.M.

4:00 PM

KIRKHOF CENTER 2201

## **Using Math to Pair Students with Internships.**

Presenter: Zach Madaj

The mathematics department has five students applying for internships and luckily there are five internships available. Each student applies to the companies they are willing to work for, and each company then interviews each applicant. After the completion of the interviews the math department compiles a list of students preferred companies and companies ideal intern. The department's goal is to now match exactly one student to exactly one company, making the interns and internships as happy as possible. In this talk we will help the math department find the best partnerships using applications of graph theory.

Mentor: Feryal Alayont

KIRKHOF CENTER 2215

## **Illusion, Morality, and Reality in The Master and Margarita**

Presenter: Tyler Steimle

This inquiry into the Stalinist-era Soviet novel, *The Master and Margarita*, tries to establish and examine a link between its title characters and its author's real-life experience. Questions concerning morality and ethics emerge as a consequence of close analysis. Bulgakov's literary use of illusion, metaphysics, and the surreal to express his worldview, in essence, helps us to understand the extremes of Soviet censorship and totalitarianism in the 1930s.

Mentor: Christine Rydel

KIRKHOF CENTER 2216

## **Design and Synthesis of Inhibitory Molecules for Cancer-Linked Focal Adhesion Kinase**

Presenter: Gregory Patten

Focal Adhesion Kinase (FAK) is a non-receptor protein kinase that plays a critical role in the cell-signaling pathways that lead to many cellular processes. In cancers such as breast and prostate, this kinase is found to be upregulated, making FAK a great target for anticancer drug development. Focus in this lab has been to develop peptidomimetics to regulate the activity of this enzyme. Peptide substrates were first developed, and were modeled after a tyrosine-containing motif of the known FAK substrate, p130cas. In hopes of developing a FAK regulating molecule, we have designed and synthesized a variety of substrate derivatives.

Mentor: Laurie Witucki

KIRKHOF CENTER 2266

## **Chernobyl and the Collapse of the Soviet Union**

Presenter: Blaine Sullivan

This paper explores how the accident at the Chernobyl Nuclear Power plant may have contributed to the collapse of the Soviet Union. Historians have emphasized many factors explaining how and why the USSR imploded, but have paid relatively little attention to the Chernobyl accident. Because the secrecy and authoritarian impulses of the regime ran directly in conflict with the aims of glasnost, it forced the regime to choose between the past and the future, and that choice was key to the fall of the Soviet state.

Mentor: Edward A Cole

# Oral Presentation Abstracts

BEGINNING AT 4:30 PM

4:00 PM CONTINUED

KIRKHOF CENTER 2263

## **The Form of the Story: How Literature Shapes Readers**

Presenter(s): Jessica Dick, Carly Crookston

This panel will explore the conventions of books less frequently analyzed in classrooms and often overlooked by the scholarly world: young adult literature. Such undervalued literature often becomes the foundation for an individual's lifelong readership, therefore increasing the significance of children's and young adult literature in relation to its audience. We will be merging a comprehensive study of young adult literature with a specific application to rewritten fairy tales within that genre in order to prove the value of good young adult literature in its strong, believable characters; its foundations in tradition and folklore; and the beauty of the writing itself.

Mentor: Patricia Bloem

KIRKHOF CENTER 2266

## **Chernobyl and the Collapse of the Soviet Union**

Presenter: Blaine Sullivan

This paper explores how the accident at the Chernobyl Nuclear Power plant may have contributed to the collapse of the Soviet Union. Historians have emphasized many factors explaining how and why the USSR imploded, but have paid relatively little attention to the Chernobyl accident. Because the secrecy and authoritarian impulses of the regime ran directly in conflict with the aims of glasnost, it forced the regime to choose between the past and the future, and that choice was key to the fall of the Soviet state.

Mentor: Edward A Cole

4:30 PM

KIRKHOF CENTER 2201

## **Control of Hypertension and Diabetes as a Measure of Chronic Disease Outcomes at a Free Clinic**

Presenter(s): Deana Girbach, Carley Breen, Megan Walling

A growing number of Americans lack health insurance, increasing the demand for services at free clinics. One study showed that the number of uninsured people in the United States rose by 15 million between 1990 and 2003. Due to the number of uninsured Americans, free clinics are utilized to manage chronic conditions. The purpose of this study was to determine the effectiveness of Oasis of Hope, a free clinic, in managing patients with hypertension and diabetes as assessed by blood pressure and blood glucose readings. A total of 187 patients were identified as having hypertension (n=119), diabetes (n=26), or both (n=42). The most prevalent co-morbidity was hyperlipidemia (n=71). A paired t-test was used to determine if a difference existed between the first and last recorded patient visits during 2009. Findings included a significant decrease in mean arterial pressure (p

Mentor: Theresa Bacon-Baguley

# Oral Presentation Abstracts

BEGINNING AT 4:30 PM

4:30 PM CONTINUED

KIRKHOF CENTER 2215

## **The Personalism of Putin's Regime**

Presenter: Alexandra Spurlock

Research has shown that Vladimir Putin has a loyal base of supporters which allows him to have a strong unchallenged authoritarian rule in Russia. I argue that the current regime is characterized by a personalistic rule. I plan to demonstrate the ways that Putin has maintained his personalistic support within his own party, United Russia, and amongst other prominent political and economic elites. First I demonstrate how Putin strategically balances rival clans, the conservative *siloviki* and St. Petersburg liberals. Secondly, I show how Putin's appointments to state-owned companies have increased his support. Thirdly, I discuss patronage in the regime and the 'grand bargain' between United Russia and Putin allowing them to lobby for special interests in exchange for support. Lastly, I will discuss the emerging formation of a personality cult that creates popular support outside the regime, and its contribution to Putin's ability to maintain control over Russia.

Mentor: Heather L. Tafel

KIRKHOF CENTER 2216

## **On Essences and Concepts: The Nietzschean Model and Beauvoir's Account of Woman**

Presenter: Kirsten Zeiter

A phenomenological approach to philosophy, criticized by some for analyzing only at the surface of the current state of affairs, is often contrasted with a genealogical approach, which is thought to look deeper for explanations. Friedrich Nietzsche's gives a genealogical account of the concept good in *On the Genealogy of Morals*, arguing for a shift in our understanding of the origins of the concept. In what is regarded as an opposing approach, Simone De Beauvoir gives a phenomenological account of woman in *The Second Sex*. I argue that Beauvoir in fact utilizes the Nietzschean approach in *The Second Sex*, demonstrating that conventional assertions about the stark differences between genealogical and phenomenological approaches are not well-founded. While there are a few clear differences in the particular methodologies of each, both accounts demonstrate a much less distinct line between genealogy and phenomenology, particularly as they apply to the question of metaphysical essences.

Mentor: David Vessey

KIRKHOF CENTER 2270

## **Drawing From the Land**

Presenter: Rachel Kauff

Drawing From the Land is a project started during the summer of 2010 at the Pierce Cedar Creek Institute in Hastings, MI. Through the Gordon Art Fellowship, I was given the opportunity to complete a body of work while living on the 600 acres of diverse ecosystems managed by the institute. The resulting work is a product of my ongoing observation and meditations on an individual's relationship to land, and the specific environment of the Pierce Cedar Creek Institute. As an artist working among scientists, both the immersion in the natural environment, as well as the scientific methods of my peers were unfamiliar and exciting as I tried to establish my role and working practice. My approach uses diverse materials and processes such as drawing, book-making, printmaking, collecting to explore questions related to the artist's relationship to the land, and recognizing humans as part of, rather than separate from natural ecosystems.

Mentor: Brett Colley



# Oral Presentation Abstracts

BEGINNING AT 5:00 P.M.

5:00 PM

KIRKHOF CENTER 2201

## **Practicing Physician Assistant Job Satisfaction in Michigan**

Presenter(s): Brenna Lamphear, Elizabeth Fielder, Brietney Sierzant

The purpose of this study is to analyze the overall job satisfaction of practicing Physician Assistants (PAs) in Michigan, specifically what level of overall job satisfaction practicing PAs in Michigan report, what difference in job satisfaction exist between genders, and which satisfaction factor has the greatest influence on practicing PA job satisfaction. The methodology involves an online survey tool that will be emailed to a list of Michigan Academy of Physician Assistants (MAPA) members. The survey includes demographic questions, Likert Scale satisfaction questions, and one open-ended question. The results will be statistically analyzed using the statistical software program SPSS. Counts, percentages, mean and standard deviations will be used to describe the responses to each individual question. Chi square tests will be used to analyze the relationship between two variables. The results will be available to Michigan's PAs in order for them to better their practice.

