

Student Scholars Day

April 11, 2012



Table of Contents

2012 SSD Committee	2
Welcome from Co-Directors	3
Schedule of Events	4
Statement from the Cover Artist	4
Keynote Lecture	5
Henry Hall Map	6
Kirkhof Center Maps	7 & 8
History of SSD	9
History of Undergraduate Research and Scholarship at GVSU	10
McNair Scholars, Student Summer Scholars, and Academic Conference Fund	11
Fredrick Meijer Office of Fellowships	19
fishladder	20
Poster Presentations Schedule and Abstracts	21
Oral Presentations Schedule and Abstracts	86
Panel Presentations Schedule and Abstracts	122
Index of Presenters and Mentors	127

SSD Committee

Feryal Alayont	Mathematics
Bopi Biddanda	Annis Water Resources Institute
Amanda Cuevas	Fellowships
Robert Deaner	Psychology
Matthew Hart	Chemistry
Andrew Lantz	Chemistry
Susan Mendoza	Undergraduate Research and Scholarship
Azizur Molla	Anthropology
Melissa Morison	Classics
Debbie Morrow	University Libraries
Ross Reynolds	Physics
Michael Scantlebury	Hospitality and Tourism Management
Megan Shannahan	Undergraduate Research and Scholarship
Shelley Sickrey	Undergraduate Research and Scholarship
Suganthi Sridhar	Biomedical Sciences
Richard Vallery	Physics
Patricia Videtich	Geology
Janet Vigna	Biology

Welcome to Student Scholars Day 2012!

It is with great pleasure that we welcome you to celebrate the diversity and excellence of faculty-student collaboration at GVSU. In its 17th year, Student Scholars Day continues to grow in scope, including five hundred students and mentors in over three 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, Ellie Fought, and Caitlin Shannahan who made this process manageable and enjoyable. We thank the members of the 2012 SSD committee, Feryal Alayont, Bopaiah Biddanda, Amanda Cuevas, Robert Deaner, Andrew Lantz, Azizur Molla, Melissa Morison, Debbie Morrow, Ross Reynolds, Michael Scantlebury, Megan Shannahan, Shelley Sickrey, Suganthi Sridhar, Richard Vallery, 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 Pnacek-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 Irisi Tole for her artistic contributions to this abstract book. Existential Transformation was one of several pieces submitted in response to a student competition hosted by the Office of Undergraduate Research and Scholarship. Irisi's 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. Henry Pollack from the University of Michigan. Today is sure to be a day of sharing and celebration.

Susan Mendoza
Director, Undergraduate Research & Integrative Learning
Office of Undergraduate Research and Scholarship

Matthew Hart
Associate Professor, Chemistry
College of Liberal Arts & Sciences

Schedule of Events

Poster Presentations

Henry Hall Atrium and Kirkhof Center
9:00 a.m. – 5:00 p.m.
See page 21 for detailed schedule.

Oral Presentations

Kirkhof Center
9:00 a.m. – 5:30 p.m.
See page 86 for detailed schedule.

Panel Presentations

Kirkhof Center 2215
10:00 a.m., 11:00 a.m., 12:00 p.m., 1:00 p.m.
See page 122 for detailed schedule.

Live Performances

Kirkhof Center Area 51
11:30 a.m., 1:00 p.m., 2:00 p.m., 4:00 p.m.
See page 122 for detailed schedule.

Keynote Lecture, Dr. Henry Pollack

Kirkhof Center, Room 2204
5:30 p.m. Hors d'oeuvres
6:00 p.m. Lecture

Statement from the Cover Artist

Irisi Tole

Existential Transformation

My work explores the relationship between Jungian archetypes and romance tourism. With influences as diverse as Caravaggio and early Jackson Pollock, new tensions are synthesized from both opaque and transparent narratives. Ever since I was a child I have been fascinated by the endless oscillation of the universe. Transformation is part of us, what starts out as hope soon becomes corroded into hegemony of distress, leaving only a sense of what could have been and the chance of a new synthesis. As shifting phenomena become frozen through diligent and diverse practice, the viewer is left with an insight into the edges of our culture.



Keynote Lecture

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

Ice, Water and Climate Change

Abstract

Ice and water are the two principal forms of H₂O on Earth, but the proportions of each change as Earth's climate changes. During past ice ages extensive ice sheets spread over the northern continents and sea level dropped, permitting human migrations between the continents. In the present-day warming of the climate, ice is diminishing and sea level is creeping upward. If the warming continues, we will by mid-century see an ice-free Arctic Ocean in the summer, perhaps for the first time in human history. The loss of many mountain glaciers will lead to diminished agricultural, municipal and domestic water supplies, affecting a third of Earth's population. A sea-level rise of only one meter, likely by the end of the century, will displace coastal inhabitants worldwide, creating more than 100 million climate refugees.

Henry Pollack

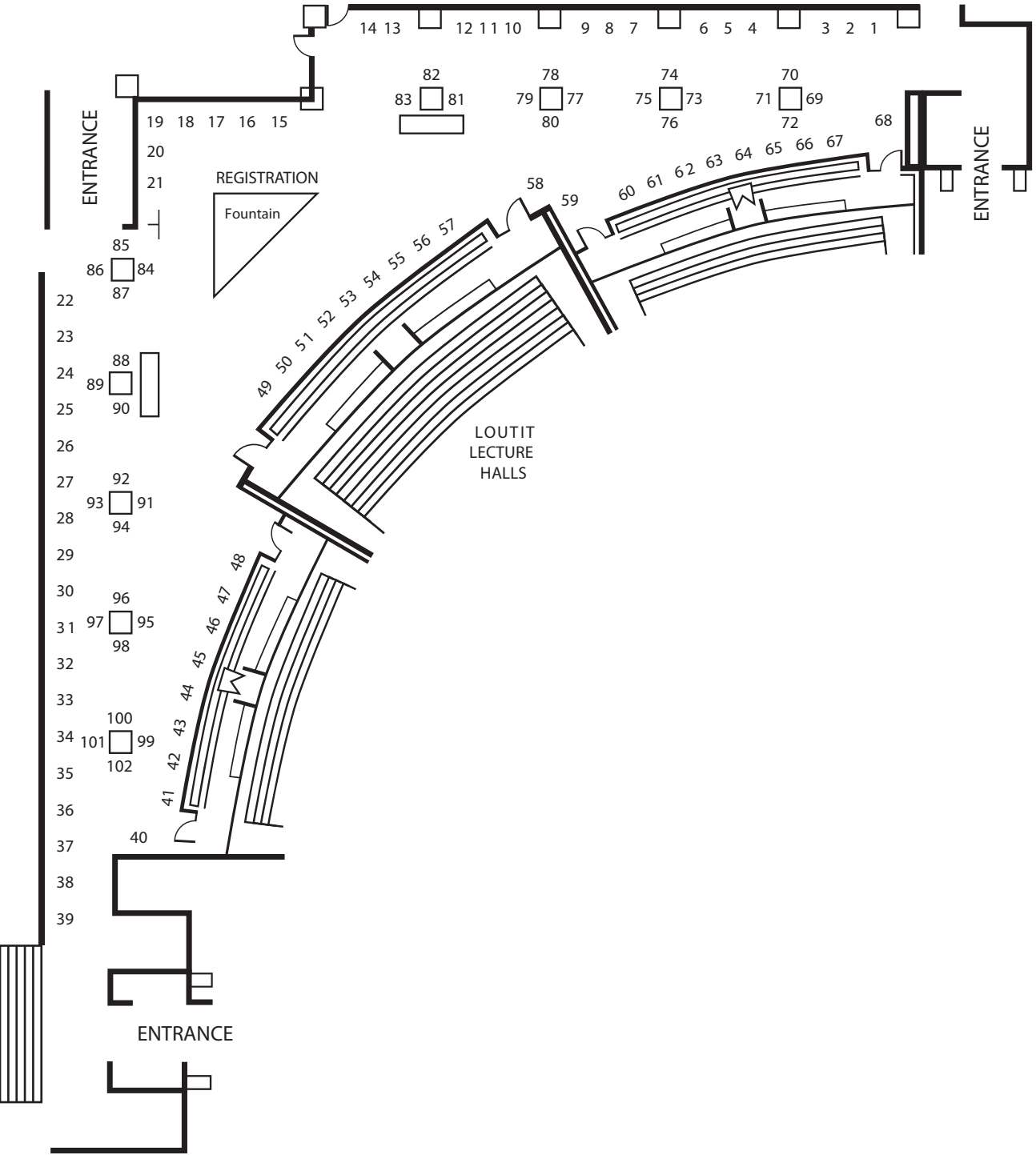
Professor of Geophysics, Department of Earth and Environmental Sciences, University of Michigan

Henry Pollack is a Professor of Geophysics at the University of Michigan, where he has taught at every level of the curriculum, from introductory courses for non-scientists to advanced graduate seminars. His current research activities focus on global climate change, as recorded by the temperatures in the rocks beneath the Earth's surface. Subsurface temperatures comprise an archive of past climate that reveals what Earth was like in the pre-industrial era, thus helping scientists to assess the human impact on Earth's climate. As Chair of the International Heat Flow Commission he coordinated a worldwide research program into geothermal evidence of global climate change.

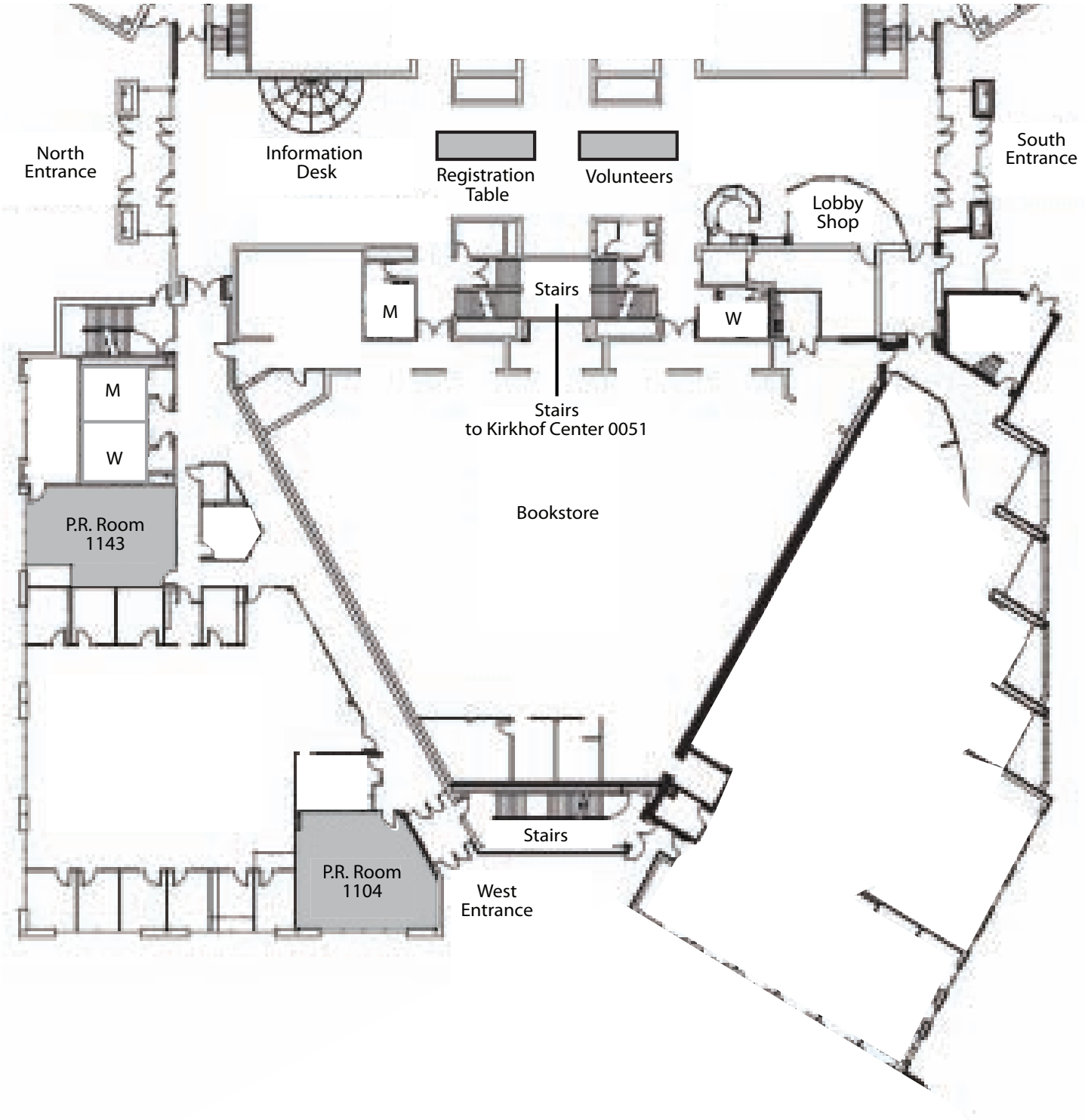
Henry has served on many advisory panels for the National Science Foundation, testified before National Academy of Sciences and U.S. Senate committees, and provided briefings about climate change to Congress and the White House. He was a Contributing Author to the Nobel Peace Prize-winning Intergovernmental Panel on Climate Change (IPCC) 2007 Assessment Report, and now serves as a science adviser to Al Gore's Climate Reality Project. He is the author of *Uncertain Science... Uncertain World* (Cambridge University Press, 2003), and *A World Without Ice* (Penguin, 2009), which addresses global climate change as seen through the prism of ice.



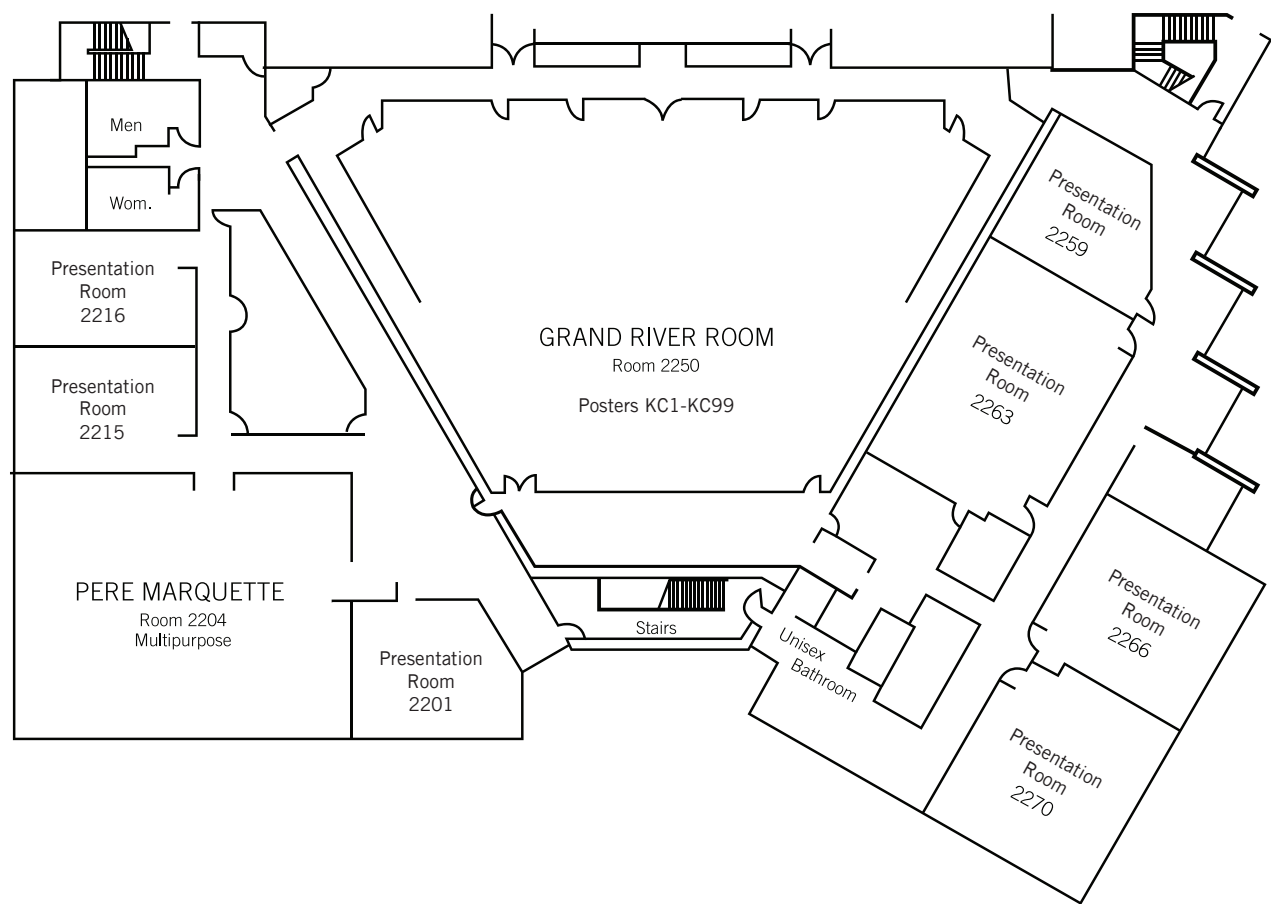
Henry Hall Map



Kirkhof Center First Floor Map



Kirkhof Center Second Floor Map



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 Integrative Learning.

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.



History of Undergraduate Research and Scholarship at GVSU

The pursuit of student research and scholarship at Grand Valley has deep roots in the history of the university. Original student research began in a number of the original Colleges at GVSU, namely Thomas Jefferson College, William James College, and the College of Arts and Science. This tradition continued through decades as the university grew.

Student Scholars Day (SSD) and Student Summer Scholars (S3), originally established in the Division of Math and Science, have served as the anchors for undergraduate research for almost twenty years. These programs have served thousands of students by encouraging original research and scholarship.