Mentor: Wallace Boeve

KIRKHOF CENTER 2215

## **Methicillin Resistant *Staphylococcus Aureus*: Educating Healthcare Workers in the Acute Care Setting**

Presenter: Kelly Madrid

Methicillin-Resistant *Staphylococcus Aureus*, or MRSA, is an infection that is resistant to many antibiotics. Consequences of MRSA infections-- high morbidity and mortality, higher hospital costs, and longer hospital length of stay-- can be avoided if healthcare workers are educated and take action. An educational module was developed in order to present information defining MRSA, its epidemiology, risk factors, and impact, as well as measures to reduce transmission. The evidence-based module was developed utilizing information obtained during a systematic literature search of CINAHL and PubMed databases for English primary articles published since 2007, as well as other relevant sources such as the Centers for Disease Control and Prevention. This interactive, online educational module could be used to increase awareness and impress upon healthcare workers the importance of reducing the spread of MRSA.

Mentor: Claudia Leiras-Laubach

KIRKHOF CENTER 2259

## **Breastfeeding Attitudes Among University Undergraduate Women and Men**

Presenter: Holly Barone

With the advancement of human medicine, there has been extensive research on the benefits of human breast milk and breastfeeding. There are currently several organizations that offer education, support, and resources for women who are considering, or have already started breastfeeding. Despite the strong efforts from many organizations, many people still hold misconceptions regarding breastfeeding, which in turn prevents them from either supporting their partners to breastfeed or breastfeeding themselves. The main purpose of this study was to examine Grand Valley State University undergraduate women's and men's attitudes toward breastfeeding in order to determine if interventional techniques to improve attitudes are needed. This study utilized a cross-sectional descriptive design. The participants in this study were GVSU freshman between the ages of 18-24; they will be surveyed via e-mail using surveymonkey.com. The results of this study are still pending.

Mentor: Wallace Boeve

# Oral Presentation Abstracts

BEGINNING AT 5:00 P.M.

5:00 PM CONTINUED

KIRKHOF CENTER 2263

## **Grand Valley Charter Schools: A Statistical Consulting Experience**

Presenter: Matt Vance, Daniel Richard

Currently, Grand Valley State University is responsible for the oversight of 41 charter schools across the state of Michigan. These schools give thousands of underprivileged kids a chance to receive a profound education that would not be possible without Grand Valley's support. GVSU would like to sponsor more charter schools, with a focus on the need present throughout inner city Detroit. As statistical consultants, our role was to develop a model of measurable determinants that will create an opportunity index through regression analysis. Relative index scores will indicate neighborhoods that have the greatest need for a charter school.

Mentor: Robert Kimball, Neal Rogness

KIRKHOF CENTER 2270

## **Outdoor Classrooms: Introducing an Agriculture Program at Grand Valley State University**

Presenter: Kendall Gilbert

The purpose of this project is to use the GVSU Community Garden for agricultural studies, research, education, and outreach, which will help build enhanced opportunities for Grand Valley students, the campus community, and the greater Grand Rapids area to engage in gardening fieldwork. This project aims to be the beginning of an effort to bridge the gap between students and food systems by promoting GVSU as a new field site for agricultural education and production.

Mentor: Levi Gardner

The background of the entire page is a high-contrast, black and white abstract pattern. It consists of numerous thick, diagonal, parallel lines that vary in length and thickness, creating a dense, textured effect. The lines are oriented diagonally from the top-left to the bottom-right.

## Panel Presentation Abstracts

1:00 — 5:00 P.M.

# Panel Presentations

12:00 P.M. — 4:00 PM

1:00 PM

KIRKHOF CENTER AREA 51

## **Scholarship and Creative Practice as Continuing Education Students**

Presenter(s): Teddie Buchner, Julie Pluger, Natalie Trevino, Jennifer Buddemeier, Noreen Delgado

This panel discusses our experiences with scholarship and creative practice as continuing education students and Liberal Studies majors. Our experiences both in traditional and non-traditional forms of education total 200+ years. We offer diverse yet complimentary perspectives and stories in our shared goal of a lifelong pursuit of liberal education.

Mentor: Christine Drewel

4:00 PM

KIRKHOF CENTER 1142

## **US Policy in the Middle East during the Ford Administration**

Presenter(s): Sandra Braden, Bart Kassel, Allison Bazaire

Syrian troops entered Lebanon in April 1976 with little response by the US or Israel. Bart's paper traces the policy of the US which bridged the gap between Israeli and Syrian concerns by emphasizing political mediation, open communication, and the limits of foreign intervention. Allison's paper is about the situation in Yemen. After South Yemen changed its government to the People's Democratic Republic of Yemen, increasing competition between the two world superpowers of the US and the USSR for military and ideological influence over the area commenced. Sandra's paper is about the Sinai passes, revealing why they were vital to Egypt and Israel. They were a persistent factor in talks with Kissinger, Sadat and Rabin. The Sinai passes were instrumental in creating discourse that almost ended negotiations of the Disengagement Agreement. US foreign policy was critical here, and Kissinger used a new policy of shuttle diplomacy for accomplishing a new peace process in the Middle East.

Mentor: James Goode

The image features a large, abstract background pattern of thick, black, diagonal, brush-stroke-like lines on a white background. These lines are oriented from the top-left towards the bottom-right and are most prominent along the top, bottom, and side edges of the page, framing a central white rectangular area.

## Index of Presenters & Mentors

# Presenter Presentation Index

SORTED BY LAST NAME

## [A]

### **Abraham, Smita**

12:00 p.m. - Kirkhof Center 2259

### **Agius, Michael**

1:00 p.m. - Henry Hall Atrium 60

### **Ahern, Maria**

9:00 a.m. - Kirkhof Center KC12

### **Allis, Mary**

1:30 p.m. - Kirkhof Center 2215

### **Alsoofy, Saltana**

1:00 p.m. - Henry Hall Atrium 70

### **Anderson, Brittani**

1:00 p.m. - Henry Hall Atrium 12

### **Andrews, Justin**

2:00 p.m. - Henry Hall Atrium 80

### **Antczak, Amanda**

1:00 p.m. - Kirkhof Center 2263

### **Apol, Lucas**

11:00 a.m. - Kirkhof Center KC54

### **Armstrong, Lauren**

1:00 p.m. - Kirkhof Center 2259

### **Arusoo, Tom**

10:00 a.m. - Henry Hall Atrium 78

### **Axdorff, Sarah**

4:00 p.m. - Henry Hall Atrium 90

### **Axline-Hillard, Amy**

9:30 a.m. - Kirkhof Center KC60

### **Ayotte, Amy**

12:30 p.m. - Kirkhof Center 2259

## [B]

### **Balz, Marci**

10:00 a.m. - Henry Hall Atrium 66

### **Baldwin, Juddson**

2:00 p.m. - Kirkhof Center 1142

### **Barber, Kristin**

3:00 p.m. - Kirkhof Center KC76

### **Barger, Andrea**

1:00 p.m. - Henry Hall Atrium 13

### **Barone, Holly**

5:00 p.m. - Kirkhof Center 2259

### **Bauer, Katherine**

9:30 a.m. - Kirkhof Center 1142

### **Baumgarten, Eric**

3:30 p.m. - Kirkhof Center 2263

### **Bazaire, Allison**

4:00 p.m. - Kirkhof Center 1142

### **Beachum, Lauren**

1:00 p.m. - Kirkhof Center KC9

### **Beebe, Aaron**

11:00 a.m. - Henry Hall Atrium 1

### **Beeler, Lindsey**

12:30 p.m. - Kirkhof Center 2259

### **Beenen, Timothy**

1:00 p.m. - Henry Hall Atrium 23

### **Beliveau, Arielle**

12:00 p.m. - Kirkhof Center 2259

### **Belknap, Katherine**

9:00 a.m. - Henry Hall Atrium 50

### **Benavidez, Ricardo**

12:00 p.m. - Kirkhof Center 2215

### **Beneditti, Marco**

1:00 p.m. - Kirkhof Center KC4

2:00 p.m. - Kirkhof Center 2259

### **Berish, Ashley**

2:00 p.m. - Kirkhof Center KC14

### **Beurkens, Jeffrey**

9:30 a.m. - Kirkhof Center 1104

### **Bibby, Kyle**

10:00 a.m. - Henry Hall Atrium 66

### **Bissett, Boe**

3:30 p.m. - Kirkhof Center 2259

### **Blossfield, Jacob**

9:00 a.m. - Henry Hall Atrium 4

### **Boeve, Jared**

11:30 a.m. - Kirkhof Center 2266

### **Boeve, Matthew**

9:00 a.m. - Kirkhof Center KC84

### **Boike, Matthew**

3:00 p.m. - Kirkhof Center KC30

### **Bol, Lisa**

10:00 a.m. - Henry Hall Atrium 66

### **Boone, Phyllis**

10:30 a.m. - Kirkhof Center 2216

### **Botting, Timothy**

1:00 p.m. - Kirkhof Center 1142

### **Boucher, Felix**

2:00 p.m. - Henry Hall Atrium 42

### **Bouwhuis, Eric**

9:00 a.m. - Henry Hall Atrium 37

### **Bowerman, Samuel**

12:30 p.m. - Kirkhof Center 2263

3:00 p.m. - Kirkhof Center 1142

### **Braden, Sandra**

4:00 p.m. - Kirkhof Center 1142

### **Bradshaw, Sandra**

11:30 a.m. - Kirkhof Center 2263

### **Braxton-Davis, Princess**

9:00 a.m. - Kirkhof Center 2259

### **Breen, Carley**

4:30 p.m. - Kirkhof Center 2201

### **Brinch, Amy**

9:00 a.m. - Kirkhof Center 2266

### **Brinks, Christopher**

9:00 a.m. - Henry Hall Atrium 15



# Presenter Presentation Index

SORTED BY LAST NAME

**Brown, Carter**

9:00 a.m. - Henry Hall Atrium 41

**Buchholz, Katelyn**

1:00 p.m. - Henry Hall Atrium 70

**Buchner, Teddie**

1:00 p.m. - Kirkhof Center Area 52

**Buddemeier, Jennifer**

1:00 p.m. - Kirkhof Center Area 52

**Bunnell, Katie**

10:00 a.m. - Henry Hall Atrium 91

**Burdis, Chris**

4:00 p.m. - Henry Hall Atrium 33

**Burke, Nathan**

1:00 p.m. - Kirkhof Center 57

**Bussey, Paul**

11:30 a.m. - Kirkhof Center 2259

**Butler, Katherine**

11:00 a.m. - Kirkhof Center KC44

## [C]

**Calkins, Amber**

3:00 p.m. - Henry Hall Atrium 83

**Cannan, Melissa**

12:00 p.m. - Henry Hall Atrium 95

**Carabulea, Carmen**

1:00 p.m. - Kirkhof Center KC4

**Carbott, Michael**

4:00 p.m. - Henry Hall Atrium 33

**Carter, Megan**

10:00 a.m. - Kirkhof Center 2270

**Cavicchio, Hannah**

2:00 p.m. - Henry Hall Atrium 101

**Cech, David**

10:00 a.m. - Kirkhof Center 2270

**Challa, Rusheeswar**

10:00 a.m. - Kirkhof Center KC71

**Chase, Rob**

12:00 p.m. - Kirkhof Center KC61

**Childs, Kathryn**

4:00 p.m. - Kirkhof Center KC53

**Chirco, Tina**

1:00 p.m. - Kirkhof Center 2259

**Chittisane, James**

12:00 p.m. - Kirkhof Center 2215

**Chizick, Chelsey**

9:00 a.m. - Kirkhof Center 2266

**Cohn, Molly**

10:00 a.m. - Kirkhof Center KC51

**Cole, Alan**

12:00 p.m. - Kirkhof Center 2215

**Coleman, Benjamin**

12:30 p.m. - Kirkhof Center 2259

**Coleman, Douglas**

11:00 a.m. - Kirkhof Center KC38

**Colley, Chelsey**

10:00 a.m. - Kirkhof Center KC48

**Cook, Callista**

4:00 p.m. - Kirkhof Center KC85

**Cooke, Erin**

10:00 a.m. - Kirkhof Center KC2

**Corgan, Ryan**

11:00 a.m. - Henry Hall Atrium 44

**Costa, Ninive**

4:00 p.m. - Henry Hall Atrium 98

**Cotela, Natalie**

3:00 p.m. - Kirkhof Center KC73

**Cotton, Lucas**

10:30 a.m. - Kirkhof Center 1104

**Coveney, Kate**

9:00 a.m. - Henry Hall Atrium 79

**Crookston, Carly**

4:00 p.m. - Kirkhof Center 2263

**Crowley, Kelsey**

10:00 a.m. - Henry Hall Atrium 89

1:00 p.m. - Kirkhof Center KC5

**Cummings, Thad**

9:00 a.m. - Kirkhof Center 1104

**Curley, Jared**

12:00 p.m. - Kirkhof Center KC61

**Curnutte, Bryan**

11:00 a.m. - Henry Hall Atrium 40

**Currey, Donald**

1:30 p.m. - Kirkhof Center 2201

## [D]

**Damm, Sara**

10:00 a.m. - Kirkhof Center 1142

**Davis, Adam**

9:00 a.m. - Kirkhof Center KC83

**Davis, Joshua**

4:00 p.m. - Kirkhof Center KC70

**De Vries, Kari**

11:00 a.m. - Kirkhof Center KC31

**Dearnley, Kevin**

10:00 a.m. - Kirkhof Center 2215

**Delgado, Noreen**

1:00 p.m. - Kirkhof Center Area 52

**DeLisle, Charles**

2:00 p.m. - Henry Hall Atrium 42

**DeWaard, Trevor**

2:00 p.m. - Kirkhof Center KC66

**Dick, Jessica**

4:00 p.m. - Kirkhof Center 2263

# Presenter Presentation Index

SORTED BY LAST NAME

**Dilloway, Mike**

2:30 p.m. - Kirkhof Center 1104

**Dixon, Elizabeth**

9:30 a.m. - Kirkhof Center 2215

**Docter, Brianne**

10:00 a.m. - Kirkhof Center KC16

**Dodla, Pushpaja**

1:30 p.m. - Kirkhof Center 2263

**Dondanville, Matthew**

9:00 a.m. - Henry Hall Atrium 76

11:30 a.m. - Kirkhof Center 2259

**Doop, Deborah**

10:00 a.m. - Henry Hall Atrium 69