SSD and S3 moved to the Brooks College of Interdisciplinary Studies and became part of the Office of Integrative Learning in 2006. During this time both programs were expanded to support student research from all disciplines and majors.

In 2010, the Office of Undergraduate Research and Scholarship (OURS) was established as part of the Center for Scholarly and Creative Excellence. The mission and intent of the office is to establish comprehensive services and programs which support students in their pursuit of inquiry, creativity, scholarship, and research. In addition to Student Scholars Day, the hallmark programs of OURS include:

Student Summer Scholars (S3)

S3 provides a \$6,000 grant for an undergraduate and faculty mentor to devote 12 weeks to a research and/or creative project during the spring/summer semester. Generally, S3 grants provide a student stipend, faculty stipend, and a small budget for supplies. The S3 program offers a unique opportunity for undergraduate students to conduct research and creative practice in their chosen field. The combination of immersion in the discipline, active scholarship, and deep reflection provides students with a meaningful learning experience that helps to prepare them for graduate school and future careers.

Academic Conference Fund (ACF)

This fund is available to all students, including undergraduate and graduate, to present, exhibit, or perform at an academic conference. Student presenters are able to apply for travel grants that range up to \$500 for domestic travel and \$750 for international travel. The grants encourage student presentations, performances, and exhibits by helping offset the cost of attendance.

Academic and Professional Enrichment Fund (APEF)

The APEF is a faculty travel grant that provides travel funds to support student travel to academic conferences and meetings. Attending a conference with a faculty member can be a valuable experience that can enrich a student's understanding of a discipline. APEF is available to all students, including undergraduate and graduate. Full-time faculty can apply for travel grants that range up to \$400 per student for travel. Grants do not exceed \$1,200.

OURS Undergraduate Grant

The OURS grant program is designed to encourage collaborative scholarly research and creative work between undergraduate students for faculty members. Students may propose a research, scholarly, or creative project to a faculty member, or a faculty member may actively recruit students for collaboration. OURS grants provide students with financial support that ranges up to \$500. Undergraduate students (both part- and full-time) are eligible to apply.

TRiO Ronald E. McNair Scholars

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 2011 McNair Scholars presenting at this year's SSD include: Justin Andrews, Matthew Berrios, Stefanie Gasko, Kelly Howell, Ashley Karcher, Jeremy Llorence, Ryan Nicholls, Kurt O'Hearn, Edwin Ortiz, Julie Watkins, Shannon Williams, Chad Williams, Jamie Zimmerman

More information about the program can be found at www.gvsu.edu/mcnair

Student Summer Scholars

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 2011 Student Summer Scholars presenting at this year's SSD include: Eric Baumgarten, Megan DeKievit, Heidi Fegel, Eliscia Fought, Megan Glazier, Timothy Godfrey, Laura Goldsmith, Paige Goote, Justin Hackett, Brandon Harris, Noah Jansen-Yee, Amy Jenkins, Elizabeth King, Greg Kortman, Jonathan Lehmann, Kája Lill, Rachelle McLaughlin, Drake Parker, Jessica Riley, David Schlueter, Kirsten Tissue, Misty Van Brocklin, Jacob Voetberg, Brittany Wildgen

More information about the program can be found at www.gvsu.edu/ours/s3

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 (up to \$750 for international conferences) 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 2011, the Academic Conference Fund aided the following presentations:

Chaz Albright, Lydia Benkert, Alyson Caillaud-Jones, Ryan Jackson, Sean Kelley, Allison Staley, Bridgett Vanderhoof, & Brynhild Weihe, “Bard to Go-traveling theatre as a cultural connector,” Shakespeare in Paradise Festival

Rebecca Bartlett, Stephanie Christy, Kelly Junis, & Mary Powell, “Getting Your Student Chapter Involved in Your Local Community,” 2011 National Art Education Association (NAEA) National Convention

Lauren Beachum, “Emotion socialization strategies: A comparison between Caucasian and Hispanic mothers,” 83rd Annual Meeting of the Midwestern Psychological Association

James Bennett, “Isotachophoretic Focusing of Bacteria and Fungi for Analysis,” 46th Midwest 39th Great Lakes Joint Regional American Chemical Society (ACS) Meeting

Rachel Marcincavage, & Maureen McDonald, “International Ceramic Art Exhibition & Annagama (Wood Kiln) Firing Demonstration,” 2011 International Ceramic Symposium in Japan

Luke Bonczyk, “Irene Ryan Nomination for Playing Jerry in Edward Albee’s ‘The Zoo Story,’” Kennedy Center-American College Theatre Festival

Sandra Braden, “Passing Obstacles in the Way of Sinai II,” Phi Alpha Theta Michigan Regional Conference

Laura Breen, Kathryn Crabtree, Sara Johnson, Erica Jones, Hollie McDonald, & Hannah Moeggenborg, “Bridging the Gap: An Exploration of Frustrations Facing Consultations,” 2011 National Conference for Peer Tutoring in Writing

Katherine Butler, “Does Gender Still Matter? Women Physicians’ Self-Reported Medical Education Experiences,” Women’s Health 2011: The 19th Annual Congress

Jessica Caron, “Portfolio Reviews for my Thesis Project titled Definition: Happiness,” Science, Poetry and the Photographic Image 48th Society for Photographic Education (SPE) National Conference

Jenna Carrigan & Cory Jackson, “AmeriCorps: Love it or Lose it,” Teaching Public Administration Conference

Zach Christian-Rotramel, “Michigan Inland Lake Water Quality and Surrounding Land Cover Change, 1998 to 2005,” Michigan Academy of Science, Arts and Letters Conference

Doug Coleman, “Mechanical Foundations of Irreversibility in Nonequilibrium Statistical Mechanics,” Butler University Undergraduate Research Conference

Cesar Colmenares, Joshua Dreyer, Jera Leffring, Anastasiya Nyzkodub, Daniel Rhode, Ashley Stanley, & Kelly Vander Molen, “New Music Ensemble Capital Region Tour,” New Music Ensemble Capital Region Tour

Renae Conner & Beth Wiegand, “Quality of Life Outcomes After 100 Da Vinci Robot Sacrocolpopexy,” 37th Annual Meeting of the Society of Gynecologic Surgeon’s (SGS) Scientific Meeting

Ninive Costa, “Raising Awareness of ABO and Cross-match Discrepancies in Patients with Multiple Myeloma: A Case Study,” Serving the Profession 24:7-Michigan Society for Clinical Laboratory Science (MSCLS) 2011 Annual Meeting and Exhibits

Elizabeth Cullen & Michelle Kozachik, “Past the Event Horizon (2008) by GVSU student composer Adam Cuthbert; Shades Saxophone Quartet,” North American Saxophone Alliance Region V Conference

Adam Davis, “Stable Isotopic and Minor Evidence for Early Formation of Dolomite in the Mississippian Michigan Formation, Subsurface of Western Michigan,” Geological Society of America Conference 2011

Kevin Dearnley, “Social Movements in the Balkans: Otpor and Vetevendosje,” Michigan Academy of Science, Arts and Letters Conference

Kate DeGraaf, “Developing Benevolent Purpose through Leadership Learning: Perspectives from Three Diverse Campuses,” John C. Dalton Institute on College Student Values

Austin Delamar, Amanda Fedewa, & Cheng Tan, “Evolution of Photography and Advertising: How They Impacted Society,” 3rd Globalization Symposium: Globalization of Knowledge: Economics, Ecology, and Humanities

Christopher Delgado, “GVSU Trumpet Ensemble,” 36th Annual Conference of the International Trumpet Guild

Charles DeLisle, “Development of Cabamoylmethyl Phoshine Oxide Chelating Agents for Use in Medical Resonance Imaging,” Argonne Undergraduate Symposium

Ashley DeWitt, “Phospho-regulation of the anillin-related scaffolding protein Mid 1 in fission yeast cytokinesis,” American Society for Cell Biology (ASCB) Annual Meeting

Deborah Dila, “Microbes and Carbon Flux in a Great Lakes Watershed,” 54th International Conference on Great Lakes Research

John Dombrowski, “Bonjour’s Solution to the Sellars Problem,” Ohio Northern University Undergraduate Conference

Jessa Dutton, “Knowledge Based Urban Development: Contrasting the Australian States and the American Midwest,” Midwest Political Science Association (MPSA) Annual National Conference

Kyle Eno, “The Genesis of Cenozoiz Apishipa Quadrangle Dikes Near Spanish Peaks and Dikes From Northeastern New Mexico,” Geological Society of America Conference 2011

Amanda Faber & Erika Narutsch, “Refrigerated Stability Study of CBC and WBC Parameters,” Serving the Profession 24:7-Michigan Society for Clinical Laboratory Science (MSCLS) 2011 Annual Meeting and Exhibits

Chelsey Fandrick, Lacie Nicole Hoag, Krystal Moskwa, Bradley Saniga, & Justin Sarns, “Concerto for Saxophone Quartet (1995) by Philip Glass; Saniga Sax Quartet,” North American Saxophone Alliance Region V Conference

Suzanne Figel, “Praise Influences Children’s Attention to Error,” 83rd Annual Meeting of the Midwestern Psychological Association

Kathrin Foreman, “Using Research to Inform Practice with Diverse Refugees Groups,” 2011 National Association of Social Workers Conference

Charles Fortenbacher, “Irene Ryan Performance Audition Scholarship Competition,” Kennedy Center-American College Theatre Festival

Ana Galloway & Matthew McNamara, “Developing a Gateway of Clean Water: International Service Learning & Water Project,” Nonprofit Leadership Alliance (formerly American Humanics) Management/Leadership Institute

Kibrom Gebre-Egziabher, “Exposure to hypergravity during pregnancy and early lactation alters abundance of cytoskeletal and extracellular matrix proteins in a rat model,” Annual Biomedical Research Conference for Minority Students

Nicole Gibbons, “Chiral silanes by asymmetric substitution of silicon,” 241st National Meeting of the American Chemical Society

Adrienne Gibson, “Low-Head Dam Removal Causes Immediate Physical Habitat and Water Chemistry Degradation,” Aquatic Science

Jamie Goggins, “Strive Baby Strive, Building a Better Chapter,” Kappa Kappa Psi and Tau Beta Sigma National Convention 2011

Jennifer Golder, “Adult’s data comparison strategies,” 83rd Annual Meeting of the Midwestern Psychological Association

Jamie Gomez, “Does practice make perfect? A test of the effect of experience on age-at-death estimation using Transition Analysis,” American Association of Physical Anthropologists 80th Annual Meeting

Deborah Grebenok, “The Feasibility of Using C&S Tubes for Routine Urinalysis,” Michigan Society for Clinical Laboratory Science (MSCLS) 2011-Serving the Profession 24/7

Paul Hardaker, “Trumpet Preludes,” 36th Annual Conference of the International Trumpet Guild

Claire Helakoski, “Analyzing Atwood: How Structure Defines Character in ‘Lady Oracle’ and ‘Oryx and Crake,’” Michigan Academy of Science, Arts and Letters Conference

Rori Hoatlin, “Modeling the Techniques of Atwood: How to Reveal while Withholding,” Michigan Academy of Science, Arts and Letters Conference

Hannah Hollandsworth, “Anthropometric, Dietary and Psychosocial Characteristics of Under-Reporters of Energy; A Study Among Middle-Class, African American Women,” Obesity 2011

Miles Hunsinger, “Effect of Center Line Rumble Strips on Head-on and Sideswipe Automobile Collisions in Michigan, 2004 to 2009,” American Association of Geographers (AAG) Annual Meeting

Catherine Idema , Ryan Nicholls, & Chelsea Sage, “Group creativity: The constraining effects of examples,” 83rd Annual Meeting of the Midwestern Psychological Association

Zachary John Jacobs, “Trumpet Prelude/Scholarship Presentation,” 36th Annual Conference of the International Trumpet Guild

Dale Johnson & Lindsay Stoyka, “Bad at Writing: How Writing Consultants Support Student Writers Through Self-Efficacy,” 2011 National Conference for Peer Tutoring in Writing

Philip Kaseska, “Analysis of a Cyclic Peptide Library to Identify Proteins That Effect hiA Expression and Invasion in Salmonella enterica serovar Typhimurium,” Midwest Microbial Pathogenesis Conference

Bart Kassel, “Syrian Intervention in Lebanon,” Phi Alpha Theta Michigan Regional Conference

Amanda Kelly, “Type II Diabetes Mellitus and the Patient-Provider Relationship,” Impact 2011-American Academy of Physician Assistants (AAPA)’s 39th Annual PA Conference

Rebecca Kenderes, “Using Research to Inform Practice with Diverse Refugees Groups,” 2011 National Association of Social Workers Conference

Charalene Kiser, “Emotion Socialization Practices of Caucasian and Hispanic Mothers,” 83rd Annual Meeting of the Midwestern Psychological Association

Kase Knochenhauer, “Lichenometry and Cosmogenic Surface Exposure Dating of Possible Fossil Talus Deposits, Devil’s Lake State Park, Wisconsin,” American Geophysical Union Fall 2011 Meeting

Amy Knappe, “Prolonged Swing Phase Rectus Femoris Activity Is Not Associated With Stiff Knee Gait In Children With Cerebral Palsy: A Retrospective Study Of 407 Limbs,” Gait and Clinical Movement Analysis Society (GCMAS) Annual Conference

John Koch, “Supporting Student Success for Active Military and Veterans,” 2011 NASPA (National Association of Student Personnel Administrators) Annual Conference: Educating for Lives of Purpose

Jennifer Kreinbrink, “Clinical Presentation of Breast Cancer: Age, Stage, and Treatment Modalities in a Contemporary Cohort of Michigan Women,” 2011 Breast Cancer Symposium

Ryan Kruis, “A Photovoice Exploration of Religion and Spirituality Among Social Work Students and Practitioners,” International Congress of Qualitative Inquiry Conference

Patrick Laarman, “Habitat Use, Home Range, and Hibernaculum Sites of the Eastern Box Turtle in Northern Michigan,” 18th Annual Conference of the Wildlife Society

Elizabeth LaRue, “Population genetic structure of the round goby in Lake Michigan: implications for dispersal of invasive species,” Society for the Study of Evolution: Evolution 2011

Elaine Leigh, “Increasing Access to Hepatitis C Treatment Using a Multidisciplinary, Community-based Approach,” Sigma Theta Tau International-41st Biennial Convention

Leah Lillmars, “Quality of Life Outcomes After Sacrocolpopexy,” Impact 2011-American Academy of Physician Assistants (AAPA)’s 39th Annual PA Conference

Patrick Loudon, “Molecular Dynamics Simulation of the Condensation Coefficient of Water,” Midwest Theoretical Chemistry Conference & Midwest Undergraduate Computational Chemistry Consortium

Shana Lucas, “Socialization of Emotion: A Comparison Between European American and Hispanic Mothers,” 83rd Annual Meeting of the Midwestern Psychological Association

Nick Maki, “Beyond Pleasure: Plato and the Good,” Western Canadian Undergraduate Conference of Philosophy 2011

Anna Marotti, “Maritime Piracy: Macroeconomic Effects with Microeconomic Solution,” International Studies Association Midwest 2011 Conference

Alynn Martin, “Genetic Demography of Perimyotis Subflavus Reveals Regional Population Trends,” North American Symposium on Bat Research (NASBR)

Sheila Miara, “Winter Habitat Characteristics and Behavior of Southern Flying Squirrels in Southwest Michigan,” 18th Annual Conference of the Wildlife Society

Brianna Middlewood, “Nonsocial Threats Activate Belonging Regulation Processes,” 83rd Annual Meeting of the Midwestern Psychological Association

Jessica Miller, “Man v. Thesis: Surviving Consultations with Entry Level Composition Students who have Misplaced Theses,” 2011 National Conference for Peer Tutoring in Writing

Adam Mulling, “Mass and Rate of Storage of Post-Settlement Soil Organic Carbon in Alluvial Soils, Ottawa County, Michigan,” Geological Society of America Conference 2011

Whitney Nelson, “Composition and Toxic Sensitivity of Benthic Macroinvertebrate Assemblages in Muskegon Lake, a Great Lakes Area of Concern,” North American Benthological Society Annual Meeting

Long Nguyen, “Just World Belief, Religiosity, and Attributions of Responsibility for Misfortune,” 83rd Annual Meeting of the Midwestern Psychological Association

Sophie Ni, “Buried Child,” Kennedy Center-American College Theatre Festival

Hannah Nicholson, “Stage Management,” Kennedy Center-American College Theatre Festival

Rebecca Nieman, “Looking for Differences in Data: Children’s Data Comparison Strategies,” 83rd Annual Meeting of the Midwestern Psychological Association

Eric Nodge, “Staff and Students Collaboration: Developing and International Cultural Exchange and Service-Learning Program,” National Collegiate Honors Conference

Edwin Ortiz, “Conceptions of Child Competence: A Comparison Between Caucasian and Hispanic-American Mothers,” 83rd Annual Meeting of the Midwestern Psychological Association

Grace Parish & Daniel Smith, “Characterization of the Detection of Breast Cancer in Females Registered in the Michigan Breast Oncology Quality Initiative,” Impact 2011-American Academy of Physician Assistants (AAPA)’s 39th Annual PA Conference

Michael Peruzzi, “Investigation of Carbamoylmethyl Phosphine Gadolinium Chelating Agents,” Argonne Undergraduate Symposium

Mark Petersen & Samuel Swanson, “Trumpet Prelude,” 36th Annual Conference of the International Trumpet Guild

Branden Pompey, “Sound Design,” Kennedy Center-American College Theatre Festival

Simon Powers-Schaub, “His Dream, Her Reality: Two Principles of Mental Functioning in E.E. Cummings’ Him,” American Literature Association Conference