**Downey, Kaitlin**

4:00 p.m. - Henry Hall Atrium 43

**Drahos, Megan**

10:00 a.m. - Kirkhof Center KC3

1:00 p.m. - Kirkhof Center KC9

**Drake, Lena**

1:00 p.m. - Kirkhof Center KC13

**DuBois, Tim**

10:00 a.m. - Kirkhof Center 2259

**Duff, Jordan**

3:00 p.m. - Kirkhof Center KC73

**Duffin, Russell**

10:00 a.m. - Kirkhof Center KC1

**Dugan, Melissa**

3:00 p.m. - Henry Hall Atrium 83

**Dulla, Whitney**

10:00 a.m. - Kirkhof Center KC48

**Dust, Lisa**

12:00 p.m. - Kirkhof Center KC28

## [E]

**Eagle, Jessica**

12:00 p.m. - Kirkhof Center 2259

**Ebenstein, Alexander**

11:30 a.m. - Kirkhof Center 2266

**Egner, Nathan**

11:30 a.m. - Kirkhof Center 2270

**Eheman, Kelly**

3:00 p.m. - Kirkhof Center 2270

**Eiswerth, Eric**

9:00 a.m. - Henry Hall Atrium 8

**Ellis, Lisa**

1:00 p.m. - Henry Hall Atrium 12

**Enck, Ryan**

1:00 p.m. - Henry Hall Atrium 86

**Eno, Kyle**

1:00 p.m. - Henry Hall Atrium 51

**Espinoza, Jeremy**

2:00 p.m. - Kirkhof Center KC78

**Evans, Jordan**

9:00 a.m. - Henry Hall Atrium 41

## [F]

**Faber, Amanda**

9:00 a.m. - Henry Hall Atrium 63

**Fahlstrom, Kathryn**

11:30 a.m. - Kirkhof Center 2216

**Falllon, Ashley**

3:00 p.m. - Kirkhof Center 2266

3:30 p.m. - Kirkhof Center 2266

**Farber, Matt**

12:00 p.m. - Kirkhof Center 2215

**Ferguson, Brianna**

11:30 a.m. - Kirkhof Center 2263

**Fernandez, Nicolas**

3:00 p.m. - Henry Hall Atrium 83

**Fielder, Elizabeth**

5:00 p.m. - Kirkhof Center 2201

**Figlewicz, Matthew**

10:00 a.m. - Henry Hall Atrium 71

**Fisher, Katy**

11:30 a.m. - Kirkhof Center 2263

**Fisk, Sean**

4:00 p.m. - Kirkhof Center KC46

**Flaherty, Ryan**

2:00 p.m. - Henry Hall Atrium 62

**Flynn, Bridgette**

4:00 p.m. - Henry Hall Atrium 90

**Foley, Alisha**

9:00 a.m. - Kirkhof Center 2266

**Folkertsma, Casey**

3:00 p.m. - Henry Hall Atrium 83

**Fought, Eliscia**

4:00 p.m. - Henry Hall Atrium 43

**Frazier, John**

1:00 p.m. - Kirkhof Center KC80

3:00 p.m. - Kirkhof Center KC19

**Fuhst, Mallory**

10:00 a.m. - Kirkhof Center KC48

## [G]

**Gaastra, Marylynn**

9:30 a.m. - Kirkhof Center 2216

**Gabrielli, Alexandra**

11:00 a.m. - Henry Hall Atrium 7

**Gallagher, Jordan**

11:00 a.m. - Kirkhof Center 1104

**Garlets, Zachary**

10:00 a.m. - Henry Hall Atrium 53

**Gaskell, Allison**

2:00 p.m. - Kirkhof Center KC27

**Gasko, Stefanie**

11:00 a.m. - Kirkhof Center KC43



# Presenter Presentation Index

SORTED BY LAST NAME

## **Geal, Brad**

1:00 p.m. - Henry Hall Atrium 93

## **Gebre-Egziabher, Kibrom**

9:00 a.m. - Kirkhof Center KC25

## **Gerrits, Rachel**

11:00 a.m. - Kirkhof Center KC37

## **Ghiri, Samir**

12:00 p.m. - Henry Hall Atrium 24

## **Gibbons, Nicole**

12:00 p.m. - Henry Hall Atrium 77

## **Gibson, Adrienne**

2:00 p.m. - Kirkhof Center KC18

## **Gier, Chad**

10:00 a.m. - Henry Hall Atrium 89

## **Gieseler, Bethany**

11:30 a.m. - Kirkhof Center 2263

## **Gilbert, Kendall**

5:00 p.m. - Kirkhof Center 2270

## **Girbach, Deana**

4:30 p.m. - Kirkhof Center 2201

## **Glazier, Megan**

10:00 a.m. - Henry Hall Atrium 57

## **Goetz, Bryan**

3:00 p.m. - Kirkhof Center 2201

## **Goetz, Stefan**

10:00 a.m. - Kirkhof Center 2263

## **Gomez Cervantes, Andrea**

12:00 p.m. - Kirkhof Center 2216

## **Goralski, Timothy**

3:30 p.m. - Kirkhof Center 2259

## **Gracz, Ann**

9:00 a.m. - Kirkhof Center 1142

## **Grebenok, Deborah**

4:00 p.m. - Kirkhof Center KC34

## **Greenwell, Alyson**

9:00 a.m. - Henry Hall Atrium 41

## **Greer, Dan**

2:00 p.m. - Henry Hall Atrium 64

## **Guerrero, Lily**

1:00 p.m. - Kirkhof Center 2270

## **Guiher, Lisa**

4:00 p.m. - Kirkhof Center KC47

## [H]

## **Hackett, Tiffany**

2:00 p.m. - Kirkhof Center KC78

## **Hager, Cody**

1:00 p.m. - Henry Hall Atrium 75

## **Hakirn, Annie**

11:00 a.m. - Kirkhof Center 2263

## **Hammond, Katie**

3:00 p.m. - Kirkhof Center KC75

## **Hansen, Nathaniel**

10:30 a.m. - Kirkhof Center 2270

## **Hansen, Eric**

12:00 p.m. - Kirkhof Center KC56

## **Harrigan, Shelby**

12:00 p.m. - Kirkhof Center 2259

## **Harshberger, Erin**

11:00 a.m. - Kirkhof Center KC59

## **Haske, Jill**

1:00 p.m. - Kirkhof Center 2259

## **Hathaway, Chaille**

1:30 p.m. - Kirkhof Center 2215

## **Haupt, Amanda**

12:00 p.m. - Kirkhof Center KC81

## **Hayward, Heather**

1:00 p.m. - Henry Hall Atrium 73

## **Heggan, Stacy**

9:00 a.m. - Henry Hall Atrium 84

## **Heinlein, Alyce**

11:00 a.m. - Henry Hall Atrium 49

## **Heinlein, Samantha**

10:00 a.m. - Kirkhof Center KC8

## **Hekstra, Katie**

3:00 p.m. - Kirkhof Center KC26

## **Helsel, Dustin**

9:00 a.m. - Kirkhof Center KC40

## **Higginson, Nathaniel**

11:30 a.m. - Kirkhof Center 1104

## **Hightower, Liberty**

10:00 a.m. - Henry Hall Atrium 66

## **Hillman, Tamara**

2:00 p.m. - Henry Hall Atrium 97

## **Hinkley, Ryan**

10:00 a.m. - Kirkhof Center 2266

1:30 p.m. - Kirkhof Center 2259

2:00 p.m. - Henry Hall Atrium 26

## **Hinterman, Corina**

11:30 a.m. - Kirkhof Center 2215

12:00 p.m. - Kirkhof Center KC32

## **Hitchcock, Stefan**

12:00 p.m. - Henry Hall Atrium 65

## **Hoekstra, Julia**

11:30 a.m. - Kirkhof Center 2216

## **Hoekwater, Stephen**

12:00 p.m. - Kirkhof Center 2215

## **Horton, Ashley**

12:30 p.m. - Kirkhof Center 2259

## **Howard, Eric**

10:00 a.m. - Kirkhof Center 2266

## **Howard, Christopher**

10:00 a.m. - Henry Hall Atrium 71

# Presenter Presentation Index

SORTED BY LAST NAME

## Howard, Jonathan

3:00 p.m. - Henry Hall Atrium 83

## Howard, Samuel

9:00 a.m. - Kirkhof Center KC65

## Howe, Aaron

11:00 a.m. - Kirkhof Center KC43

## Howell, Kelly

2:00 p.m. - Henry Hall Atrium 74

## Hutchins, Alex

12:00 p.m. - Henry Hall Atrium 83

## Hurley, Megan

3:00 p.m. - Kirkhof Center 2259

## [I]

## Itani, Farah

10:00 a.m. - Kirkhof Center KC15

3:00 p.m. - Henry Hall Atrium 83

## [J]

## Jablonski, Joe

12:00 p.m. - Henry Hall Atrium 17

## Jahic, Sani

4:00 p.m. - Kirkhof Center KC34

## Jahic, Sani

4:00 p.m. - Kirkhof Center KC34

## James, Caleb

4:00 p.m. - Henry Hall Atrium 28

## Jandernoa, Barbara

1:30 p.m. - Kirkhof Center 2270

## Jelterna, Kayla

1:00 p.m. - Kirkhof Center 2259

## Johnson, Brad

11:00 a.m. - Kirkhof Center 2259

## Johnson, Dianna

12:00 p.m. - Henry Hall Atrium 55

## Joseph, Kheran

12:30 p.m. - Kirkhof Center 2270

## [K]

## Kabara, Jared

2:00 p.m. - Henry Hall Atrium 48

## Kane, Elise

4:00 p.m. - Kirkhof Center KC34

## Kaseka, Philip

1:00 p.m. - Henry Hall Atrium 93

## Kassel, Bart

4:00 p.m. - Kirkhof Center 1142

## Kauff, Rachel

4:30 p.m. - Kirkhof Center 2270

## Kedrowski, Joe

1:00 p.m. - Henry Hall Atrium 52

## Kendzicky, Ann

1:00 p.m. - Henry Hall Atrium 19

## Kielbasa, Ryan

4:00 p.m. - Kirkhof Center KC64

## King, Greg

2:00 p.m. - Henry Hall Atrium 64

## Kriby, Laura

11:00 a.m. - Henry Hall Atrium 1

## Kiser, Charalene

1:00 p.m. - Kirkhof Center KC9

## Knockenbauer, Kase

3:00 p.m. - Kirkhof Center KC30

## Kobus, Chelsea

1:00 p.m. - Henry Hall Atrium 70

## Kogelman, Jesse

11:00 a.m. - Kirkhof Center 2216

## Kovacevic, Naila

10:30 a.m. - Kirkhof Center 2266

## Kowalczyk, Stacey

11:00 a.m. - Henry Hall Atrium 44

## Kremers, Kelseyann

2:00 p.m. - Henry Hall Atrium 16

## Krings, Nathan

2:30 p.m. - Kirkhof Center 2201

## Krizmanich, Susan

11:00 a.m. - Henry Hall Atrium 81

## Kubont, Chris

10:00 a.m. - Kirkhof Center KC1

## Kuck, Andrew

12:00 p.m. - Kirkhof Center 2263

## Kulpers, Austin

3:00 p.m. - Kirkhof Center 2201

## Kuntz, Chad

10:00 a.m. - Henry Hall Atrium 71

## [L]

## Laarman, Patrick

1:30 p.m. - Kirkhof Center 1104

## LaLonde, Terri

12:00 p.m. - Kirkhof Center 2259

## Laman, Lauren

2:00 p.m. - Henry Hall Atrium 48

## Lamberts, Ross

11:00 a.m. - Kirkhof Center KC43

## Lamphear, Brenna

5:00 p.m. - Kirkhof Center 2201

## Lamphere, Aaron

10:00 a.m. - Henry Hall Atrium 101

## LaPres, Kendra

12:30 p.m. - Kirkhof Center 2259

## Larsen, Matt

1:00 p.m. - Kirkhof Center 2201

## Lautenbach, Jon

1:00 p.m. - Kirkhof Center 2201

## Lawless, Susan

11:00 a.m. - Henry Hall Atrium 1

# Presenter Presentation Index

SORTED BY LAST NAME

## **Leblanc, Claude**

2:00 p.m. - Kirkhof Center 1142

## **Lee, Min**

2:30 p.m. - Henry Hall Atrium 36

## **Legant, Kyle**

9:00 a.m. - Kirkhof Center 2270

11:00 a.m. - Kirkhof Center KC43

## **Lemon, Kaitlyn**

12:00 p.m. - Kirkhof Center 1104

## **Liebig, Jennifer**

10:00 a.m. - Henry Hall Atrium 31

## **Lindberg, William**

11:00 a.m. - Kirkhof Center KC10

## **Lipski, Clayton**

2:00 p.m. - Kirkhof Center KC78

## **Lock, Colton**

3:00 p.m. - Kirkhof Center KC7

## **Louden, Patrick**

3:00 p.m. - Kirkhof Center KC35

4:00 p.m. - Kirkhof Center KC24

## **Lowing, Andrea**

10:00 a.m. - Henry Hall Atrium 32

## **Lux, Andrew**

1:00 p.m. - Henry Hall Atrium 93

## **Ly, Stephanie**

10:00 a.m. - Kirkhof Center 2259

## **[M]**

## **MacDonald, Alex**

12:00 p.m. - Henry Hall Atrium 100

## **Macintosh, Hayden**

11:30 p.m. - Kirkhof Center 2266

## **Macksood, Nick**

2:30 p.m. - Kirkhof Center 2259

## **MacLean, Christopher**

1:00 p.m. - Henry Hall Atrium 19

## **Maclellan, Scott**

10:00 a.m. - Kirkhof Center KC1

## **Madaj, Zach**

4:00 p.m. - Kirkhof Center 2201

## **Maddox, John**

10:00 a.m. - Kirkhof Center KC48

## **Madrid, Kelly**

5:00 p.m. - Kirkhof Center 2215

## **Maginity, James Scott**

12:00 p.m. - Kirkhof Center 2201

1:00 p.m. - Kirkhof Center 2201

## **Main, Jackie**

10:00 a.m. - Kirkhof Center KC8

## **Maki, Nicholas**

10:30 a.m. - Kirkhof Center 2263

## **Maleski, Lisa**

3:30 p.m. - Kirkhof Center 1142

## **Malloure, Matthew**

12:00 p.m. - Kirkhof Center KC23

## **Marecek, Scott**

2:00 p.m. - Kirkhof Center 1104

## **Martin, Michael**

2:30 p.m. - Kirkhof Center 2266

## **Marx, Jennifer**

11:30 a.m. - Kirkhof Center 2263

## **Mason, Nick**

12:00 p.m. - Kirkhof Center KC61

## **Masters, Brittan**

3:30 p.m. - Kirkhof Center 2259

## **May, Jeremy**

12:00 p.m. - Kirkhof Center 2270

## **McBarnes, Kristin**

2:00 p.m. - Kirkhof Center 2270

## **McCarthy, Patrick**

12:00 p.m. - Kirkhof Center KC68

## **McCotter, Courtney**

11:00 a.m. - Kirkhof Center KC77

## **McCurley, Zachary**

9:00 a.m. - Kirkhof Center KC83

## **McDaniel, Russell**

11:00 a.m. - Kirkhof Center KC82

## **McGuire, Bridgette**

12:00 p.m. - Henry Hall Atrium 65

## **Mclaughlin, Rachelle**

10:00 a.m. - Henry Hall Atrium 66

1:00 p.m. - Kirkhof Center 1104

## **McLeay, Kaylie**

10:30 a.m. - Kirkhof Center 2259

## **McQuillan, Natalie**

3:00 p.m. - Henry Hall Atrium 83

## **McRae, Matt**

11:00 a.m. - Henry Hall Atrium 7

## **Medelin, Taylor**

9:30 a.m. - Kirkhof Center 2215

## **Mercer, Amanda**

2:00 p.m. - Henry Hall Atrium 38

## **Meyer, Melissa**

9:30 a.m. - Kirkhof Center 2216

## **Meyer, Benjamin**

2:00 p.m. - Kirkhof Center KC14

## **Middlewood, Brianna**

3:00 p.m. - Kirkhof Center 1104

## **Mielke, Kristie**

11:00 a.m. - Henry Hall Atrium 58

## **Mier, Dustin**

10:00 a.m. - Henry Hall Atrium 69

## **Miller, Jessica A.**

11:00 a.m. - Kirkhof Center 2259

## **Miller, Jessica R.**

3:00 p.m. - Kirkhof Center 2216

# Presenter Presentation Index

SORTED BY LAST NAME

## Miller, Jessie

12:00 p.m. - Henry Hall Atrium 65

## Miller, Nathaniel

11:00 a.m. - Kirkhof Center KC6

## Mitchell, Andrea

2:00 p.m. - Kirkhof Center KC62

## Moeggenberg, Jordan

9:00 a.m. - Henry Hall Atrium 85

## Mohney, Suzanna

11:30 a.m. - Kirkhof Center 2263

## Monroe, William

3:00 p.m. - Kirkhof Center KC30

## Montoya, Anthony

10:00 a.m. - Kirkhof Center KC34

## Moore, Ashley

9:30 a.m. - Kirkhof Center 2266

## Mounds, Joel

3:00 p.m. - Kirkhof Center KC75

## Musser, Matt

2:30 p.m. - Kirkhof Center 2216

## [N]

## Nader, Brandon

9:00 a.m. - Henry Hall Atrium 2

## Nadolny, Megan

1:00 p.m. - Kirkhof Center 2259

## Narutsch, Erika

9:00 a.m. - Henry Hall Atrium 63

## Naveria, Nina

12:00 p.m. - Kirkhof Center 2259

## Nawrocki, Brian

9:00 a.m. - Henry Hall Atrium 8

## Nguyen, Long

1:00 p.m. - Henry Hall Atrium 12

## Nichols, Samantha

9:00 a.m. - Kirkhof Center 2201

## Nicholson, Hannah

12:00 p.m. - Kirkhof Center KC74

## Nothaft, Patrick

2:00 p.m. - Henry Hall Atrium 46

## Novak, Allison

3:00 p.m. - Kirkhof Center KC19

## Nshime, Allison

9:00 a.m. - Henry Hall Atrium 29

## Nwokocha, Godwill

11:00 a.m. - Henry Hall Atrium 7

## [O]

## Oatmen, Tyler

12:00 p.m. - Henry Hall Atrium 21