Heather Quandt, “Why Nonprofit?,” Nonprofit Leadership Alliance (formerly American Humanics) Management/Leadership Institute

Carol Robinson, “End of Life Simulation of Therapeutic Communication and Care Using Standard Patients and SimMan®,” 10th Annual Association of Standardized Patient Educators Conference

Robert C. Roos, “A Michigan Sand Prairie Restoration Experiment: Nature or Nurture?” Society of Ecological Restoration - Midwest Great Lakes Chapter

Audrey Rosenau, “Sharing the Caribbean Slavery Experience-The Caribbean Heritage Tourism Project,” International Conference on Business, Hospitality & Tourism Management

Tara Salas, “Type 2 Diabetes Mellitus and the Patient-Provider Relationship,” Impact 2011-American Academy of Physician Assistants (AAPA)’s 39th Annual PA Conference

M. Andrew Sanford, “Metaphysical Origins of Ethics in Medieval Islamic Thought,” Ohio Northern University Undergraduate Conference

Anne Santa Maria, “Assessing Human Impacts on Campsites: A Critique of U.S. Forest Service Methods,” American Association of Geographers (AAG) Annual Meeting

Eric Scholten, “American Humanics Management Institute,” Nonprofit Leadership Alliance (formerly American Humanics) Management/Leadership Institute

Scott Simonson, “Using Total Suspended Sediment Data to Evaluate the Impacts of Storm Water Diversion to a Constructed Wetland at Grand Valley State University, Allendale, Michigan,” Geological Society of America Conference 2011

Daniel Smith, “Clinical presentation of breast cancer: Age, stage, and treatment modalities in a contemporary cohort of Michigan women,” 2011 Breast Cancer Symposium

Nathaniel Smith, “Latino American Women Immigration and Space in the Contemporary Spanish Novel,” Forming Identity, Transforming Space

Nicole M. Summers, “Conceptions of Child Competence: A Comparison Between Caucasian and Hispanic-American Mothers,” 83rd Annual Meeting of the Midwestern Psychological Association

Hannah Tavalire, “Implications of Genetics and Environment for Management: Are Certain Lineages of Variable Leaf Watermilfoil More Apt to Grow Invasively?,” Northeast Aquatic Plant Management Society (NEAPMS) 2011

Meghan Thatcher, “Economic Development: The Changing Consensus,” International Studies Association Midwest 2011 Conference

Olvi Tole, “Towards Searching for Temporal Patterns in Gene Expression Profiles,” Great Lakes Bioinformatics Conference (GLBIO) 2011

Amy Ver Wey, “Just World Belief, Religiosity, and Attributions of Responsibility for Misfortune,” 83rd Annual Meeting of the Midwestern Psychological Association

Lauren Villalobos, “The Ecosystem Responses to Low-Head Dam Removal: Assessment of Physical Habitat, Water Chemistry, and Macroinvertebrates,” North American Benthological Society Annual Meeting

Kimberly Wallace, “Strive Baby Strive, Building a Better Chapter,” Kappa Kappa Psi and Tau Beta Sigma National Convention 2011

Carolyn Waterstradt, “From Tears to Triumph: An Autoethnographic Reaction to Women’s Spirituality after Clergy Sexual Abuse,” International Congress of Qualitative Inquiry Conference

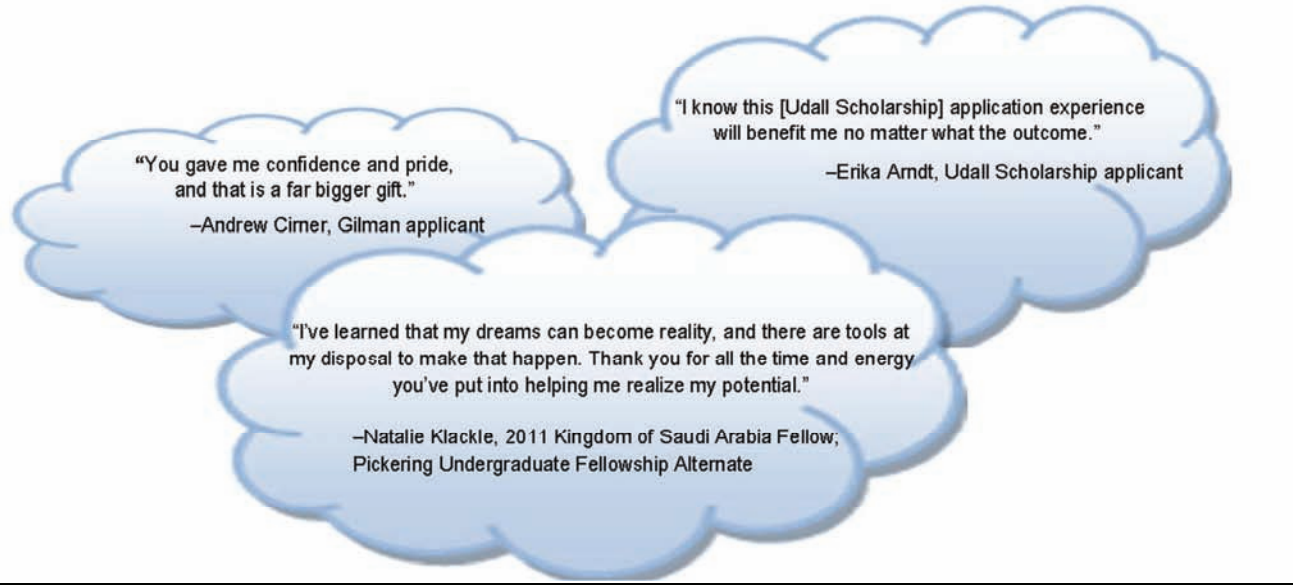
Kevin Wolf, “Incidence and Risk Factors of Post-Rewarding “Rebound Hypothermia” in Cardiac Arrest Patients Undergoing Therapeutic Hypothermia,” American College of Emergency Physicians (ACEP) Research Forum

Taylor Wondergem, “When do Boys Start Smiling Less than Girls? A Yearbook Photographs Analysis,” Society for Research in Child Development Biennial Meeting



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UNVEILING & EXHIBITION

Spring 2012

Please join us for the unveiling reception:

- Friday, April 13th at 6 PM
- Lake Ontario Hall, room #174

Kirkhof Center Art Exhibition: April 9 - 12, 2012

Contributors

Fiction	Garrett Dennert
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Poetry	Joshua Campeau
	Amy Johnson
	Kelly Kensler
	Shawnkeisha Stoudamire
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	Meghan McAfee
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Drama Readers	Jeremy Llorence	Michelle Green
	Andrew Wernette	Christopher Dier-
	Emily Colletti	Scalise
Art Editors	Elizabeth Uitvlugt, Dale Johnson, & Lindsay Fisher	
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Faculty Advisors	Professors Caitlin Horrocks	
	Chris Haven	

Poster Presentations, Abstracts & Schedule

HENRY HALL ATRIUM 1
The Role of CBL10 in Stamen Development in Arabidopsis thaliana
Participant attending from 12:00 p.m. until 1:00 p.m.
Presenter: Misty Van Brocklin

Flowering plants are a primary source of food for humans. Therefore, it is of the utmost importance for us to understand plant flower development. Recently a gene encoding a calcineurin-B-like protein (CBL10) has been shown to play a role in flower development in A. thaliana. Mutations in this gene cause a breakdown in the stamen development pathway, resulting in nonfunctional stamens. Leaf and open flower cDNA was used to optimize PCR conditions for 8 of the genes in the pathway. Then RT-PCR was used to compare expression in open flowers of WT and cbl10 recovered (cbl10R) plants. Preliminary data show that 4 of the genes are expressed equally in these flowers, indicating that CBL10 acts in a subsequent step or that normal gene expression has been restored in recovered cbl10 flowers. In the future, gene expression will be studied in 3 stages of flower development: open flowers, opening flowers, and bud clusters, in 3 A. thaliana types: WT, cbl10 phenotype 2, and cbl10R. Mentor: Margaret Dietrich

HENRY HALL ATRIUM 2
Probing the Role of Phosphorylation in the Mechanism of Formin mDia2
Participant attending from 10:00 a.m. until 11:00 a.m.
Presenter: Zac Garlets

Diaphanous-related formins are a conserved family of proteins that affect many cellular processes by regulating cytoskeletal dynamics. Formins nucleate actin filaments by recruiting actin monomers as the filament elongates. Since the formins influence so many cellular processes, it is vital that they are tightly regulated. The regulation of one specific mammalian formin, mDia2, occurs by intramolecular interactions. Autoinhibitory binding to prevent actin polymerization occurs between the diaphanous inhibitory domain (DID) at the N-terminus and the diaphanous auto regulatory domain (DAD) at the C-terminus. It is understood that formins are activated by a Rho GTPase, but this binding may not fully activate the protein. Previously, we showed that p21 activated kinase (PAK1) phosphorylates mDia2 and potentially regulates formins. We have performed isothermal titration calorimetry and actin polymerization assays to characterize the mechanism for phosphorylation of mDia2 with PAK1. Mentor: Brad Wallar

HENRY HALL ATRIUM 3
Test Everything; Hold Fast to What is Good: Bridging Comprehensive Sex Education and Catholic Doctrine
Participants attending from 12:00 p.m. until 1:00 p.m.
Presenter: Anna Worm

Where do Catholic doctrine and the principles of comprehensive sex education intersect? Contrary to popular belief, the Catholic emphasis on the dignity of all human persons and the comprehensive sex education focus on information and agency are not in opposition; they share many fundamental assumptions. This poster demonstrates the areas of overlap, drawing from a two-fold project that bridges the perceived gap between sexual information and Catholic doctrine. This project included construction of a website through which Catholic teenagers can easily navigate sex ed resources, enhancing their agency and informed decision making, as well as offering a more sex-positive message than frequently presented in abstinence-only programs. The project also involved a bibliography of

useful resources for those who educate Catholic teens in matters of sexuality. Both aspects of this project are presented as methods of bringing comprehensive sex education to Catholic teenagers in positive ways.

Mentor: Danielle DeMuth

HENRY HALL ATRIUM 4

Factors Associated with Egg Hatching in Tree Swallows

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

Presenters: Megan Briggs, Mary Graham, Amanda Rostic, Deb Near, Danielle Smith

We tracked the hatching success of 3,839 eggs (n=998 nests) laid by tree swallows nesting on the GVSU campus from 1992-2011. The year an egg was laid, the age of the female who laid the egg, the date the egg was laid, and clutch size did not affect the likelihood of its hatching. When in the laying sequence an egg was laid affected the likelihood of its hatching; eggs laid between the first and last eggs were more likely to hatch. For E1-6, the hatching of a previous egg increased the likelihood of the subsequent egg hatching (e.g., E1 vs. E2); however, whether E7 hatched was independent of whether E6 hatched. For the most common clutch sizes (4-6) first and last eggs were equally likely to hatch. Comparing the most common clutch sizes, E1 was most likely to hatch in clutches of 6 eggs but last eggs were equally likely to hatch. These results suggest that whether an egg hatches was most influenced by when in the sequence it was laid and whether the egg that was laid before it hatched.

Mentors: Patrick Thorpe, Michael Lombardo

HENRY HALL ATRIUM 5

Creation of Salmonella Type 3 Secretion System Mutants

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

Presenters: Breck Davis, Christopher Altheim

Salmonella enterica serovar Typhimurium is a bacteria which causes a self-limiting gastroenteritis in humans. Pathogenicity of Salmonella is dependent upon a series of genetic “islands” in the chromosome termed SPIs. SPI-1 contains the genes necessary to construct a type three secretion system (T3SS) that Salmonella uses to directly deliver virulence factors into targeted host intestinal cells. These virulence factors manipulate the host cell cytoskeleton to facilitate Salmonella entry into the cell. The T3SS is a needle-shaped structure composed of many proteins. The tip of this structure includes 2 proteins, SipD and PrgI. These proteins form the needle and trigger necessary for secretion. Working in collaboration with Bill Picking at Oklahoma State University, who is characterizing the function and assembly of the secretion needle, we are creating nonpolar prgI and sipD mutants within the Salmonella genome utilizing the method developed by Datsenko and Wanner.

Mentor: M. Aaron Baxter

HENRY HALL ATRIUM 6

Genetic Variation of Community Associated and Hospital Associated Methicillin Resistant *Staphylococcus aureus* (MRSA)

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

Presenters: Tyler Flora, Bryanna Cikesh

There are two types of MRSA, community associated (CA) and hospital associated (HA). The question posed: Is there more genetic variation within the CA-MRSA population than within the HA-MRSA population. Data sets were obtained from the MLST *S. aureus* database. An advanced search of country and epidemiology yielded; 11 CA-MRSA strains and 14 HA-MRSA strains which were used during this study. Each strain has a specific genetic profile consisting of 7 genes: arc, aroe, glpf, gmk, pta, tpi and yqil. The methods of analysis were variation of the genetic profiles, the mean diversity

in entire population, the between group mean distance, and boot-strap phylogenetic tree of entire data set. The results show a significant difference between the groups. Although the sample sizes were small the evidence supports the hypothesis that HA-MRSA has less genetic variation within its population than CA-MRSA; implying that environmental differences may affect the genetic evolution of the two groups.

Mentor: Doug Graham

HENRY HALL ATRIUM 7

Social Competence and Language Ability in School-Age Children

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

Presenters: Brian Grysen, Stacy DePree, Kim Stover, Nicole Wrona, Alyssa Toma, Sarah Rietema

The current investigation assessed the relationships among social and academic competencies, language ability, nonverbal cognition, and socioeconomic status (SES) in 42 school-age children. The children completed a measure of nonverbal cognition and the following language assessments: EVT-2, PPVT-4 and CELF-4. Their parents completed the Competence Scales of the Child Behavior Checklist. Regression modeling revealed that SES, nonverbal cognition, and expressive vocabulary predicted school competence. SES predicted number of friends, social skills and total competence. Nonverbal cognition, SES and school competence predicted each of the three language measures. These results highlight the role of SES in linguistic, academic, and social competence and suggest that children with language impairment may present with typical development in some areas of social functioning.

Mentor: Courtney Karasinski

HENRY HALL ATRIUM 8

Fly from Grand Rapids: Making Flying Out of GRR More Appealing

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

Presenters: Jaimie Brandon, Michele Gort, Sung Kim

At the beginning of 2010 Gerald R. Ford International Airport (GRR) was named the 2nd most expensive airport to fly out of in the United States. As expected this news was not welcomed by some of the top business executives in West Michigan. As an effort to bring down prices and stop people from driving to Detroit or Chicago to fly, the Regional Air Alliance of West Michigan began. They now conduct a survey every quarter gathering information from passengers regarding air service at GRR. The data is segmented in to the categories: overall satisfaction, access, airport environment, airport facilities, and check in. We analyze the data to determine trends and possible correlations regarding the thoughts of the passengers flying out of Grand Rapids. We will show where GRR is performing best and where it can improve.

Mentors: Paul Stansbie, Sango Otieno

HENRY HALL ATRIUM 9

The Use of GIS for the Delineation of the Little Mac Ravine Watershed

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

Presenter: Scott Simonson

Grand Valley State University was founded in 1960 and since then over 120 acres of impermeable surfaces, runoff from which was channeled into the ravines, have been constructed. This resulted in erosion, slope instability, and sediment discharge into the Grand River. As part of the June, 2011 library construction project, storm water runoff from impermeable surfaces was redirected from the Little Mac Ravine to a new wetland west of campus. In order to observe how runoff diversion alters certain water quality parameters, water samples were collected from the Little Mac ravine throughout the summer of 2011. Different surfaces in the Little Mac ravine watershed affect runoff and stream

discharge and will be mapped using a Geographic Information System (GIS), aerial photos, and LIDAR topographic data. The rational runoff equation, combined with watershed surface delineation, will allow for a semi-quantitative analysis of peak discharge changes resulting from 2011 storm water diversion.

Mentor: Peter Wampler

HENRY HALL ATRIUM 10

Asymmetric Synthesis of Chiral Silicon

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

Presenter: Kellen Stilwell

Chiral silanes have potential as resolving agents, chiral ligands, chiral auxiliaries and in chiral polymers. We have been investigating nucleophilic asymmetric substitution using prochiral (at silicon) menthoxy silanes. We will present progress we have made towards the synthesis of asymmetric, chiral silicon molecules. Phenyl methyl dimethoxy silane was synthesized from dichloromethylphenylsilane using lithium menthoxide in good yield. Mono-substitution of the alkoxy groups by butyl lithium was studied for both enantiomers of menthol, and yielded modest enantiomeric excess. Mono-substitution of the alkoxy groups on phenyl methyl di-(-)-menthoxy silane by tert butyl lithium was also observed, and displayed high enantiomeric excess. The tert butyl phenyl methyl menthoxy silane was reduced with DIBAL-H to verify the optical rotation. These results indicate that dimethoxy substituted silanes may be useful precursors to chiral silanes.

Mentor: Randy Winchester

HENRY HALL ATRIUM 11

Integrating Art into West Michigan Summers: A Statistical Consulting Experience

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

Presenter: Colleen MacCallum

The Muskegon Summer Celebration annually brings music, art, food, and fun to the west side of Michigan. It is the festival committee's goal to assess whether festival attendees are having a pleasant and enriching experience throughout the various festival venues. As such, they annually prepare and administer surveys to patrons of each venue to receive direct feedback. My role, as a statistical consultant, was to aide Becky Wilson, MSC Survey Committee Chair, in analyzing surveys collected over the past four years from the Art in the Park venue. My goal was to investigate any observable trends. Taking these trends into consideration, I was also responsible for making suggestions on which questions are candidates for potential removal in an effort to reduce the length of the survey.