## O'Brein, Madelyn

3:00 p.m. - Kirkhof Center 2263

## Ochalek, Michael

3:00 p.m. - Kirkhof Center KC30

## O'Connor, Allyson

12:00 p.m. - Kirkhof Center KC22

## O'Hearn, Kurt

10:00 a.m. - Kirkhof Center 2216

4:00 p.m. - Kirkhof Center KC46

## O'Leary, Dale

1:00 p.m. - Kirkhof Center KC57

## Ostby, Kristine

9:00 a.m. - Henry Hall Atrium 41

## [P]

## Parish, Trevor

1:00 p.m. - Henry Hall Atrium 13

## Parker, Elizabeth

12:30 p.m. - Kirkhof Center 2201

## Parsons, Angie

12:30 p.m. - Kirkhof Center 2259

## Pattern, Gregory

4:00 p.m. - Kirkhof Center 2216

## Pentecost, Allison

12:00 p.m. - Henry Hall Atrium 22

## Perzanowski, Alan

10:00 a.m. - Kirkhof Center 1104

## Petersen, Eric

9:00 a.m. - Henry Hall Atrium 4

## Peterson, Todd

1:30 p.m. - Kirkhof Center 2266

## Peterson, Douglas

9:00 a.m. - Henry Hall Atrium 47

## Phelan, Jennifer

4:00 p.m. - Henry Hall Atrium 27

## Philips, Michael

9:00 a.m. - Henry Hall Atrium 68

## Philips, Patricia

1:00 p.m. - Henry Hall Atrium 11

## Pluger, Julie

1:00 p.m. - Kirkhof Center Area 52

## Podein, Stephanie

10:30 a.m. - Kirkhof Center 1142

## Porritt, Marilyn

12:00 p.m. - Kirkhof Center KC22

## Powell, Brittany

10:00 a.m. - Henry Hall Atrium 91

## Powers, Kristen

4:00 p.m. - Kirkhof Center KC64

## Persutti, Joseph

9:00 a.m. - Henry Hall Atrium 68

## Prodanovic, Srecko

11:00 a.m. - Kirkhof Center KC55

# Presenter Presentation Index

SORTED BY LAST NAME

## **Pruitt, Erin**

9:00 a.m. - Kirkhof Center KC79

## **Pugh, Sara**

12:00 p.m. - Henry Hall Atrium 22

## **[R]**

## **Raaymakers, Susan**

9:30 a.m. - Kirkhof Center 2216

## **Rahrig, Paul**

3:00 p.m. - Kirkhof Center KC21

## **Rapisarda, Krista**

3:00 p.m. - Henry Hall Atrium 83

## **Rathburg, Marie**

9:30 a.m. - Kirkhof Center 2270

## **Ray, Sharcy**

11:00 a.m. - Kirkhof Center 1142

## **Reed, Samuel**

2:00 p.m. - Henry Hall Atrium 46

## **Repeck, Alexander**

9:00 a.m. - Kirkhof Center KC29

## **Resendez, Samantha**

11:30 a.m. - Kirkhof Center 2263

## **Rhode, Daniel**

5:00 p.m. - Kirkhof Center 2263

## **Rich, Kiely**

11:00 a.m. - Kirkhof Center KC58

## **Richard, Daniel**

11:00 a.m. - Kirkhof Center KC58

## **Richardson, William**

2:00 p.m. - Henry Hall Atrium 99

## **Riddering, Thomas**

2:00 p.m. - Kirkhof Center KC78

## **Roach, Patrick**

12:00 p.m. - Henry Hall Atrium 56

## **Rogers, Thomas**

10:00 a.m. - Kirkhof Center KC71

11:00 a.m. - Henry Hall Atrium 1

## **Rohde, Jacob**

10:00 a.m. - Kirkhof Center KC3

## **Rood, Scott**

9:30 a.m. - Henry Hall Atrium 82

## **Rose, Cody**

10:00 a.m. - Kirkhof Center 2263

## **Rozeboom, Latricia**

9:00 a.m. - Kirkhof Center KC41

## **Rozsi, Martha**

2:30 p.m. - Kirkhof Center 2263

## **Rutledge, Diana**

11:00 a.m. - Kirkhof Center KC43

## **Rydahi, Nichole**

4:00 p.m. - Kirkhof Center KC50

## **[S]**

## **Sage, Chelsea**

11:00 a.m. - Kirkhof Center 2201

## **Sanford, Andy**

10:30 a.m. - Kirkhof Center 2215

1:00 p.m. - Kirkhof Center 2266

## **Sarathi, Akshay**

2:00 p.m. - Kirkhof Center 2263

## **Sarver, Scott**

2:00 p.m. - Henry Hall Atrium 88

## **Sawyer, Ryan**

9:00 a.m. - Henry Hall Atrium 41

10:00 a.m. - Henry Hall Atrium 89

## **Schaar, Anna**

3:00 p.m. - Kirkhof Center Area 2259

## **Scheiber, Christopher**

12:00 p.m. - Kirkhof Center KC81

## **Schendel, Logan**

11:00 a.m. - Kirkhof Center 2270

## **Schepper, Kayleen**

1:30 p.m. - Kirkhof Center 2216

## **Schilling Jr., Timothy**

2:00 p.m. - Kirkhof Center 2215

## **Schloegl, Brianne**

10:00 a.m. - Kirkhof Center KC8

## **Schlueter, David**

12:00 p.m. - Kirkhof Center KC23

1:00 p.m. - Kirkhof Center KC80

## **Schnotala, Tony**

12:00 p.m. - Kirkhof Center KC74

## **Schroeder, Matthew**

12:00 p.m. - Henry Hall Atrium 87

## **Schulte, Brian**

12:00 p.m. - Henry Hall Atrium 102

## **Schultz, Jessica**

3:30 p.m. - Kirkhof Center 1142

## **Schuta, Aaron**

12:00 p.m. - Henry Hall Atrium 25

1:00 p.m. - Henry Hall Atrium 14

## **Sexton, Kathleen**

12:30 p.m. - Kirkhof Center 1104

## **Seyferth, Carly**

11:00 p.m. - Henry Hall Atrium 45

## **Shah, Jankaki**

12:00 p.m. - Kirkhof Center KC45

## **Shattuck, Kraig**

10:00 a.m. - Kirkhof Center 2201

## **Shattuck, Lisa**

9:30 a.m. - Kirkhof Center 2201

## **Shields, Justin**

11:00 a.m. - Kirkhof Center 2216

# Presenter Presentation Index

SORTED BY LAST NAME

**Shields, Stephen**

1:00 p.m. - Henry Hall Atrium 51

**Shier, Joey**

1:30 p.m. - Kirkhof Center 2215

**Shultz, Bruce**

9:00 a.m. - Kirkhof Center KC65

**Sierzant, Brietney**

5:00 p.m. - Kirkhof Center 2201

**Sikora, Meghann**

9:00 a.m. - Kirkhof Center 2215

**Simon, Kristen**

12:00 p.m. - Henry Hall Atrium 20

**Simon, Matthew**

9:00 a.m. - Henry Hall Atrium 41

**Simonson, Scott**

9:00 a.m. - Kirkhof Center KC83

**Skora, Leslie**

9:30 a.m. - Kirkhof Center KC83

**Smit, John**

4:00 p.m. - Kirkhof Center KC46

**Smith, Brandt**

2:00 p.m. - Henry Hall Atrium 80

**Smith, Kody**

12:00 p.m. - Henry Hall Atrium 17

**Smith, Lauren**

9:00 a.m. - Kirkhof Center 72

**Smith, Nicholas**

9:00 a.m. - Henry Hall Atrium 10

**Smith, Nicholas**

12:30 p.m. - Kirkhof Center 1142

**Smogoleski, Kayla**

1:30 p.m. - Kirkhof Center 2215

**Snoap, Adam**

1:00 p.m. - Henry Hall Atrium 19

**Snyder, Philip**

11:00 a.m. - Kirkhof Center 2215

3:30 p.m. - Kirkhof Center 2216

**Spadacene, Lene**

9:00 a.m. - Kirkhof Center KC39

10:00 a.m. - Henry Hall Atrium 66

**Sparks, Jordan**

10:30 a.m. - Kirkhof Center 2201

**Spoelma, Trevor**

9:00 a.m. - Henry Hall Atrium 8

**Spurlock, Alexandra**

4:30 p.m. - Kirkhof Center 2215

**Strackangast, Colene**

3:00 p.m. - Kirkhof Center 2201

**Stanford, Kyle**

9:00 a.m. - Henry Hall Atrium 37

**Starr, Andy**

4:00 p.m. - Henry Hall Atrium 43

**Steimle, Tyler**

4:00 p.m. - Kirkhof Center 2215

**Stein, Molly**

1:00 p.m. - Kirkhof Center KC52

**Stillson, Jacob**

11:00 a.m. - Henry Hall Atrium 45

**Stockoski, Michael**

1:00 p.m. - Henry Hall Atrium 51

**Stoike, Erika**

1:30 p.m. - Kirkhof Center 2215

**Stout, Audrey**

1:30 p.m. - Kirkhof Center 2215

**Stoyka, Lindsay**

2:00 p.m. - Kirkhof Center KC27

**Straley, Anothony**

9:00 a.m. - Kirkhof Center 2216