Mentor: Neal Rogness

HENRY HALL ATRIUM 12

Ping Pong Ball Toss: Motor Performance in a Simple Task

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

Presenters: Michael Angerbrandt, Amy Hinman, Ryan Oostdyk

The purpose of this study was to determine whether or not the knowledge of a future reward would have an effect on performance during a motor task - bouncing a ping pong ball into an empty coffee can. After two trials, half of the participants were informed that a reward would be given if their scores on the third trial were better than the average of the first two. Their efforts were scored to help the investigators discern whether or not the knowledge of a reward assisted motor performance.

Mentors: Bradley Ambrose, Gordon Alderink, James Scott

HENRY HALL ATRIUM 13

Effect of Increased G-Load on Rat Mammary Gland Development

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

Presenter: Kibrom Gebre-Egziabher

Mammary gland epithelial differentiation is dependent on an integral cytoskeletal support structure and hormonal direction. The objective of this study was to determine the effects of chronic hypergravity (HG) exposure during pregnancy on abundance of the cellular scaffolding proteins in the rat mammary gland. One group of pregnant rats were exposed to either 2g (HG) or 1g (control) from days 11 to 20 of gestation (G20). Another control (1g) and experimental (2g) groups were investigated from days 11 of pregnancy through days 1 (P1) and 3 (P3) postpartum. On G20, P1 and P3, mammary tissue was collected and processed for immunohistochemical based quantification of proteins (actin, tubulin cyokeratin, vimentin). At G20, and P3 significant ($p < 0.05$) amounts of actin, tubulin, and vimentin were detected in HG rats compared to control animals. Our results suggest that abnormal cytoskeletal protein quantities correlate with the reduced mammary metabolic activity in HG-exposed rats.

Mentor: Osman Patel

HENRY HALL ATRIUM 14

Origin of Dolomite in the Middle Silurian Bisher Formation: Northeastern Kentucky

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

Presenters: Carlene Gilewski, Jody Wycech, Rachel Moran

The Middle Silurian Bisher Formation in northeastern Kentucky is dolomite originally composed primarily of calcite sands. The thick- to thin-bedded dolomite is interpreted in the literature as forming in an episodically high energy tidal flat. Using a petrographic microscope point counts will be performed on samples of dolomite collected from the base to the top of the formation. The point counts will determine if the dolomite is homogeneous in crystal size and shape. Initial observations indicate the crystals range from 20-150 microns in diameter and are planar-euhedral. The literature suggests dolomite texture gives clues to the mechanism of crystal growth and the temperature at which it formed. X-ray diffraction analysis will determine the extent of dolomitization and the degree of ordering in the dolomite, which we hypothesize will correlate with crystal size. Both mineralogy and texture may indicate variations in the origin of the dolomite up stratigraphic section in the Bisher.

Mentor: Patricia Videtich

HENRY HALL ATRIUM 15

Does Auditory Distraction by a Metronome Affect Anticipation Timing Accuracy?

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

Presenters: Elizabeth Webb, Cassandra Regan, Marc Boissoneau

The purpose of this experiment was to examine the effect of auditory distraction on anticipation timing. Subjects were assigned to one of two groups. Group A performed the anticipation timing task with the metronome for the first test while Group B performed the task without the metronome. Each test consisted of ten trials and after each trial data were recorded but no feedback was given. For the second test, Group A performed the anticipation timing task without the metronome and Group B performed the task with the metronome. Tests were performed at the same time one week apart and procedures followed were the same for the first and second tests. The anticipation timer's speed setting and the tempo of the metronome remained constant for each trial during each test.

Mentors: James Scott, Gordon Alderink, Bradley Ambrose

HENRY HALL ATRIUM 16

Naturally Occurring Contextual Cues During Infant-Directed Speech

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

Presenter: Megan Zelinsky

Background & Aims: Caregivers are more likely to touch their infants while speaking about an abstract topic than while speaking about a physically present object (Dueker, Portko & Zelinsky, 2011). The current study will examine whether touch characteristics, utterance type or their interaction consistently predict the topic of infant-directed speech (IDS). Method: Adult-infant dyads were given objects and topic cards to use while interacting. Interactions were recorded and transcribed. Utterances were coded for topic, presence of touch, type and quality of touch, and utterance type (e.g. declarative, interrogative). Proposed Analyses: Data will be analyzed for patterns within aspects of touch and utterance type and interactions between aspects of touch and utterance type. Discussion: Results could reveal patterns of cues present during adult-infant interactions that predict the topic of IDS. Patterns may be used by the pre-verbal infant to disambiguate the referent of adult speech.

Mentor: Gwenden Dueker

HENRY HALL ATRIUM 17

Larval Steelhead Densities in the Muskegon River, Michigan

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

Presenter: Neal Swanson

Steelhead (*Onchorhynchus mykiss*) have become an important component of the Lake Michigan ecosystem and provide an important fishery in the region. Currently, steelhead populations are heavily supplemented with hatchery stocks due to low production in many coastal Michigan streams. Several studies have evaluated juvenile survival, but no studies have estimated larval steelhead emergence. During spring 2010 and 2011 we found that maximum larval steelhead emergence varied from 0.259/m³ to 0.045/m³ respectively with peak emergence between May 31 and June 7. Larval densities were greatest between 12:00 am and 2:00 am. The total estimated larvae drifting during the two sample periods were higher for 2010 than 2011. Physical factors, notably discharge, may account for some of the variation observed between years. Understanding the relationship between larval emergence and annual year class may provide managers with additional tools to manage steelhead stocks in the Great Lakes region.

Mentor: Mark Luttenton

HENRY HALL ATRIUM 18

Is Local Food More Expensive? A Grand Rapids Case Study

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

Presenter: Christine Sauer

Is locally produced food more expensive than non-locally produced food? As Americans become more aware of how their food is produced and where it is sourced, this question becomes more pertinent. This study compares prices for local fruits and vegetables, sold at the Fulton St. Farmers Market in Grand Rapids, with prices for non-local (national or international) products offered at area supermarkets in late summer/early fall 2011. Although there is a common perception that local food costs more, results indicate that local food - in peak season - is often less expensive than its non-local counterpart.

Mentor: Aaron Lowen

HENRY HALL ATRIUM 19

The Eye: A Window to Event Cognition

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

Presenters: Elsa Thomasma, Tony Schnotala, Chelsea Romanczuk, Amanda Wright

Past research suggests readers segment information presented in narrative texts into discrete events, with distinct boundaries between those events. However, methods used to demonstrate this segmentation have so far been limited to offline measures. The present study examines whether segmentation may be demonstrated with a measure that uses online cognitive processing: eye movements. Participants read narrative passages as their eye movements were monitored. Based on prior research, clauses were coded as event boundaries (i.e., the start of a new event) or event middles. We found that participants fixated longer on boundary clauses. Remarkably, these effects appeared within the first three fixations on the boundary clause. Participants also re-read boundary clauses more often than event middles. Our online measures, which reflect both immediate and prolonged effects of boundaries on eye movements, help clarify prior theories of event segmentation while comprehending narratives.

Mentor: Benjamin Swets

HENRY HALL ATRIUM 20

Student Misconceptions of Hydrogen Bonding

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

Presenter: Joshua Kazdan

This survey examines Grand Valley State University (GVSU) chemistry student's comprehension of hydrogen bonding in organic molecules. A strong grasp of hydrogen bonding can increase comprehension of chemistry topics such as boiling point patterns, solubility, and IR spectroscopy. Each question in the predominantly multiple-choice survey was aimed at targeting a specific concept related to hydrogen bonding. Student misconceptions from previous research were used as distractors for each question to identify any recognizable pattern/s of misconceptions. Subjects included organic chemistry students enrolled in CHM 242 and CHM 247, with previous general chemistry CHM 115 experience at GVSU. The purpose of this research was to collect baseline data for changes in student understanding of hydrogen bonding concepts in light of revisions in CHM 115 laboratory to focus some experiments on intermolecular forces.

Mentor: Julie Henderleiter

HENRY HALL ATRIUM 21

Synthesis and Application of Pedagogical Concepts: Three Cases Illustrating The Evolution of Undergraduate Professional Development From Classroom-Based Pedagogical Theory to Teacher In-Service Training

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

Presenters: Elizabeth Van Tiflin, Paula Cynar, Tanya Emelander

We would like to share the process we engaged in over the past year that allowed us to make three different presentations to in-service teachers at a state-wide physical education conference. These experiences provided opportunities for us to take classroom theory and transform it into useful instructional materials which we then delivered to in-service teachers through our presentation.

Mentors: Patricia Rowe, Ingrid Johnson

HENRY HALL ATRIUM 22

Biomass to Chemicals: Sustainable Chemistry

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

Presenter: Aaron Marshall

Biomass provides fuel. However, biomass can be also converted to chemicals. The multitude of complex processes for conversion are similar in scope and scale with the operation of oil refineries. Depletion of petroleum supplies level the field for competition of bio- with oil-refineries. Biomass is plant material, vegetation, or agricultural waste used mainly as energy source; however biomass has a bigger potential as raw material for chemicals. Green chemistry principles promotes conversion of biomass to value-added chemicals, like 5-hydroxymethyl furfural (HMF), a platform molecule that opens multiple pathways to synthesis. Many processes are already known to convert biomass to useful chemicals, including hydrogenation, oxidation, and hydrolysis. Heterogeneous catalytic conversions of biomass into value-added products via hydrogenation is presented here as a viable alternatives to those from petroleum industry.

Mentor: Dalila Kovacs

HENRY HALL ATRIUM 23

The Effect of Histamine Deficiency on Courtship Behavior in *Drosophila melanogaster*

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

Presenter: Shelby Lemke

Histamine has been found to function as a visual and mechanosensory neurotransmitter in *Drosophila melanogaster*. However, little is known about its role in higher-order behaviors in flies, such as courtship behavior. The process of courtship in *Drosophila* is a complex behavior exhibiting distinct stages that can be easily observed. This project examines the differences in courtship behaviors between flies that have decreased histamine levels due to a mutation in the gene encoding the enzyme histidine decarboxylase (HDC) and flies that have normal HDC function. Pairs of virgin flies were introduced to each other to observe courtship behavior, and the time after introduction at which different stages of courtship occurred was recorded. Results will reflect the current progress of the research. Differences observed between the strains of flies could have implications for recent findings linking a mutation in the human Hdc gene and Tourette's syndrome in humans.

Mentor: Martin Burg

HENRY HALL ATRIUM 24

Deformation in the Upper Ordovician Point Pleasant Formation, Northern Kentucky

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

Presenters: Jeffrey Alexander, Joshua Klosinski, Nicholas Weiss, Neal Ringerwole

The Upper Ordovician Point Pleasant Formation in northern Kentucky consists of two conglomerates (interpreted by others as debris flows), two thin deformed grainstone beds, a chaotic layer, and a nodular mudstone. The lower, fine grained, rippled grainstone bed is thought to have been deposited on uneven, surface debris flows. The grainstone pinches out and is then replaced with a nodular mudstone. Atop these lies the upper, fine grained, grainstone bed. We will use hand samples and point counts of thin sections to identify the meso/micro-scale features found in these beds and compare the grainstone beds to the undeformed beds. We hypothesize that we will see evidence for deformation in the meso scale, but at the micro scale features suggesting post lithification deformation such as fractures across grains and cements will be absent. This would support the interpretation that deformation occurred prelithification and was perhaps caused by seismic activity along a submarine slope.

Mentor: Patricia Videtich

HENRY HALL ATRIUM 25

Body Regions and Early Grammatical Structure

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

Presenters: Trevor Wilson, Kevin Putschko, Meaghan Machiele, Dominic Kootsillas-Conybeare

Previous research on early grammatical development has proposed that grammar develops from regularities in linguistic experience. We suggest that these regularities may extend to bodily experiences. A previous study on early-learned verbs suggests strong correlations between verbs and specific body regions. It follows that young children may perceive these regularities and connect the body region with grammatical structure. A corpus of 3000 sentences from a transcription of speech recorded during a free play session between 20 children (20 or 28 months old) and their mothers were analyzed in verb frame appearance and their correlations with body parts. We hypothesized that a particular body region would be more likely to appear within a specific grammatical framework. We then analyzed the correlation between six sentence structures (SV,VNP, VNPNP, VNPLOC, VLOC, VS) and body region (Leg, Hand, Head) using chi-square test of independence and found significant relationships between them.

Mentors: Sango Otieno, Josita Maouene

HENRY HALL ATRIUM 26

Glaucinite and Pyrite in Chert Nodules and Dolomite in the Silurian Brassfield Formation of Northern Kentucky

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

Presenters: Benjamin Steavenson, David Trudeau, Eli DenBesten, Robert Fortney

The Silurian Brassfield Formation in northern Kentucky is comprised of dolomite, with local concentrations of chert nodules. The formation originated as a coral reef that was dolomitized following lithification to limestone. Glaucinite and pyrite can be found in small amounts throughout the limestone and chert nodules. Plain light microscopy of dolomite and chert samples was used to determine the association of glaucinite with pyrite, and reflected light microscopy was utilized to determine the pyrite morphology. If framboidal morphology of the pyrite is observed, this may indicate that the pyrite formed in an environment in which bacteria reduced sulfate to sulfide resulting in the formation of pyrite. Glaucinite may have also formed in association with the pyrite. Moreover, removing the sulfate may result in conditions conducive to formation of organogenic dolomite, which could then form the nucleation sites for further dolomitization.

Mentor: Patricia Videtich

HENRY HALL ATRIUM 27

Analysis of QuiBids Penny Auctions

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

Presenter: Nathan Marculis

Successful companies such as eBay and Amazon have inspired a new generation of online auction websites. QuiBids is one of the leading pioneers in the online penny auction industry. A penny auction is a type of all-pay auction in which players pay a non-refundable fee to place a small incremental bid. This poster presents a mathematical model of QuiBids penny auctions and explores the effectiveness of various bidding strategies.

Mentor: Jonathan Hodge

HENRY HALL ATRIUM 28

Role of Policy to Sustain International Development Programs -An Ethno Scientific Analysis

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

Presenter: Kelsey Davies

This study aimed to identify the role of policy in the contribution of sustainability in community based development programs in international communities. Non-governmental organizations (NGOs) play an important role in developing and continuing programs in many parts of the world including Kenya, China, and Canada. I have conducted a survey with the employees of two international NGOs, employees who have influence in the decision making processes. I analyzed the policies and strategies of the organizations and their contributions to sustainability through the programs these organizations implement. Through this analysis, areas of strength as well as areas needing improvement were found.

Mentor: Azizur Molla

HENRY HALL ATRIUM 29

Woodrow Wilson's Personality and His Struggles Over the League of Nations

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

Presenter: Lauren Longo

There is nothing but insufficient insights into Woodrow Wilson's personality and the role it played in the fight for the League of Nations. Therefore it is important to further examine Wilson's participation in the Versailles conference as well as his battle with the Senate over ratification of the treaty. Woodrow Wilson refused to compromise even when his ultimate goal would suffer as a result. In the fight for the League, Wilson's first choice would have been to have the League ratified without reservations. Rather than compromising when his first option was unavailable, Wilson's stubborn personality led him to jump to the least desirable choice. In their psychobiography of Wilson, Freud and Bullitt explain these actions as the result of Wilson's repressed hostility toward his father. Other work on the issue is equally lacking in empiricism. This work attempts to rectify the lack of empiricism by using accepted psychological theory to explain Wilson's behavior.

Mentor: Thomas Walker

HENRY HALL ATRIUM 30

Por la Patria y la Revolución: Sifting through Guatemalan Military Archival Materials

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

Presenter: Heidi Fegel

What explains the Guatemalan military's intervention in politics and its eventual takeover of the government in 1963? One answer is ideology, and if ideology matters, then it would make sense to look at the education of interventionist officers in Guatemala. To find the link between education and militarism, I spent two months sifting through declassified military documents in Guatemala. This poster presentation describes my biggest challenges and key finds as I dug through military academy documents, piecing together the fragments and shards of relevant information. Focused on the years immediately before and after the 1944 Revolution, the documents revealed a highly centralized institution in which every minute detail of the Guatemalan military academy had to be reported. While the Revolution did little to change that, I was able to piece together evidence of an ideological shift in terms of how officers perceived their institution and their role in Guatemalan national development.

Mentor: Andrew Schlewitz

HENRY HALL ATRIUM 31

The Role of the Textbook for Students in Organic and Analytical Chemistry

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

Presenter: Kristen Simon

This study is to observe and analyze how undergraduate chemistry students use their textbooks to study and learn chemistry. This work seeks to identify fundamentally different ways students interact with the text. Seventeen in-depth interviews with second and third year organic and analytical chemistry students were conducted to identify the role the text plays in student learning of chemistry. After analyzing these interviews it is clear that the instructors' actions affect students textbook usage. The book is seen mostly as a back up to their professor and as a source of problems for the student. We believe we have found the various roles for the text and that we can soon begin work on a questionnaire that will measure how the students use their textbooks as they study and learn chemistry. This poster will present our analysis of the interviews and our in-depth findings of how the students view the roles of their textbook.

Mentor: Thomas Pentecost

HENRY HALL ATRIUM 32

Ignored, Vulnerable, and Invisible: Evidence for an Embodied Social Metaphor

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

Presenter: Danielle Lucksted

Research on embodied cognition and metaphors suggest that people's understanding of abstract concepts is grounded in their sensory experiences. For example, feeling physically warm (vs. cool) elicits perceptions that others are interpersonally warm (Williams & Bargh, 2008), and social exclusion (vs. acceptance) leads people to literally feel colder (Zhong & Leonardelli, 2008). The current study examined the effects of social exclusion/acceptance on perceptions of physical vulnerability and invisibility. Consistent with hypotheses, participants randomly assigned to write about a past social exclusion (vs. acceptance) displayed greater accessibility of physical risk-related constructs (assessed via a word completion task), and expressed greater aversion to experiencing invisibility (assessed via reactions to an imagination scenario). Discussion will center on future research questions and interventions aimed at helping people to cope with exclusion and to feel physically safe.

Mentor: Kristy Dean

HENRY HALL ATRIUM 33

Ethnic Minority Recruitment at Grand Valley State University

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

Presenter: Meghan Huyghe

This project examines the recruitment and enrollment of ethnic minority students at Grand Valley State University. The study investigates the literature on the college choice process for ethnic minority students to determine what factors impact their decision to enroll in higher education and what factors impact their choice of which school to attend. The objectives of this research project are to first identify what factors impact the college choice process for ethnic minority students. Next, the project identifies where students enroll after they have applied to Grand Valley. Finally, the project identifies the enrollment trends of ethnic minority students. Appropriate recruitment suggestions for Grand Valley State University are made based on the literature review and results of the study.

Mentor: Diana Pace

HENRY HALL ATRIUM 34
Guys and Gals Going for Gold: Sex Differences in Olympic Success Across Nations
Participants attending from 12:00 p.m. until 1:00 p.m.
Presenter: Erika Schmitt

Studies show that the number of Olympic medals won by nations can be predicted by population size, wealth, and previous success. Here we test whether there is also predictable variation in which nations win proportionally more women’s than men’s medals. In particular, we explore the predictiveness of gender role strength, gender-equity and gender-empowerment indices, and legislation aimed to increase female sports opportunities (e.g., Title IX). Results will be related to previous cross-national studies of women’s empowerment.
Mentors: Aaron Lowen, Robert Deaner

HENRY HALL ATRIUM 35
Can we Improve Research Experiences to Better Address Nature of Science Concepts?
Participants attending from 10:00 a.m. until 11:00 a.m.
Presenter: Joe Grit

National and State education documents list elements of Nature of Science (NOS) as student learning outcomes for science programs. Furthermore, the National Science Teachers Association’s position statement regarding NOS identifies nine key premises important to the understanding of NOS and calls for all those involved with science teaching and learning to have a common, accurate view of NOS. As NOS deals the construction of scientific knowledge, a research experience, where participants are involved in constructing scientific knowledge, should be considered important for developing a sound understanding of NOS. Our study examines the effects of a research experience for teachers, which is part of the Target Inquiry professional development program, on teachers’ views of NOS, and compares teachers’ views to those of experts, science research faculty. Moreover, we have examined additional strategies for improving teachers’ understanding of NOS.
Mentor: Deborah Herrington

HENRY HALL ATRIUM 36
The Effects of Different Genres of Music on Short-Term Memory
Participants attending from 1:00 p.m. until 2:00 p.m.
Presenters: Matthew Harvey, Margaret Hiner, Sian Mehl

The purpose of this study was to examine the possible relationship between musical stimuli and the function of working/short-term memory. In order to examine this possible relationship, a pool of college-age volunteer subjects performed three trials of a memory test (classical music in background, rock music in background, and silence). The results of this study allow us to examine how listening to various types of music might affect student short term memory.
Mentors: Bradley Ambrose, James Scott, Gordon Alderink

HENRY HALL ATRIUM 37
Periodization of Collegiate Golfer
Participants attending from 3:00 p.m. until 4:00 p.m.
Presenters: Brian Schulte, Gavin Stuart

The necessity for fitness in the golf world has grown exponentially in the past 10 years with attributions to the PGA tour. Through the years, this has trickled down through the levels of competitive golfers and even the leisurely golfer. The purpose of this presentation was to construct a long term training program for the collegiate golfer in order to lower scores and reduce the risk of injury. Using a periodized training

regimen of general and golf-specific conditioning methods, the goal of the program is to improve the golfers strength, power, balance, flexibility, coordination, and endurance. Collegiate players are also required to walk the course while carrying their own bags, so aerobic training to improve endurance will be added to reduce fatigue. Positive improvements in all the above areas will lead to decreased scores, improved ball striking and mechanics, and a reduction in fatigue and injury risk.
Mentor: Amy Crawley

HENRY HALL ATRIUM 38
Sex Differences in Athletes’ Media Representations: Conspiracy or Reflection of Human Nature?
Participants attending from 9:00 a.m. until 10:00 a.m.
Presenter: Megan Luchies

Many studies report that media portrayals of female athletes are much less frequent than those of males and are qualitatively different, especially in their emphasis on physical attractiveness. This differential representation is usually assumed to be due to systematic social structural biases. Here we review evidence for the differential representation of male and female athletes and present a new hypothesis for it, namely that it partly reflects evolved psychological dispositions. We conclude by outlining research that might distinguish between the hypotheses.
Mentor: Robert Deaner

HENRY HALL ATRIUM 39
Sex Differences in Sports Interest: Is Socialization The Whole Story?
Participants attending from 12:00 p.m. until 1:00 p.m.
Presenter: Amber Jahnke

There is much evidence that boys and men are generally more interested in sports than girls and women are. Most scholars and policy makers seem to assume that this sex difference can be entirely attributed to socialization practices (i.e. the differential treatment of males and females by parents, peers, and media). Here we document the ubiquity of this assumption, review the empirical evidence for it, and explore other possible factors, including genetics and hormones. We conclude with suggestions for further research.
Mentor: Robert Deaner

HENRY HALL ATRIUM 40
Modeling Social Networks with Random and Fuzzy Graphs
Participants attending from 1:00 p.m. until 2:00 p.m.
Presenter: David Schlueter

In this project, random weight graph models are extended to the fuzzy case, where fuzzy probability theory drives the stochastic process. To illustrate, suppose that an edge in a weighted graph is known to exist between two particular vertices but the strength of that edge is unclear. To determine the strength of this edge, we find the conditional expectation of a fuzzy random variable conditioned on the strength of mutual friends shared by the two vertices. The calculation of expected weight in this manner drives the stochastic process as a new vertex is connected randomly to the graph with each iteration. We discuss the efficacy of our approach as a modeling tool, interesting growth characteristics of the model, and possible modifications to the process.
Mentor: Jiyeon Suh

HENRY HALL ATRIUM 41

Freedom and Islam: A World Study, 1990-2010

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

Presenter: Elisabeth Cole

A study was conducted on freedom and Islam worldwide between 1990 and 2010. The purpose of this study was to examine and map the relationship between the percentage of the population that is Muslim in a country and freedom as defined by Freedom House. Freedom House classified their data as Free, Partially Free and Unfree. Data were analyzed with ANOVA using the FH freedom class as grouping variable and percent of country population that is Muslim as the test variable. Bivariable maps were created and incorporated into ArcGIS for visualizing and analyzing the relationship between Islam and freedom. Results showed an inverse relationship between the variables: the mean percent of the population that was Muslim in 2010 was significantly lower in the Free class compared to the Partly Free and Unfree classes. Keywords: Freedom, Islam.

Mentor: Wanxiao Sun

HENRY HALL ATRIUM 42

Isotachophoretic Focusing of Bacteria and Fungi for Analysis

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

Presenter: James Bennett

In this experiment we attempt to use the isotachopheresis mode of capillary electrophoresis to focus and potentially separate bacterial and fungal species. Isotachopheresis is typically used in biochemistry to concentrate and separate protein samples based on their electrophoretic mobilities as compared to the other components in a multi-electrolyte system. The same basic principle may be applied to the analysis of whole cells by exploiting their differences in size and surface charges. Different bacteria such as gram positive and gram negative have different surface characteristics as well as being vastly different from that of fungi. By focusing the cells into distinct zones based on these surface characteristics it would be possible to differentiate between species and thus have a fast and inexpensive test to determine the cause of sample contamination.

Mentor: Andrew Lantz

HENRY HALL ATRIUM 43

Drosophila Genomics: A Novel Research Experience in the Classroom

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

Presenters: Stephanie Adams, Morgan Baker, Mitchell McDonald, Nicholas Monsma, Devon Shallman, Peter Wendland, Erica Enoch, Alen Ramic, Christopher Scheiber, Eric Spencer

Through support of the Genomics Education Partnership (GEP), students are provided an opportunity to experience genomics research and its applications in a classroom setting. The majority of the genomes from many *Drosophila* species have been sequenced, except for the dot chromosome, which is composed of highly repetitive DNA sequence much like the human genome. We are currently working towards improving the DNA sequence of the 4th (dot) chromosome in *D. ananassae*. Large DNA fragments were identified that cover the dot chromosome, and using the resources established by the GEP, students “finished” the DNA sequence to high quality using Consed™. After finishing DNA sequence of 1 fosmid, students annotate DNA contigs from the dot chromosomes of *D. mojavensis* or *D. grimshawi* to determine how the dot chromosome structure changes between species. The results contributed by students are placed into the GEP database, furthering scientific knowledge of comparative genomics in *Drosophila*.

Mentor: Martin Burg

HENRY HALL ATRIUM 44

Are Neurobehavioral Effects of Embryonic Methylmercury Exposure Heritable Transgenerationally in Zebrafish?

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

Presenters: Amanda Martin, Daniel Lone

Learning is pivotal in the cognitive development of all creatures and deficits in this respect can be detrimental to one’s ability to function in society. Previous research has demonstrated that embryonic methylmercury (MeHg) exposure in zebrafish affects learning and produces hyperactivity. The current study aims to investigate the heritability of these adverse neurobehavioral effects by testing the offspring of zebrafish that were subjected to embryonic MeHg exposure. In order to evaluate the learning capabilities of zebrafish they were trained to associate a light with being shocked and to avoid this shock they could swim to a darkened compartment underneath a manually raised divider. By assessing the ability of zebrafish to learn this task we will be able to evaluate the transgenerational heritability of the neurobehavioral effects of embryonic MeHg exposure.

Mentor: Xandra Xu

HENRY HALL ATRIUM 45

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

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

Presenters: Christopher Altheim, Breck Davis

Salmonella Typhimurium is a gram-negative bacterium that produces a self-limiting, localized gastroenteritis in humans upon ingestion of contaminated food or water. *Salmonella* infection depends upon 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 of the small intestine. The expression of the SPI-1 genes is controlled via the sensing of various environmental conditions through multiple pathways. When conditions are optimal for invasion, these various environmental signals induce the SPI-1 transcriptional activator *hilA*. In collaboration with Brad Jones at the University of Iowa, we have identified some plasmids which produce cyclic peptides responsible for a reduction in expression of a *hilA::lacZY* reporter in *E. coli* and in *Salmonella Typhimurium*. The effects of these plasmids have also been quantified through in vivo invasion assays.

Mentor: M. Aaron Baxter

HENRY HALL ATRIUM 46

Museum Education: Understanding the Artist through K-12 Studio Practice

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

Presenters: Katherine Rodge, Desiree Nordstrand, Ryan Korson, Sara Weimer, Rebekah Weiss

Grand Valley State University Art Education students prepared and hosted several art studio workshops, based on Deborah Butterfield’s current sculpture exhibit at Frederick Meijer Gardens and Sculpture Park. Preparation included a visit of the exhibition, discussion with the curator, research of the artist, as well as experimentation with materials. Projects were suited for an intergenerational museum setting. Data were collected through GVSU students’ personal reflections, review of visual documentation, as well as feedback from visitors. Data was then reviewed weekly for the purpose of improving projects and/or developing new ones based on an emerging idea/practice. This research advocates for the practice of meaningful art-making and appreciation in a contemporary, service based setting.

Mentor: Katalin Zaszlavik

HENRY HALL ATRIUM 47

Do You Speak Chemistry? Assessing the Degree of Inconsistency Between Expert and Novice Interpretations of Exam Questions.

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

Presenter: Ellie Fought

The No Child Left Behind Act of 2001 catalyzed the institutionalization of standardized testing in public schools. As many college and university faculty resist using standardized tests, their students continue to be assessed via measures created by instructors with little or no training in educational measurement. Although instructor-developed questions and course content are generally congruent, a class of students will occasionally perform poorly on a conceptually simple question. To better understand this phenomenon, we are interviewing GVSU students and faculty about characteristics of general chemistry exam questions that cause them to be difficult, confusing, or both. A secondary goal of this research is to compare faculty and student perspectives of clarity and difficulty. Preliminary results suggest that three primary categories are present - test stressors, item construction, and language - and that faculty and students hold disparate views of clarity and difficulty.

Mentor: Nathan Barrows

HENRY HALL ATRIUM 48

The Role of Visual Art in the Development of Special Needs Students

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

Presenters: Mark Devries, Paige Darbyshire, Michelle Haapala, Emily Horvat, Alicia Core

Grand Valley State University Art Education students prepared and taught studio art projects to visiting special need students varied in age from 16 to 22 years old. The winter 2012 project focused on art-making within the confines of a circus. Students were asked to create a circus environment and populate it with multiple characters. The GVSU students applied their knowledge and research skills through a) preparation of the project, b) problem solving emerging ideas or/and technical challenges, c) inventing new communication strategies, d) collaboration with special needs students. The poster session will share images and data on how this non-traditional teaching practice can be applied in a K-8 classroom. It advocates for the power of art and art-making in the development of a student with special needs.

Mentor: Katalin Zaszlavik

HENRY HALL ATRIUM 49

Measuring Mirror-Tracing Ability: The Effects of Cerebral Dominance and Form Symmetry

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

Presenters: Amber Cullison, Kyla Cieslak, Sarah Corrello

The subjects in this experiment were volunteers who were undergraduate students enrolled at Grand Valley State University, ranging from 18 to 24 years of age. Prior to the experiment, subjects were asked to take a pre-test survey to determine their cerebral dominance. To measure mirror-tracing ability, subjects used a mirror-tracing apparatus to trace 3 symmetrical and 3 asymmetrical shapes. Each subject was then scored based on the number of errors in drawing the form, as well as the time used to complete each form.

Mentors: James Scott, Bradley Ambrose, Gordon Alderink

HENRY HALL ATRIUM 50

Influence of Glucose on Growth of Cultured Mouse Endothelial Cells

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

Presenters: Noah Zucker, Allison Desautels, Eric Spencer, Kara Winczkowski

The supplier (ATCC) of cultured mouse endothelial cells states that those cells should be maintained in a high glucose environment. As these are the only cultured endothelial cells available commercially that do not require growth supplements in addition to the FBS, we were interested in whether the media glucose concentration influenced the rates of cell division (growth) in these cells. The growth of mouse endothelial cell (bEnd.3) division was assessed in high (4.5 g/L = 25 mM/L) and low (1 g/L = 5.6 mM/L) glucose with 10% FBS-DMEM. The rate of endothelial cell growth was reduced when glucose was closer to physiological concentrations (5.56 mM/L = 100 mg/dl). When the FBS was lowered/removed from the media, the cells continued to grow (although more slowly than in 10% FBS). As the cells in 5.6 mM grew even slower, high glucose appears to stimulate the release of growth factors from the endothelial cells that are necessary for their growth.

Mentor: David Kurjiaka

HENRY HALL ATRIUM 51

The Effects of Adopting Proper Running Form Techniques on Hip Strength in Healthy Females

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

Presenter: Patrick Lawrence

The purpose of this study is to determine if instruction and practice improper running form techniques strengthens the hip abductor and hip external rotator muscles and thus reduce the risk of certain knee injuries. Healthy female volunteers ages 18-35 were recruited for this study. To be included, each subject had to be running 10-20 miles per week for at least two weeks prior to the study and be free of any injuries. Subjects were randomly assigned to a control or experimental group. Both groups ran 12-16 miles per week on a treadmill for six weeks, and were measured for hip strength at the start, third week, and sixth week of the running protocol. Isometric hip abduction and hip external rotation strength were measured with a hand-held dynamometer. The experimental group also received instruction on proper running form. Two separate three way ANOVA tests will be performed to identify changes in hip abductor and hip external rotator strength by time, side, and group.

Mentor: Heather Gulgin

HENRY HALL ATRIUM 52

Examining the Effects of Testimonials on Cancer Screening Decisions: Does Identity or Vividness Matter?

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

Presenter: Jackie Main

Research supports the use of testimonials to communicate health information and encourage health behavior change, but few studies have examined what attributes of testimonials make them persuasive and meaningful. In this study, older adults who were due for colorectal cancer screening read a screening message about colon cancer that included a testimonial from a similar other (matched to each participant's age, gender, and race) who had previously made a screening decision. We examined associations between participants' perceptions of the testimonial, such as identification with the character and vividness of the experience, and their intentions to have a screening test in the next year. We also examined associations between participants' perceived identity and vividness and their knowledge and attitude toward screening.