**Stratil, Sean**

11:30 a.m. - Kirkhof Center 1142

**Stratton, Holly**

9:00 a.m. - Kirkhof Center 2263

**Street, Jason**

3:00 p.m. - Kirkhof Center KC11

**Strotbaum, Ashley**

9:00 a.m. - Kirkhof Center 2263

**Sullivan, Blaine**

4:00 p.m. - Kirkhof Center 2266

**Summers, Nicole**

4:00 p.m. - Kirkhof Center 2266

**Swem, Joshua**

10:00 a.m. - Kirkhof Center KC51

**Szura, Andrea**

12:00 p.m. - Kirkhof Center KC22

## [T]

**Tagett, Jennifer**

9:00 a.m. - Henry Hall Atrium 30

**Tanner, Shawna**

1:00 p.m. - Kirkhof Center KC20

**Tarrant, Leah**

9:00 a.m. - Kirkhof Center 2270

**Taylor, Andrew**

2:00 p.m. - Kirkhof Center 2201

**Teshima, Jori**

1:00 p.m. - Henry Hall Atrium 59

**Thorne, Ben**

10:00 a.m. - Henry Hall Atrium 34

**Tissue, Kristen**

2:00 p.m. - Henry Hall Atrium 42

**Tokzhumanov, Nurzhan**

12:00 p.m. - Kirkhof Center 1142

# Presenter Presentation Index

SORTED BY LAST NAME

**Tole, Olvi**

3:00 p.m. - Kirkhof Center KC69

**Tomkins, Trisha**

9:00 a.m. - Henry Hall Atrium 41

**Torreano, Jennifer**

11:00 a.m. - Henry Hall Atrium 39

**Torres, Luis**

1:00 p.m. - Kirkhof Center 2215

**Treat, William**

1:00 p.m. - Kirkhof Center 2201

**Trevino, Natalie**

1:00 p.m. - Kirkhof Center Arena 52

**Turner, Chelsea**

11:00 a.m. - Henry Hall Atrium 45

## [U]

**Ung, Sandy**

1:30 p.m. - Kirkhof Center 2215

## [V]

**Vanacker, Emma**

11:30 a.m. - Kirkhof Center 2266

**Vance, Matt**

5:00 p.m. - Kirkhof Center 2263

**VanDeCar, Willaim**

10:00 a.m. - Henry Hall Atrium 71

**VanDenburg, April**

9:00 a.m. - Kirkhof Center 2270

**Vander Moren, Cynthia**

11:00 a.m. - Kirkhof Center 2266

**VanderLean, Katherine**

2:00 p.m. - Kirkhof Center 1142

**VanPelt, Laura**

11:00 a.m. - Kirkhof Center 2259

**Ver Way, Amy**

1:00 p.m. - Henry Hall Atrium 12

**Verellen, Michele**

3:00 p.m. - Kirkhof Center KC73

**Vice, Justin**

2:00 p.m. - Kirkhof Center KC14

**Villalobos, Lauren**

11:00 a.m. - Henry Hall Atrium 5

**Vista, Drew**

12:00 p.m. - Kirkhof Center 2266

**Vos, Candace**

9:00 a.m. - Kirkhof Center KC65

**Vuillemot, Michele**

11:30 a.m. - Kirkhof Center 2216

## [W]

**Waldron, Dean**

1:00 p.m. - Kirkhof Center 2259

**Walker, Kaili**

3:00 p.m. - Kirkhof Center 2270

**Walker, Linda**

9:30 a.m. - Kirkhof Center 2215

**Walker, Nathan**

11:30 a.m. - Kirkhof Center 2259

**Walling, Megan**

4:30 p.m. - Kirkhof Center 2201

**Walukonis, Kelsey**

12:00 p.m. - Kirkhof Center KC74

**Weaver, Wade**

10:00 a.m. - Henry Hall Atrium 71

**Weeks, Tammy**

4:00 p.m. - Kirkhof Center KC46

**Weir, Katherine**

1:00 p.m. - Henry Hall Atrium 19

**Werner, Kirsten**

2:00 p.m. - Kirkhof Center 2216

**Wesselink, Julie**

9:00 a.m. - Henry Hall Atrium 54

**Westrick, Logan**

9:00 a.m. - Henry Hall Atrium 37

**Wharton, Ashley**

9:30 a.m. - Kirkhof Center 2216

**Wheat, Candice**

11:00 a.m. - Kirkhof Center KC6

**Whitworth, Mary**

9:00 a.m. - Henry Hall Atrium 41

**Wildgen, Brittany**

10:00 a.m. - Henry Hall Atrium 67

**Williamson, Stacy**

10:00 a.m. - Henry Hall Atrium 82

**Wilmot, Hailey**

10:00 a.m. - Kirkhof Center KC8

**Wilson, Michael**

12:00 p.m. - Henry Hall Atrium 35

**Wiltse, Michael**

1:30 p.m. - Kirkhof Center 1142

**Wingelaar, Maxwell**

11:00 a.m. - Henry Hall Atrium 7

**Wolf, Kevin**

3:00 p.m. - Kirkhof Center 2215

**Wood, Elizabeth**

11:00 a.m. - Henry Hall Atrium 45

**Wood, Katelyn**

12:00 p.m. - Henry Hall Atrium 61

2:00 p.m. - Henry Hall Atrium 72

**Wood, Shelby**

9:00 a.m. - Henry Hall Atrium 63

# Presenter Presentation Index

SORTED BY LAST NAME

**Wright, Julia**

12:00 p.m. - Kirkhof Center KC74

**Wright, Shawn**

9:00 a.m. - Henry Hall Atrium 6

**Wycech, Jody**

1:00 p.m. - Kirkhof Center KC36

**Wygant, Cassandra**

1:00 p.m. - Kirkhof Center KC63

## [Z]

**Zavala-Arellano, Elizabeth**

9:00 a.m. - Henry Hall Atrium 19

1:00 p.m. - Henry Hall Atrium 41

**Zeigler, Troy**

2:00 p.m. - Henry Hall Atrium 64

**Zeiter, Kristen**

4:30 p.m. - Kirkhof Center 2216

**Zipple, Monica**

1:00 p.m. - Kirkhof Center 2216

**Zuiderveen, Grady**

2:00 p.m. - Henry Hall Atrium 96



# Mentor Index

SORTED BY LAST NAME

## [A]

**Adams, Justin**  
Biomedical Sciences

**Alayont, Feryal**  
Mathematics

**Ambrose, Bradley**  
Physics

**Arnold, Elizabeth**  
Anthropology

**Aschenbach, Todd**  
Biology

**Austin, David**  
Mathematics

## [B]

**Bacon-Baguley, Theresa**  
Physician Assistant Studies

**Barrows, Nathan**  
Chemistry

**Baxter, M. Aaron**  
Biomedical Sciences

**Beaudoin, Christina**  
Movement Science

**Bender, John**  
Chemistry

**Benjamin, Craig**  
History

**Bergman, Daniel**  
Biomedical Sciences

**Biddanda, Bopi**  
Annis Water Resources Institute

**Biros, Shannon**  
Chemistry

**Bloem, Patricia**  
English

**Blossom, Frank**  
Communications

**Blumreich, Kathleen**  
English

**Boeve, Wallace**  
Physician Assistant

**Bolen, Brett**  
Physics

**Booth, Andrew**  
Physician Assistant

**Borders, Dale**  
Anthropology

**Borders, Stephen**  
School of Public, Nonprofit,  
& Health Administration

**Boudreaux, Cheryl**  
Sociology

**Brashler, Janet**  
Anthropology

**Burg, Martin**  
Biomedical Sciences

**Burns, Lawrence**  
Psychology

## [C]

**Campbell, Amy**  
Psychology

**Clifford Hart, Dawn**  
Cell & Molecular Biology

**Cole, A. Edward**  
History

**Cole, Roy**  
Geography

**Colgan, Patrick**  
Geology

**Colley, Brett**  
Art & Design

**Constantelos, John**  
Political Science

**Crawley, Amy**  
Movement Science

**Curtiss, Phyllis**  
Statistics

## [D]

**Daley, Matthew**  
History

**Das, Rupam**  
Physics

**Dean, Kristy**  
Psychology

**Deaner, Robert**  
Psychology

**DiCarlo, Cory**  
Chemistry

**Dillard, Amanda**  
Psychology

**Diven, Polly**  
Political Science

## [E]

**Epple, Dorothea**  
School of Social Work

**Evans, Timothy**  
Biology

## [F]

**Farris, John**  
School of Engineering

**Ferguson, Roger**  
School of Computing &  
Information Systems

# Mentor Index

SORTED BY LAST NAME

**Feurzeig, Lisa**

Music

**Fitzpatrick, Coeli**

Philosophy

**Freidlmeier, Wolfgang**

Psychology

**Furton, Douglas**

Physics

## [G]

**Gabrosek, John**

Statistics

**Galen, Luke**

Psychology