Mentor: Amanda Dillard

HENRY HALL ATRIUM 53
Foucault Pendulum and Light Ring
Participants attending from 4:00 p.m. until 5:00 p.m.
Presenter: Amy Mohr

This experiment was composed of building a Foucault Pendulum that could fit inside a classroom. I constructed a pendulum that hung over a light ring. A phototransistor on the bottom of the bob registered the change in light intensity and started a timer when it passed over the light ring. The timer turned on an electromagnet, which attracted the metal bob to it. This caused the bob to accelerate. The acceleration counteracted the frictional forces that usually slow a pendulum. This system successfully made a perpetual motion pendulum that can demonstrate the rotation of the Earth.
Mentor: Ross Reynolds

HENRY HALL ATRIUM 54
Perceived Social Support Relationships Among Infantry Marine Reservists
Participants attending from 10:00 a.m. until 11:00 a.m.
Presenter: Justin Andrews

The present study is an investigation of the mechanisms by which perceived social support is linked to better mental health. This study was conducted to explore the link between favorable affect and perceived social support. We examine the extent to which conversation elaboration (CE) is highly relational and the extent to which CE can account for perceived support’s link to mental health, specifically for relational influences. This was be done by testing Relational Regulation Theory (RRT) which explains the association between perceived support and mental health, by using CE as the mechanism. Findings were consistent with RRT, for relational influences, perceived social support and CE are correlated at about .77, both are correlated with positive affect at about .42 and with negative affect at about -.35. Perceived social support was found to be linked to high positive affect and low negative affect, and positive affect and negative affect were weakly correlated.
Mentor: Brian Lakey

HENRY HALL ATRIUM 55
Linguistic Stigmatization and the Enregisterment of an Internet Standard
Participants attending from 2:00 p.m. until 3:00 p.m.
Presenters: Lisa Austin, Chelsea Renaud

The advent of the internet has fundamentally influenced the way we communicate. Twenty years ago, "girl, ur my bff" would not have been legible, let alone socially acceptable. However, this evolution of language has followed some predictable sociolinguistic patterns. We believe that social networking sites have elicited the enregisterment of a certain "Standard of English", as well as the stigmatization of other dialects within the language. We analyzed various journal articles on the subject of enregistering Internet languages and media based stigmatization, and incorporated them into our study of various blogs and media outlets that encouraged a standard of English. We also analyze how these media have affected the way we communicate, and how these communications habits are stratified based on age, socioeconomic status, gender, and the level at which one is "tech-savvy".
Mentor: Kathryn Remlinger

HENRY HALL ATRIUM 56
Perception of Political Affiliations from Faces: An Exploratory Study
Participants attending from 4:00 p.m. until 5:00 p.m.
Presenters: Kyle Wicklund, Kelsey Drvinski

The purpose of this study is to gain a greater understanding of identity perception from human faces. Photos of members of the US Congress (democrats and republicans) as well as similarly affiliated politicians from other nations will be standardized in black and white and made to show no more than the face of the individual. These photos will then be presented to research participants (GVSU undergraduate students), who decide whether each face belongs to a democrat or a republican. Previous studies have shown that these judgments can reflect differences in perceived personality traits among the faces as well as certain biases and stereotypes on the part of the perceiver. We will explore these issues further in this study, which will be the first of a series of studies.
Mentor: Liang Lou

HENRY HALL ATRIUM 57
Periodized Strength and Conditioning Program for College Football Athlete
Participants attending from 10:00 a.m. until 11:00 a.m.
Presenters: Mark Brostman, Trent Holmes

According to a 2006 Gallop poll, Football is America’s most popular sport. The demand is great for these athletes to perform to their highest ability; therefore, a successful strength and conditioning program is required to prepare these athletes to meet that requirement. The purpose of this presentation was to create a year-long strength and conditioning program for collegiate men’s football players to enhance their performance on the field by improving strength, power, speed, and agility. This was accomplished by utilizing specific training methods which replicate and use game-like movements common to all positions. A review of literature was used to build the foundation of the program based on fundamental principles and proven methods of improving performance.
Mentor: Amy Crawley

HENRY HALL ATRIUM 58
Periodization Training for Collegiate Female Soccer Players
Participants attending from 12:00 p.m. until 1:00 p.m.
Presenters: Adrienne Chandler, Alison Reddick

Soccer is a rigorous sport that includes ninety minutes of intense aerobic and anaerobic energy use, including continuous running, sprinting and skilled agility. The purpose of this research was to present a training program for female collegiate soccer players to improve overall conditioning for endurance, agility, and power. Research suggests that appropriate strength and conditioning will decrease the risk of injury and avoid detriments in skill from fatigue. Based on a review of literature, the program utilized research-supported training techniques to improve conditioning for endurance, agility, and power. However, because this research utilized a review of literature, it did not expand current knowledge or provide a controlled experiment to support the program developed. The program should benefit coaches, athletic trainers, and strength and conditioning professionals by providing a best-practice model for soccer training.
Mentor: Amy Crawley

HENRY HALL ATRIUM 59

Reacting to Distractions: Visual Distractors and Choice Reaction Time

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

Presenters: Kelsey Canada, Jake Gascho, Erin Letherby

The purpose of this project is to test the impact of the presence of visual distractors on an individual's choice reaction time. Our aim is to use these experiments to see how visual distractions affect reaction time and how they can apply to real life situations. The subjects will be taking a test using an apparatus that will have them select a button which will be indicated by a light above the correct button. A timer will be attached to this device to get an accurate time of how long it takes the subject to respond to the stimuli. Subjects will be in two groups, one with the distractors present in the initial test and one without. Both groups will be tested under both conditions. Subjects will be taking an anonymous survey prior to taking the actual test which will help to identify demographics that can later be explored in the discussion and results.

Mentors: Bradley Ambrose, Gordon Alderink, James Scott

HENRY HALL ATRIUM 60

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

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

Presenter: Thomas Rogers

Unlimited cellular proliferation of cancer cells is coupled with the maintenance of telomeres in DNA. Telomerase, the enzyme that re-extends telomeres, has become an attractive target for new cancer therapeutics. BIBR1532, a mixed-type non-competitive inhibitor of telomerase, has been shown to cause growth arrest in tumor cells. Here, we tested BIBR1532 and two synthetic analogues (WS6-48, WS4-43A) for anti-proliferative activity on metastatic prostate cancer cells. Preliminary results indicate these compounds are highly active against proliferation. Their effects on inhibiting telomerase activity directly were quantified using a telomere repeat amplification protocol assay. Newly developed analogues are under preliminary testing to determine their effect upon telomerase. Available x-ray structures of telomerase domains are also being explored to assess ligand binding sites and affinities. Further studies will assess the effect these compounds have on other metastatic cancer cell lines.

Mentor: Suganthi Sridhar

HENRY HALL ATRIUM 61

The Effect of Upper Body Training on a Professional Cyclist's Performance

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

Presenters: Becky Gill, Jen Lund

A cyclist may have a chiseled lower body but the concealed foundation of their power originates from their upper body. The purpose of this study was to create a periodized training program for a professional cyclist. Due to the long-term and high-power demands of cycling, it is important to have a well-researched training program. It has been proposed for a cyclist to perform at their best ability, it is vital to have a stable core, strong shoulders, and a high cadence. There is limited information about the stability of a cyclist's upper body and core strength. This presentation demonstrates a year-round training program focused on a cyclist's upper body in order for them to improve performance. Cyclists will benefit by obtaining a faster time due to the increase in strength and efficiency after they have completed this periodized training program.

Mentor: Amy Crawley

HENRY HALL ATRIUM 62

Using Crayfish to Control Zebra Mussel Populations

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

Presenter: Paige Goote

The expansion of zebra mussel distribution into inland waterways of North America has created significant challenges. Mussels increase water clarity by removing suspended clay, silt, bacteria, phytoplankton, and small zooplankton. This focuses nutrients into the bottom of lakes away from much of the food chain and also causes increases in cyanobacterial toxins. However, mussels are exploited by a host of predators, most notably waterfowl, fish, and crayfish. They can return some of the nutrients to the food chain, but unfortunately even with predation much of the nutrients remain at the bottoms of lakes. We have tested one crayfish species (*Orconectes propinquus*) for feeding responses when given an opportunity to interact with zebra mussels (5 consecutive days). Crayfish did ingest zebra mussels and males ate more than females. Moreover, all crayfish selected smaller zebra mussels as a preferential prey item.

Mentor: Dan Bergman

HENRY HALL ATRIUM 63

Let's Talk about Sex: Testing Multiple Methods for Sex Estimation on Metacarpals and Metatarsals from Um-EI Jamal, Northern Jordan.

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

Presenter: Caitlin Hoop

Three methods for sex identification were tested on a sample of metacarpals and metatarsals excavated in 1996 from a commingled deposit in the Byzantine tomb, Umm El Jamal. The purpose of the research was to test both the ease of replicability as well as accuracy among the three methods and to refine the minimum number of individual's data for the site. Methods tested included Scheuer & Elkington(1993), Case & Ross(2006), and Barrio(2006). Results showed 71% similarity across the three methods for metacarpals. Case & Ross had the easiest method to repeat, measuring only axial length on metacarpals and metatarsals, and based on that one measurement determining sex from tables previously created. Madden and Brashler's research on Um-ElJamal previously determined the minimum number of adult individuals using all skeletal elements to be 7, this study suggests 4 based solely on the metacarpals which fits well with previous research. The MNI based on metatarsals parallels the previous MNI of 7.

Mentor: Gwyn Madden

HENRY HALL ATRIUM 64

Rescue of a Gain-of-Function Mutation in *Drosophila melanogaster* Affecting Wing Morphogenesis

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

Presenter: Sarah VanOeveren

The delorean mutation in *Drosophila melanogaster* was isolated from a collection of mutants generated in a large-scale screen of P[lacW] transposon insertions on the second chromosome. Wings of flies that are homozygous for the delorean mutation are held perpendicular to the body, misshapen, and have defects of the wing margin. The P[lacW] insertion has been mapped to the first intron of the *Drosophila* Protein Kinase N gene and the delorean mutation is thought to alter PKN function. It is known that PKN protein is required in embryogenesis because loss-of-function mutations disrupt the process of dorsal closure. This defect can be rescued if normal PKN protein is supplied. This loss-of-function mutation is in contrast to the gain-of-function mutation seen in delorean that affects wing morphogenesis. We have analyzed transgenic flies that contain the pkn cDNA under the control of a heat-shock promoter to determine if providing PKN protein can also rescue the delorean phenotype.

Mentor: Georgette Sass

HENRY HALL ATRIUM 65
Intelligent Design as a Meta-Science to Interpret Scientific Facts
Participants attending from 1:00 p.m. until 2:00 p.m.
Presenter: Jenna Fredrickson

The battle between religion and science has been at the forefront of the search for truth. Philosopher Karl Popper defined science by arguing that scientific theories are abstract in nature and must have the ability to be falsified. Popper also described anything that cannot be falsified as a meta-science. Intelligent design, which claims the existence of a higher power can be seen in nature, therefore must be a meta-science rather than a religion-based belief system. Advances in biochemistry such as the concepts of irreducible complexity and minimal function support intelligent design. Together, these two elements reveal flaws in Darwin’s theory of natural selection. The Big Bang Theory further strengthens the claim of an intelligent designer through evidence of the existence of cosmic microwave background radiation, the origin of light elements and Hubble’s Law. Intelligent design, as a meta-science, provides a satisfactory conceptual paradigm for interpreting scientific facts.
Mentor: Sheldon Kopperl

HENRY HALL ATRIUM 66
An Exploration of the Maasai People
Participants attending from 12:00 p.m. until 1:00 p.m.
Presenters: Stephanie Petersen, Brittney Mohnke

During the month of May 2011, we traveled to Arusha, Tanzania. While there, we spent one weekend in Monduli, a Maasai village. Through the many experiences this provided us with, we became interested in the Maasai people and we began first-hand research with Maasai people who we saw on a daily basis. In addition, we chose several topics concerning the Maasai people that were of particular interest to us to research more in depth. We took special interest in the Maasai culture specifically including their appearance, family structure, and rank system. The Maasai people take much pride in their history, so we chose to discuss different theories about the Maasai origins including traditional religious beliefs. We also spent a significant amount of time researching the Maasai education system from lessons in the bush to formal classroom educations. Through our personal experiences and research, we have come to appreciate the simplistic yet intricate Maasai way of life.
Mentor: Lisa Kasmer

HENRY HALL ATRIUM 67
Addition of Alanine to Antibiotic Target Compound
Participants attending from 12:00 p.m. until 1:00 p.m.
Presenter: Kayla Hurd

On a daily basis, thousands of people are infected with diseases with high mortality rates. Antibiotics are given to treat such diseases, but unfortunately, the human body can become resistant to these drugs over time. One such disease is *Staphylococcus aureus* or otherwise known as MRSA. The goal of this research project is to develop a method of making an antibiotic nonresistant to human antibodies and mutations. The amino acid alanine will be attached to a parent compound of the antibiotic derivative. This project is a collaboration with Dr. Schroeder and Dr. Smart’s research laboratory.
Mentor: Laurie Witucki

HENRY HALL ATRIUM 68
Optimizing de novo Assembly Algorithms for Next-Generation Sequencing Data
Participants attending from 9:00 a.m. until 10:00 a.m.
Presenters: Kurt O’Hearn, Sean Fisk

Next-generation sequencing (NGS) platforms have presented unique challenges to the computing community. The large number of short reads characteristic of NGS data has increased the difficulty of assembling genomes without use of a reference sequence, a method known as de novo sequence assembly. Further complicating the problem is the recent interest in metagenomics, the sequencing of multi-genetic material from environmental samples. Specialized data structures, such as de Bruijn graphs and bloom filters, have been incorporated as the backbone of modern assembly software. But as the rapid growth in metagenomic data illustrates, the development of new data structures and algorithms must continue to keep pace. The goal of this project is to analyze and optimize the performance of these assembly algorithms, focusing specifically on the pre-processing and graph partitioning stages. Both memory usage and run-time optimizations are considered, and a range of computing platforms is targeted.
Mentors: Greg Wolffe, Christian Trefftz

HENRY HALL ATRIUM 69
Lake Michigan Wind Assessment Project: A Validation of Laser Wind Sensor Technology
Participants attending from 2:00 p.m. until 3:00 p.m.
Presenter: Yeni Nieves

This research seeks to validate the use of a Laser Wind Sensor (LWS) unit placed on a research buoy located in Muskegon Lake. The validation process is the first step in exploring the behavior of wind in Lake Michigan and its environmental factors for potential placement of wind turbines. The validation focuses on measuring wind speed and wind direction over a month time span collected continuously. The data collected from the LWS unit was compared to the data from the anemometer on the GVSU Meteorological (MET) Tower which is currently stationed on the shore of Lake Muskegon. Comparison of the wind speed measurements and the differences of measurements of the two devices were analyzed using paired t-test, LOESS: Local Regression Smoothing, and correlation analysis. During the month’s time span, several storms were encountered and recorded by the LWS unit. These storms were analyzed separately to determine the efficacy of the LWS unit and its ability to measure high wind speeds.
Mentors: Charlie Standridge, David Zeitler

HENRY HALL ATRIUM 70
Depositional Environments and Sea Level Changes in the Late Ordovician Fairview Formation, Northeastern Kentucky
Participants attending from 12:00 p.m. until 1:00 p.m.
Presenters: Jordan Koster, Zach Bachler, Conner Rowlader, Kasey Fritz

By determining the paleo-environments in the Late Ordovician Fairview Formation, located in northeastern Kentucky, changes in sea level become evident. The lithologies in the Fairview Formation primarily consist of shale and fossiliferous limestone. The fossils, which include brachiopods, trilobites, and assorted corals, are useful in determining ancient depositional environments and relative sea level. For example, the presence of coral represents relatively shallow seas whereas brachiopods indicate slightly deeper seas. Our study includes analysis of hand samples and point counts of thin sections from the Fairview Formation. By carefully quantifying the fossil types in our samples we aim to determine if there are any changes throughout the stratigraphic section, and relate those changes to specific depositional environments and sea level.
Mentor: Patricia Videtich

HENRY HALL ATRIUM 71

Monitoring Quagga Mussel Growth using Remotely Operated Vehicles

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

Presenter: Mara Deckinga

Remotely Operated Vehicles (ROVs) can be used to monitor quagga mussel growth and to map threatened archaeological sites. Inexpensive ROVs made of PVC pipes are another option for researchers studying our underwater heritage. With the support of the Great Lakes Naval Memorial and Museum, video observation of mussel colonization was made on artificial substrate over 2 months. Inspection of the substrate was conducted every 2 weeks by video observation and visual inspection. Video from a professional ROV and a PVC pipe ROV were compared. Adult mussels migrated to the box. ROV footage showed algae discoloration, but the grid system restricted ability to count mussels. The inexpensive PVC pipe ROV worked as well as the professional-grade ROV for the purposes of monitoring mussel growth. Use of inexpensive ROV technology is a viable option for mapping the effects of mussel growth on underwater archaeological sites.

Mentors: Mark Schwartz, Mark Gleason

HENRY HALL ATRIUM 72

Status of Reintroduced American Marten in the Manistee National Forest Within Michigan's Northern Lower Peninsula

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

Presenter: Julie Watkins

We conducted a pilot study investigating the genetic structure of American marten (*Martes americana*) populations in Ward Hills and Caberfae in the Manistee National Forest. Using live traps, we captured 5 females and 6 males and drew blood samples for genetic analysis. Hair snares were also deployed in Caberfae resulting in samples from 17 red squirrels, 10 rodent and 8 possible marten. We extracted DNA from blood samples and amplified 5 microsatellite loci using the polymerase chain reaction. Using the program KINSHIP, we determined whether pairs of individuals were more likely to be parent-offspring, siblings or unrelated. We found 3 in Caberfae and 2 in Ward Hills who were likely to be parents and offspring, and 5 in Ward Hills that were more likely to be full-siblings. We calculated FST and found it was 0.14 with a p-value of 0.05, indicating that there was moderate genetic differentiation between the sites which suggests restricted dispersal and some loss of genetic diversity.

Mentors: Paul Keenlance, Joseph Jacquot

HENRY HALL ATRIUM 73

Parental Decisions and Paternity in the Yellow Warbler

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

Presenter: Julie Watkins

Yellow Warblers (*Dendroica petechia*) are socially monogamous within a breeding season, and both parents care for the young. However, both males and females participate in extra-pair copulations, which may result in mixed paternity broods containing offspring of the social father as well as extra-pair offspring from other males. Eggs are laid over a 5-6 day period and males preferentially feed larger young who hatch from earlier eggs. This may be an adaptation to bias investment toward their own offspring if larger chicks are more likely to be their genetic progeny. We will genotype 200 offspring and adult males at 8 microsatellite loci using the polymerase chain reaction. Based on the genotypes of the males and offspring, we will determine which offspring resulted from extra-pair fertilizations, whether extra-pair offspring are more likely to be large or small, and whether males can use offspring size as a cue to successfully bias their investments toward their own offspring.

Mentor: Michael Henshaw

HENRY HALL ATRIUM 74

Homelessness: Media's Role in Blaming the Individual

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

Presenter: James Munson

With homelessness on the rise and shelters at full capacity, it is becoming long overdue to understand how people get into such poverty-stricken situations and why these outcomes are often misunderstood. Unfortunately, much of the information we receive comes from the media, an inconsistent source at best that manages to have a significant influence in conditioning people's beliefs. By incorporating the theory of intersectionality into a qualitative content analysis study of The New York Times, Washington Post, and Chicago Sun-Times, I'm interested in determining how newspapers use words and images to explain the causes of homelessness. Although newspapers do not represent the entire media, they play a significant role in promoting America's dominant ideology, and thus become a great place to start in unraveling all the misconstrued notions.

Mentor: Jennifer Stewart

HENRY HALL ATRIUM 75

Interpreting Continental Spreading Rates in Iceland using GIS

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

Presenter: Bruce Shultz

Iceland is located on the Mid-Atlantic Ridge and provides a unique view of the processes occurring at a divergent plate boundary. Global Positioning System Satellite data (GPS) have given geologists an accurate method to measure the motion of the spreading through real-time data collection. GPS data, collected by researchers in Iceland, will be used to investigate the past and present plate motion of the region and evaluate the rate at which Iceland is increasing in size. A Geographic Information System (GIS) will be used to analyze elevation, landsat imagery, GPS, and other data to better understand heat flow and ridge spreading rates.

Mentor: Peter Wampler

HENRY HALL ATRIUM 76

Regioselective Nucleophilic Ring Opening of Aziridines in the Synthesis of T1AM Analogues

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

Presenter: Jonathan Havenhill

Thyroxine (T4), the primary secretion of the thyroid gland, undergoes deiodination at target tissues to produce the potent agonist Triiodothyronine (T3). Recent work has identified a deiodinated and decarboxylated analog of T3, T1AM, which is a potent agonist of trace amine associated receptors. T1AM induces physiological effects opposite to those produced by the T3 and T4 hormones (Scanlan et al. 2004). Presently, a regulatory relationship between T1AM and the thyroid hormones requires a better understanding of the TAAR1 receptor and its ligands. Elucidation of a regulatory pathway could establish more comprehensive treatment options for thyroid-related disorders. Previous work has shown agonist/antagonist regulation of TAAR1 using the two enantiomers of apomorphine. This project describes the regioselectivity of nucleophilic ring openings on aziridines using p-methoxy phenol and presents the progress towards the synthesis of proposed TAAR1 regulators.

Mentor: Kathryn Remlinger

HENRY HALL ATRIUM 77

Using GIS to Predict Copper Deposits Associated with the Keweenaw Rift System

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

Presenter: Adam Mulling

The Keweenaw Rift system stretches across the North American craton with exposures in the Lake Superior region. Younger sedimentary rocks cover the majority of the rift, stretching from Kansas to Michigan. The associated mix of mafic to intermediate rocks can be identified by magnetic and gravity anomalies. The more dense, metal-rich rocks produce anomalously high gravity and magnetic fields. Metallic ore deposits are associated with the rift system; copper is found in Michigan's Upper Peninsula. The purpose of this project is to determine a set of criteria including geophysical, structural, and bedrock data that could allow for copper deposit identification and prediction. Geographic Information System (GIS) software will be used to identify commonalities among the copper deposits, as well as look for potential deposits in other parts of the Keweenaw Rift system.

Mentor: Peter Wampler

HENRY HALL ATRIUM 78

Characterization of Lethal Deficiencies in the Gi-alpha 65A Gene in *Drosophila melanogaster*

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

Presenter: Anthony Hage

P-element transposition is useful for generating new deletion mutations in *D. melanogaster* to increase our knowledge of specific genes and their roles in a variety of biological processes, including neurogenesis. Specific pHdc-5'UTR-eGFP transgene combinations had an effect on the histaminergic nervous system by eliminating histaminergic neurons in the central nervous system of *D. melanogaster*. One of these transgenes was inserted into the Gi α 65A gene, which has been implicated in the process of neural differentiation. Flies containing the pHdc-5UTR-eGFP transgene in Gi α 65A were exposed to the transposase source 2-3 to generate deletion events. Lethal excisions from of the Gi α 65A insert needed to be examined further for chromosomal abnormalities. Molecular analysis of the deletions that do not have obvious chromosomal aberrations will be carried out to determine where the deletion in the gene may be, and if there is an effect on the development of the histaminergic nervous system.

Mentor: Martin Burg

HENRY HALL ATRIUM 79

Training Biofeedback for Self-Regulation of Skin Temperature to Explore Induced Cooling of Hand from Artificial Limb Ownership

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

Presenters: Luke Larabee, Julie Miller

The purpose of this study is to explore if biofeedback training on skin temperature regulation can limit or override the effect of hand cooling during an experiment called the rubber hand illusion. Literature suggests training the brain to accept an artificial hand leads the vascular system of the experimental hand to constrict. This gives the subject a feeling of hand cooling. One participant in a single subject A-B-A design, will undergo three (3) segments of consecutive four (4) day sessions. Skin temperature measures will be recorded by three (3) thermistors and a data logger.

Mentors: James Scott, Gordon Alderink, Bradley Ambrose

HENRY HALL ATRIUM 80

Survey of Sexual Education

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

Presenters: Alyssa Kirschling, Elle Liquigli

Using a web survey conducted with college age students, this research seeks to assess the needs of young adults and with our findings, advise lawmakers about the effectiveness of Michigan's sexual health education standards. While sexual health education is a subject that has been debated politically and culturally, the scientific community has found in other US states, as well as other countries, that abstinence only education is not effective, the proposed research would add evidence to those claims, more specifically in the state of Michigan.

Mentor: Ayana Weekley

HENRY HALL ATRIUM 81

The Role of Textbooks: Does the Course Content or Faculty Member Matter?

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

Presenters: Jordyn Betz, Lacey Hamilton

The role of the textbook in college chemistry courses can be evaluated from two perspectives: How do students use the chemistry textbook and how do chemistry professors integrate the textbook into the course? It is also reasonable to think that the role played by the textbook might differ because of the course content. To determine the role the textbook played for faculty and students in general chemistry and organic chemistry, a semi-structured interview protocol was developed and refined by both researchers. Faculty were interviewed by one researcher and students by the other. Each group of interviews, faculty or student, were analyzed and themes emerged. A set of common themes were identified and used to analyze the pooled data. Similarities and differences between faculty and students perceptions of the role of the textbook and the role of the textbook in different courses have been identified.

Mentor: Thomas Pentecost

HENRY HALL ATRIUM 82

Lonely Boy: Parental Division of Labor and Single-Parenting in Convict Cichlids (*Amatitlania nigrofasciata*).

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

Presenter: Lindsay Stoyka

Fish aerate and guard embryos, and may transmit beneficial microbes to them. Wild convict cichlids provide biparental care with marked division of labor. We investigated whether parental specialization persisted in experimental conditions, and if males and females continued care if the other parent was absent. In one experiment, we divided broods, rearing half with both parents, but sequestering the other from parental contact. In another, we divided broods, rearing half with the female and half with the male. When paired, females remaining near and frequently contacted broods while males were vigilant- similar to parents in wild populations. Single males remained nearer offspring compared to paired males. Females (vs. males) consistently contacted offspring more frequently, and patrolled more when alone vs. paired. Behavioral flexibility helps parents rear broods to independence, and demonstrates that either parent could provide bacterial inocula for transmission.

Mentor: Jodee Hunt

HENRY HALL ATRIUM 83
Perspectives of Student Mentors and Non-Student Mentors
Participants attending from 11:00 a.m. until 12:00 p.m.
Presenter: Chelsey Colley

The main focus is to compare the perceptions of student mentors and non-student mentors about the impact of relationships. This research will compare the perceptions of the importance of relationships, a foundational premise in mentoring. A survey will be developed and disseminated to students that have been formally trained, from a relational perspective, to be a mentor, and individuals who mentor that have no relational training.
Mentor: Kathleen Bailey

HENRY HALL ATRIUM 84
Effect of Visual Feedback On Grip Strength as Measured by an Analog Dynamometer
Participants attending from 12:00 p.m. until 1:00 p.m.
Presenters: Jared Weber, Jessica Brennan, Jeffrey Wagner

The purpose of this study was to determine if visual feedback from an analog hand grip dynamometer had a significant effect on grip strength scores. Some past studies have found a differences between feedback and strength scores, while others did not discover any significant results, though they did not all use the same kinds of dynamometers. In order to search for differences, we tested participants' grip strength over the course of several trials. In half the trials, they were allowed to look at the dynamometer reading while performing the test, and in the other half the reading was made unavailable. We then contrasted the results to search for differences between the feedback conditions.
Mentors: Bradley Ambrose, James Scott, Gordon Alderink

HENRY HALL ATRIUM 85
Gravitational Collapse in Anti de Sitter Spacetime
Participants attending from 3:00 p.m. until 4:00 p.m.
Presenter: Eric Van Oeveren

Since Oppenheimer and Snyder first studied the collapse of stars under their own weight in 1939, many other studies on gravitational collapse have been performed. In this project, we study the gravitational collapse of pressureless dust in AdS spacetime. This project compares and contrasts the redshift of null rays emitted from an infalling dust cloud in this Schwarzschild AdS spacetime to that of an ordinary Schwarzschild spacetime.
Mentor: Brett Bolen

HENRY HALL ATRIUM 86
Using Census Data to Formulate Recommendations on how Non-Governmental Organizations (Not-for-Profit Organizations) Could Prioritize Areas with Most Need in Kenya
Participants attending from 11:00 a.m. until 12:00 p.m.
Presenters: Josh Ostrenga, Sara Yakamovich, Brian Mullen

Our goal is to identify which of the eight regions in Kenya need the most help from a non-governmental organization based on the data from the Kenya National Bureau of Statistics and census data from the Library of Congress. The topics of interest include poverty, environment/arable land, food, clean water, and AIDS/disease. We outline a suitable data cleaning approach and apply appropriate inferential statistical techniques to determine the differences between the regions.
Mentor: Sango Otieno

HENRY HALL ATRIUM 87
A Bacteriophage Screening System for Novel Anti-Virals
Participants attending from 10:00 a.m. until 11:00 a.m.
Presenters: Chelsey Colley, Magee Shreeve

Bacteria from soil have been a rich source of antibiotics in the past. However, antibiotics are not useful in viral infections and their use in those cases contributes to antibiotic resistance. There are a limited number of antiviral chemotherapeutic agents. It is possible that soil bacteria may also be a source of anti-virals. We are developing a screening assay for these agents. Other interesting questions can be asked with this assay, such as screening for other bacterial communication chemicals and their functions.
Mentor: Steven Hecht

HENRY HALL ATRIUM 88
Familial Similarities in the Acoustic Vowel Quadrilateral
Participants attending from 9:00 a.m. until 10:00 a.m.
Presenters: Rebecca Beebe, Thomas Beebe

This poster will report on the similarities of vowel production in an extended family unit. Seven members of a family from west Michigan produced the four corner vowels (beet, bat, boot, bot) into an acoustic analysis software package. The resulting first and second formants for each vowel were recorded and plotted on a F1xF2 graph. The plots for each vowel were connected forming quadrilaterals for each family member. Many of the quadrilateral plots were the same across family members or within one SD of the mean. The vowel quadrilateral plots for the family members were all distinctly different from plots from persons outside the family, such as other class members.
Mentor: Beth Macauley

HENRY HALL ATRIUM 89
Required Modifications for the Expression and Purification of the E290K Mutant of Horse Heart Cytochrome C Peroxidase.
Participants attending from 1:00 p.m. until 2:00 p.m.
Presenter: Garrett MacLean

Expression of mutant horse heart cytochrome c peroxidase (HH CcP) was carried out using a recombinant bacterial expression system. Crystallization of HH CcP mutant E290K was realized with the formation of purified protein crystals. Although crystallization of this mutant was attained other mutant strains were found to be less receptive of the techniques used during the early stages of isolation. Crystal size was found to be diminutive and recrystallization for the sample will need to be performed to increase crystal dimensions for crystallography to be performed. Further development and honing of the procedures for cell cultures, protein isolation and purification was carried out through acclimatizing prior procedures to attain improved realizations of product though each stage of product collection.
Mentor: Cory DiCarlo

HENRY HALL ATRIUM 90
Dendrochronology Aids in Understanding Overall Changes to the Ravines at GVSU Allendale Campus
Participants attending from 4:00 p.m. until 5:00 p.m.
Presenter: Amber Strick

Dendrochronology is the careful measurement and analysis of the distinct rings which form each year a tree is alive. This determines a date which can be used for archaeological sites, to calibrate a radiocarbon date, or to determine environmental or climate variations in the past. The Allendale

campus of GVSU has expanded through the addition of buildings and parking lots. The amount of water going almost directly into the ravines has changed dramatically as a result. Dendrochronology of both living and dead trees in the ravines can provide a temporal record of runoff and erosion changes. Core samples of trees will be taken in the ravines at sites located with a Global Position System (GPS). Digital photographs of the samples will be taken and photos will be referenced using a Geographic Information Systems (GIS). GIS will allow accurate measurements of rings for each sample and image enhancements will allow subtle features to be highlighted and analyzed.

Mentor: Peter Wampler

HENRY HALL ATRIUM 91

Initial Cell Size Affects the Hormone Response in *Physcomitrella patens*

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

Presenter: Anthony Hansen

How cells perceive and respond to hormones is largely unknown, although their role in development is crucial. When initial cells of the moss, *Physcomitrella patens*, are exposed to the plant hormone cytokinin, normal tip growth transitions into the development of a leafy gametophyte. In order to study this signaling process, a mutant was identified which produces initial cells unable to respond to cytokinin. These initial cells appear to grow much faster than those of the wild type, which potentially removes the window of competency for response to the hormone. TAIL PCR was used to determine the sequence upstream of the insertion site and identify the locus. The locus does not appear to contain coding sequence, but does include retrotransposon sequence and 10bp tandem repeats, which precludes reconstruction of the mutant. Instead, formation of initial cells will be monitored to characterize the mutant in an effort to understand what confers competency for the cytokinin response.

Mentor: Margaret Dietrich

HENRY HALL ATRIUM 92

The Stirling Cycle Engine

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

Presenter: Mark Vandervelde

A small beta configuration Stirling cycle engine of approximately 6 cubic inches of displacement was constructed. The engine was operated at atmospheric pressure. Heat was provided by an electric element with voltage and current measured in order to monitor the power input to the engine. Pressure and the temperature of various components were also logged to facilitate the calculation of performance and efficiency. The power output was measured by means of a deProny brake. Comparison between the calculated theoretical efficiency and the actual efficiency was made and possible causes for the discrepancy explored.

Mentor: Ross Reynolds

HENRY HALL ATRIUM 93

Ancient Migrations into Eurasian Steppe Revealed by Genetic Analysis of Ancient mtDNA

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

Presenter: Jessica Riley

The study of human DNA helps to understand human migratory patterns throughout the past. By analysis of the maternally inherited mitochondrial genome (mtDNA), phylogenetic relationships between geographically distinct populations can be deduced through region-specific mtDNA lineage (haplogroup) assignment. The analysis of mtDNA lineages extracted from the remains of seven specimens from three pre-historic burial mounds in southern Ukraine has given us greater understanding of the magnitude of prehistoric migrations

during a time of cultural, technological and ecological change. By piecing together the archeological details of individual burials and the geographic origins of mtDNA lineages, we see a dynamic continuum of long distance human travel to the Black Sea from as far as Siberia and Central Asia, likely precipitated by a cooling environment and sustained by stockbreeding and the new power of copper trade.

Mentor: Alexey Nikitin

HENRY HALL ATRIUM 94

Down-Regulation of Genes Are Associated with Metastatic Prostate Cancer

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

Presenter: Mary Durston

The metastasis tumor suppressor protein CD82 is down-regulated in prostate cancer. Microarray studies have been done on CD82(+/-) cells in both tumor and prostate cancer cells. CD82 re-expression has been shown in microarray data to regulate other genes involved in the suppression of metastasis which include: ITGA1, BST2, and MMP10. ITGA1, BST2, and MMP10 were seen to be down-regulated in the microarray data and this data will be validated using Q-PCR. ITGA1 encodes the alpha 1 subunit of integrin receptors which is involved in integrin mediated cell-cell adhesion. BST2 encodes the bone marrow stromal cell antigen which may be involved in B-cell development. MMP10 encodes the matrix metalloproteinase 10 which is involved in the breakdown of extracellular matrices. We expect to see the same pattern of expression with these three genes (ITGA1, BST2, and MMP10) with the Q-PCR that were seen in microarray data.

Mentor: Suganthi Sridhar

HENRY HALL ATRIUM 95

The Synthesis and Testing of GV-2 Chemical Derivatives for Antibacterial Derivatives

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

Presenter: Joseph Baumann

Infectious disease prevails in being one of the leading health concerns worldwide due to antibiotic resistant organisms and their growing ability to adapt and spread in hospitals. Antibiotic resistant strains of Gram-positive bacteria such as methicillin resistant *Staphylococcus aureus* (MRSA) and *Vancomycin enterococci* (VRE), have been steadily increasing since 1972 because of improper and excessive use of antibiotics, contributing to the ability of the bacteria to adapt to the antibiotic. The research project focused on developing a series of new antimicrobial compounds and testing their activity against antibiotic resistant Gram-positive bacteria. New derivatives of an antibacterial base chemical structure were created by attaching a carbon aliphatic chain of varying lengths onto methylantrinic acid (the base structure). These compounds inhibited the growth of *S.aureus* bacteria with minimum inhibitory concentration (MIC) values ranging from 8-128 Å¹/4g/ml.