**Gardner, Levi**

Sustainability Community  
Development Initiative

**Gendler, Phyllis**

Kirkhof College of Nursing

**Goode, James**

History

**Goossen, Linda**

Clinical Laboratory Science

**Graham, Doug**

Biomedical Sciences

**Griffin, Carol**

Biology

**Gross, Jennifer**

Psychology

**Gulgin, Heather**

Movement Science

## [H]

**Harms, Anna**

Ottawa Area Intermediate  
School Distruct

**Hart, Matthew**

Chemistry

**Hecht, Steven**

Biomedical Sciences

**Herrington, Deborah**

Chemistry

**Hewitt, Avis**

English

**Hickman, Lisa**

Sociology

**Hollister, Robert**

Biology

**Hunt, Jodee**

Biology

## [I]

**Ihrman, Dr. D**

English

## [J]

**Jacquot, Joseph**

Biology

**James, Reed**

Biomedical Sciences

**Joseph, Edwin**

Geography & Planning

**Jursinic, Paul**

College of Health  
Professions

## [K]

**Karpen, Mary**

Chemistry

**Keenlance, Paul**

Biology

**Kensinger, Kari**

Therapeutic Recreation

**Kilbourne, John**

Movement Science

**Kimball, Robert**

Office of the President

**Kopperl, Sheldon**

Biomedical Sciences

**Kurby, Christopher**

Psychology

**Kurjiaka, David**

Biomedical Sciences

## [L]

**Lakey, Brian**

Psychology

**Langlois, Jaime**

School of Social Work

**Lantz, Andrew**

Chemistry

**Lawerence, Christopher**

Chemistry

**Lee, Hoon**

Art & Design

**Leiras-Laubach, Claudia**

Kirkhof College of Nursing

**Lewis, Colleen**

Movement Science

**Liouimtseva, Elena**

Geography & Planning

**Litton, Jo Ann**

College of Liberal Arts & Sciences

**Lombardo, Michael**

Biology

**Lown, Debbie**

Biomedical Sciences

## [M]

**Ma, Kin**

Geography

**MacDonald, Neil**

Biology

# Mentor Index

SORTED BY LAST NAME

**Maouene, Josita**

Psychology

**Masko, Amy**

English

**Mason, Julia**

Women & Gender Studies

**Matchett, Stephen**

Chemistry

**May, Jeremy**

Biology

**McBane, George**

Chemistry

**McCann, Ethan**

Hospitality & Tourism Management

**Menon, Shaily**

Biology

**Moes, Mark**

Philosophy

**Molla, Azizur**

Anthropology

**Moret, Zulema**

Modern Language & Literatures

**Morgan, Rod**

Biology

**Motwani, Jaideep**

Seidamn - Management

**Munk, Dana**

Movement Science

## [N]

**Ngassa, Felix**

Chemistry

**Noto, Christopher**

Biomedical Sciences

## [O]

**Ostrow, Bruce**

Biology

**Otieno, Sango**

Statistics

**Owen-DeSchryver, Jamie**

Psychology

## [P]

**Patel, Osman**

Cell & Molecular Biology

**Pentecost, Thomas**

Chemistry

**Powers, Rachel**

Chemistry

**Pung, Christopher**

School of Engineering

## [Q]

**Qi, Min**

Chemistry

## [R]

**Rakovic, Milun**

Physics

**Rediske, Richard**

Annis Water Resources Institute

**Remlinger, Kathryn**

English

**Reuter, James**

College of Health Professions

**Reynolds, Ross**

Physics

**Rice, Toni**

Chemistry

**Richiert, Dawn**

Biomedical Sciences

**Rogness, Neal**

Statistics

**Rudolph, Kelli**

Classics

**Rueth, Heather**

Biology

**Russell, Amy**

Biology

**Rydel, Christine**

Modern Language & Literatures

## [S]

**Sanchez, Carol**

Seidman - Management

**Scantlebury, Michael**

African American Health Institute (AAHI)

**Schaertel, Stephanie**

Chemistry

**Schafer, Patricia**

Kirkhof College of Nursing

**Schendel, Ellen**

Writing

**Schnyders, Harold**

Physics

**Schnutten, Mary**

Movement Science

**Schwartz, Mark**

Anthropology

**Scott, James**

Movement Science

**Scott, Linda**

Kirkhof College of Nursing

# Mentor Index

SORTED BY LAST NAME

**Schoultz, Gerald**

Statistics

**Sisson, Lisa**

Hospitality & Tourism Management

**Smart, Robert**

Chemistry

**Smith, Christine**

Psychology

**Snell, Steve**

Geography & Planning

**Snyder, Eric**

Biology

**Sridhar, Suganthi**

Biomedical Sciences

**Stark, David**

History

**Staves, Mark**

Cell & Molecular Biology

**Stephenson, Paul**

Statistics

**Stieler, Kathryn**

Music

**Stratbucker, William**

African American Health Institute (AAHI)

**Strickler, Tim**

Biomedical Sciences

**Sun, Wanxiao**

Geography & Planning

**Swanson, Karel**

Student Academic Success Center

**Sweets, Benjamin**

Psychology

**Sylvester, Francis**

Biomedical Sciences

## [T]

**Tafel, L. Heather**

Political Science

**Taylor, Merritt**

Biomedical Sciences

**Thum, Ryan**

Annis Water Resource Institute

**Toot, Jane**

Frederik Meijer Honors College

**Trefftz, Christian**

School of Computing &  
Information Systems

**Trier, Terry**

Biology

**Tusch, Guenter**

School of Computing &  
Information Systems

## [U]

**Uglietta, John**

Philosophy

**Underwood, Kathleen**

Women & Gender Studies

## [V]

**Vail, Janet**

Annis Water Resource Institute

**Valdez, Glenn**

Psychology

**Vallery, Richard**

Physics

**Vam Doren, Elaine**

Kirkhof College of Nursing

**Van Wormer, Heather**

Anthropology

**Vessey, David**

Philosophy

**Videtich, Patricia**

Geology

## [W]

**Wallar, Brad**

Chemistry

**Washburn, Joy**

Kirkhof College of Nursing

**Williams, Todd**

Psychology

**Winchester, Randy**

Chemistry

**Witucki, Laurie**

Chemistry

**Wolfe, Michael**

Psychology

**Wolffe, Greg**

School of Computing &  
Information System

**Woolsey, Lisa**

Physician Assistant Studies

## [X]

**Xu, Xandra**

Psychology

## [Z]

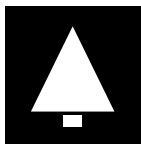
**Zaszlavik, Katalin**

Art & Design

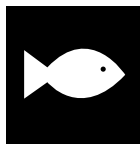
## SUSTAINABLE BOOK BENEFITS

The environmental impact of this book based on (1388) lbs of paper.

The savings below are achieved when PC recycled fiber is used in place of virgin fiber. Your project uses (1388) lbs of paper which has a postconsumer recycled percentage of 30%.



(4) trees  
not cut down



(12) lbs of waterborne  
waste not created



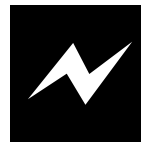
(1,698) gal. wastewater  
flow saved



(188) lbs solid waste  
not generated



(370) lbs net greenhouse  
gasses prevented



(2,831,520 BTUs) energy  
not consumed





Grand Valley State University is an affirmative action, equal opportunity institution. It encourages diversity and provides equal opportunity in education, employment, all of its programs, and the use of its facilities. It is committed to protecting the constitutional and statutory civil rights of persons connected with the university. 4/11