Mentors: Rod Morgan, Robert Smart

HENRY HALL ATRIUM 96

Synthesis of Multidentate CMPO Ligands for Heavy Metal Ion Chelation

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

Presenters: Michael Peruzzi, Hope Sartain, Charles DeLisle

The chelation of heavy metals has a wide variety of applications, including nuclear waste remediation and MRI imaging. Carbamoylmethyl phosphine oxides (CMPOs) have been used as bidentate chelating agents for the removal of lanthanides and actinides from aqueous solutions. Our group is interested in exploring the use of CMPOs to sequester a broader range of metals. This approach takes advantage of the chelate effect through the synthesis of tripodal CMPO ligands. Current efforts toward the synthesis of these compounds will be described.

Mentor: Shannon Biros

HENRY HALL ATRIUM 97
Acquisition of WH-question Formation by Chinese Learners of English
Participants attending from 9:00 a.m. until 10:00 a.m.
Presenters: Sara Mock, Daniel Cisse

This analysis is based on errors in wh-question (what, where, when, why, who, which, how, whether, etc.) formation made by Chinese learners of English. The first part is to determine if there is statistically significant evidence to confirm the assumption that the students in two classes were at a higher proficiency level in English than the students in two other classes. The second part is to determine if there are differences between the seven types of errors made when forming wh-questions within and between the two proficiency levels.
Mentors: Shinian Wu, Sango Otieno

HENRY HALL ATRIUM 98
“Ser Hispano es Cool Because...” Perceptions of Spanglish in the Media
Participants attending from 9:00 a.m. until 10:00 a.m.
Presenters: Jason Michalek, Alex Mason

With the Hispanic population becoming the United States’ largest minority, the use of Spanish-English code-switching, or Spanglish as many call it, is on the rise. The controversy about Spanglish as a legitimate language variety is hotly debated among scholars and the public. This study examines perceptions and language attitudes surrounding Spanglish by looking at the use of Spanish-English code-switching in a major advertising campaign, and opinions surrounding the usage of Spanglish through the social media of Facebook and Twitter. Using Preston’s (2002) research on perceptual dialectology, Jane Hill’s (2008) research on Mock Spanish, and Zentella’s (1997) anthro-political linguistic perspective as a base, this research explores what symbolic linguistic capital Spanglish holds, how the media uses and perpetuates perceptions of Spanglish, and how well those perceptions are grounded in linguistic evidence.
Mentor: Kathryn Remlinger

HENRY HALL ATRIUM 99
Structure and Function of AmpC β -Lactamases
Participants attending from 4:00 p.m. until 5:00 p.m.
Presenter: Vincent Baggett

β -lactamases are enzymes that are produced by bacteria that hydrolyze the β -lactam ring in many different types of antibiotics (such as amoxicillin, cephalosporin, etc.) and thus play an important role in antibiotic resistance. These clinical applications are primarily focused on determining how to inhibit this hydrolysis and ultimately sustain the antibiotic well enough for it to complete its intended use. The research project in question has been focusing on AmpC, which is a class C β -lactamase that can inactivate a range of known antibiotics. AmpC has been the focus for research due to the fact that, in a similar class C enzyme, P99, a mutant at the asparagine-152 residue has been found to completely change the profile of antibiotics that can bind in the active site. Using a combination of site-directed mutagenesis, protein purification, enzyme kinetics, and x-ray crystallography, we have been developing a structure-function relationship for the asparagine-152 residue.
Mentor: Brad Wallar

HENRY HALL ATRIUM 100
Co-Crystallization of Human Cdc7-Dbf4
Participants attending from 12:00 p.m. until 1:00 p.m.
Presenter: Raymond Yeow

Cdc7-Dbf4 (DDK) is a two-subunit protein required for DNA replication. This protein is overexpressed in cancer cells and thus could be an important therapeutic target. The goal of this project is to purify significant amounts of DDK for crystallization with stabilizing inhibitors to gain structural information about the DDK-inhibitor complex. Stabilizing inhibitors are important for crystallography because they help create a homogenous sample of protein, making it more likely for crystals to form. An optimized and truncated version of DDK was purified and used for crystallography screening. However, heterogeneity of the complex due to autophosphorylation prevented crystallization. Currently, we are optimizing the purification of DDK to yield untagged and dephosphorylated protein for future crystallography screens. The crystallization of DDK will provide us with the foundation to crystallize DDK-inhibitor complexes, which will aid in the potential design of other inhibitory ligands.
Mentor: Brad Wallar

HENRY HALL ATRIUM 101
Body Parts Correlates to a Hundred Early-Learned Verbs
Participants attending from 9:00 a.m. until 10:00 a.m.
Presenters: Daniel Lucas, Taylor Moore, Meghan Nesheim, Branden Braun, Patrick Karabon, Amber Sepsey

We commonly believe that verbs are about action, but are they also about body parts? We kiss with our lips, kick with our legs, and think with our heads. Our question is whether children systematically associate verbs to specific body parts. So far, theoretically, the original components of verbs include: contact, path, goal, source, state of mind, and manner (Kemerer, 2008). Our study adds the component of body parts. Sixty children were tested, 20 verbs at a time, with a total of 102 verbs. They were asked which body part they use with a given verb. The results indicate that 91 verbs out of 102 (86.6%) were related to one body region by 50% of the participants. Further, a correspondence analysis (a dimension reduction technique) showed that children systematically associate verbs with five main body regions: hands (55% of the verbs), legs (13%), mouth (14%), eye (6%), and ear (2%) and these correspond to the exact same regions proposed by adults from a previous study.
Mentors: Sango Otieno, Josita Maouene

HENRY HALL ATRIUM 102
Effects of Emotional vs. Logical Processing and Messages on Skin Cancer Risk Behaviors
Participants attending from 10:00 a.m. until 11:00 a.m.
Presenters: Molly Graham, Tara Ouillette

The purpose of this study was to test the effects of different information processing and formats in communicating the risk of skin cancer. College student women who reported indoor tanning in the past were randomly assigned to read a narrative about a similar other or a bulleted list of facts about skin cancer. Both formats included the same factual information. Additionally, participants were randomly assigned to one of two instruction primes: they were asked to process information rationally (based on logic and reason) or experientially (based on emotions and experiences). We then tested the effects and interactions of these factors on knowledge about skin cancer, risk perception, and behavior intentions related to tanning in the future.
Mentor: Amanda Dillard

KIRKHOF CENTER KC1
The Influence of Hip and Shoulder Range of Motion on Shoulder Function in Baseball and Softball Players
 Participants attending from 10:00 a.m. until 11:00 a.m.
 Presenter: Alison Reddick

Baseball and softball players throw thousands of times in and out of season, thus exposing themselves to the risk of overuse injuries. A single pitch produces stress on a baseball players' arm that often reaches near the point of tissue failure in highly-skilled athletes. However, overhead throwing moves beyond the arm and involves synchronized motion of the hip, torso, and upper extremity; hip activity significantly impacts the power and motion generated in the upper body. Previous studies have considered the relationships between hip and shoulder range of motion and rates of shoulder injury or level of performance in professional baseball players and found significant correlations. The current study investigated the differences in hip and shoulder range of motion between collegiate baseball and softball players with and without a history of injury so that future healthcare professionals can recognize and treat conditions which may predispose the athlete to injury.
 Mentor: Brian Hatzel

KIRKHOF CENTER KC2
Cellular Regulation of the Formin Protein, DAAM1
 Participants attending from 3:00 p.m. until 4:00 p.m.
 Presenter: Nicholas Florek

Formins are a family of proteins responsible for cytoskeletal organization by playing an integral role in actin nucleation and polymerization. Dishevelled-Associated Activator Morphogenesis 1 (DAAM1) is a formin found in all mammalian organisms and consists of several domains. Two of these domains, the Diaphanous Autoregulatory Domain (DAD) and the Diaphanous Inhibitory Domain (DID) bind to each other to inactivate the protein. Activation occurs when DID-DAD interactions are disrupted by the binding of active Rho GTPase to the N-terminus of DAAM1. Once activated, DAAM1 is believed to act as a guanine nucleotide exchange factor (GEF) for the Rho GTPase. However, a new possible component of this pathway, a known Rho GEF, NET1, could be activating Rho instead of DAAM1. An alternative binding relationship was discovered between DAAM1, Dvl, and NET1. Being a known Rho GEF makes NET1 a strong candidate in Rho activation, leading to a new role in cytoskeletal regulation.
 Mentor: Brad Wallar

KIRKHOF CENTER KC3
"1 - 30 odds" Not in My Classroom: Innovative Activities for Algebra I Students
 Participants attending from 1:00 p.m. until 2:00 p.m.
 Presenter: Cassandra Becker

If you were to ask a student what his or her least favorite subject is, you would not be surprised to hear that it is math. Math is very difficult for many students and can also be incredibly boring. They may find lectures to be boring and the homework to be long and tedious. I do not want my students to feel this way about the subject which brings me so much joy. For as long as I can remember, I have told myself that I will not be that teacher who assigns 30, or even 15, repetitive book problems as homework. I believe this is not effective for several reasons. Therefore I want to establish alternative homework and class work assignments for my students to complete. I think these will be more interesting to my students, which means they will put more time and effort into completing the assignments. I also think that the lessons will demonstrate how mathematics can be used to model real world phenomena rather than just the plug and chug method so many of us grew up with.
 Mentor: John Golden

KIRKHOF CENTER KC4
Bone Densities of the Frontal and Maxillary Sinuses, Determined by CT Scans to Aid in Limiting Complications of Endonasal Sinus Surgery
 Participants attending from 10:00 a.m. until 11:00 a.m.
 Presenter: Megan Glazier

Endonasal sinus surgery (ESS) is a common surgical procedure that is used to relieve chronic, problematic conditions associated with the paranasal sinuses of the cranium. A potential complication that can arise during ESS is damage to the bone surrounding the sinus. Previous research has shown that x-rays can be used to determine areas of the sinus wall to avoid during ESS (Sprinzl et al., 1999). A more accurate means of determining least-dense bone is to use CT, which images the body based on tissue density. Presented here are the results of an examination of 36 cranial CT scans provided by Saint Mary's Healthcare System, depicting all age groups and both sexes. Using analytical software (Amira 3.5), the bone density surrounding the maxillary and frontal sinuses were examined and the least-dense portion of bone was determined using Hounsfield Units (HU's). By determining the bone density by an absolute measure, the area of bone to avoid during ESS can be delineated with accuracy.
 Mentor: Chris Reed

KIRKHOF CENTER KC5
Periodization of a Mixed Martial Arts Fighter
 Participants attending from 1:00 p.m. until 2:00 p.m.
 Presenters: Nick Ballard, Zachary A Pellegrini

Mixed martial arts (MMA) is a combat sport that takes serious mental devotion and training. The purpose of this research was to examine the periodization of a strength and conditioning program for MMA. Research revolved around MMA training is fairly limited because of the recent popularity of the sport. Research has been conducted to investigate the best ways to prevent injuries and increase performance. One limitations was that testing occurred in consideration of the subject's schedule, resulting in an inconsistent testing pattern. It is important to study the periodization of a strength and conditioning program for a MMA fighter to determine the most efficient way to train and to develop a fighter to peak at his next competition. This presentation is important because it strives to apply the four periods of a traditional periodization program for an individual fighter.
 Mentor: Amy Crawley

KIRKHOF CENTER KC6
Arctic Ecology in West Michigan Classrooms
 Participants attending from 12:00 p.m. until 1:00 p.m.
 Presenter: Jennifer Liebig

The Arctic Ecology Program (AEP) at GVSU is led by Professor Bob Hollister and includes both graduate and undergraduate students. Though the main emphasis of the AEP is on tundra research in northern Alaska, the program also participates in outreach activities in Michigan. Outreach activities are intended to educate students about science in general and the Arctic in particular. To evaluate the success of these efforts, a short test consisting of questions about students' knowledge of the Arctic and ideas about science is administered twice: both before and after the outreach event. An event taking place on February 20th 2012 at Great Lakes Elementary school in Holland, Michigan will use these assessment tools. Groups of third-grade students will be presented with a short photo-based lecture and participate in hands-on activities. We will use the pre-test and post-test to track changes in the students' knowledge about the Arctic and attitudes toward science.
 Mentor: Robert Hollister

KIRKHOF CENTER KC7

Changes in Vascular Reactivity of Mesenteric Porcine Arteries Following Hyperbaric Treatment

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

Presenter: Benjamin Hake

The objective of this study was to evaluate the changes in vascular reactivity of mesenteric arteries resulting from hyperbaric oxygen treatment. It was hypothesized that hyperbaric oxygen treatment differentially alters vascular reactivity in mesenteric arteries. Arteries from porcine mesentery were dissected and then subjected to a 2-hour hyperbaric treatment in 100% oxygen, 100% nitrogen, or room air at 1.75 ATA. Following a 1-hour equilibration in Krebs-Henseleit solution arteries were treated with potassium chloride to assess viability. Subsequently, arteries were treated with increasing concentrations of phenylephrine and then sodium nitroprusside to measure changes in vascular reactivity. Treatment with hyperbaric oxygen augmented vascular responses to phenylephrine and sodium nitroprusside when compared to arteries treated with hyperbaric nitrogen. The results from these studies provide basic insight into the physiological effects of hyperbaric oxygen treatment.

Mentor: Francis Sylvester

KIRKHOF CENTER KC8

Rethink Autism Pilot Study

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

Presenters: Taylor Thorpe, Lauren Briggs

The Rethink Autism online curriculum program was implemented at two sites with students diagnosed with Autism Spectrum Disorders ranging in age from 2-4 years with varying levels of skills, and was used as a guide to identify target goals for the students. The program is targeted towards parents and individuals with varying experience in Applied Behavior Analysis (ABA), and is designed to be implemented in home, school, or therapy settings. Two GVSU students served as instructors for this pilot program, and were supervised by GVSU professors, a teacher, and school psychologist. The GVSU instructors spent 45 minutes to one hour twice a week with each student in one-on-one sessions, and student responses were recorded using data collection sheets provided by the Rethink Autism website. Sessions were designed to increase functional skills and to demonstrate that the program can be implemented successfully with minimal ABA training or experience. Results are currently being collected.

Mentor: Amy Matthews

KIRKHOF CENTER KC9

Positronium Decay Rates in Gases

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

Presenter: Jacob Voetberg

Theoretical work on the heavier noble gases, xenon in particular, has suggested that the temperature dependence of the rate at which orthopositronium (o-Ps) decays is non-linear with increasing temperature. However, there is little experimental data on the heavier noble gases to support the theory, and the data that does exist is inconclusive. This non-linearity is in opposition to both the theoretical and experimental work on the lighter noble gases like helium, neon and argon, which have shown a linear dependence with respect to temperature. The goal of this experiment is to investigate the temperature dependence of the decay rate of o-Ps in xenon gas. We will use a high-pressure gas cell with a positron source inside as the basic setup of the experiment. So far, design and construction has been completed on the temperature control system, including the temperature controller electronics, the heaters, and the insulated housing for the gas cell.

Mentor: Richard Vallery

KIRKHOF CENTER KC10

GIS Investigation, Evidence for Active Folding, Apsheron Peninsula, Azerbaijan

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

Presenter: Caitlin Leslie

The Apsheron Peninsula, Azerbaijan and neighboring South Caspian Basin have many anticlines (upfolds) that produce significant quantities of oil. It is currently unknown whether folding is actively occurring in this region. I will study the Yasamal anticline in the semi-arid Apsheron peninsula using GIS to look for evidence for active folding. I use GIS to investigate the morphology and gradients of the streams flanking and crossing the anticline and map how they vary across the structure. I will use digital elevation models, aerial photos, satellite images, and a geologic map as base layers for my research. Preliminary GIS analysis and data layers will be supplemented with forthcoming thermochronology results from a suite of U-Th-He samples, which will be used to establish the timing of unburial and exhumation of the Apsheron anticlines.

Mentor: Peter Wampler

KIRKHOF CENTER KC11

Aging and the Comprehension of Narrative Film

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

Presenters: Lillian Asiala, Jordan Duff, Steven Mills

A recent theory of event segmentation states that during the perception of ongoing activity, individuals construct and update event models in working memory. This occurs by dividing activity into units (or events) and updating working memory representations at the boundaries between these events. Previous research shows that younger adults tend to segment continuous, everyday activity better than older adults, showing better agreement with group norms on the temporal location of event boundaries. However, past research has also shown that older adults have a preserved ability to comprehend events in narrative text. The present experiment tested whether age differences exist within the segmentation of ongoing activity in narrative film, and how they may differ. Results showed minimal age differences in segmentation between age groups. This supports the possibility that narrative structure may serve to support the comprehension of continuous activity for older adults.

Mentor: Christopher Kurby

KIRKHOF CENTER KC12

Expression and Characterization of the Beta-Lactamase, ADC-7

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

Presenter: Alexander Porambo

β -Lactamases are bacterial enzymes that are responsible for much of the antibiotic resistance that exists in human health. While there are numerous β -lactamases that have been identified and characterized. One relatively new β -lactamase enzyme is ADC-7 (Acinetobacter-derived cephalosporinase-7); isolated from Acinetobacter bacteria that are emerging as opportunistic hospital pathogens demonstrating resistance to many antibiotic classes. In order to isolate and characterize ADC-7, we are using molecular biological techniques to generate a specific ADC-7 construct that will allow for the purification of large amounts of ADC-7 protein. This will provide enough ADC-7 for structural determination by X-ray crystallography. In addition, the pure ADC-7 enzyme is being subjected to kinetic assays to measure its ability to resist an array of antibiotics. Hopefully, our work to develop a structure/function relationship for ADC-7 will provide insight into bacterial antibiotic resistance.

Mentor: Brad Wallar

KIRKHOF CENTER KC13

Effects of Resistance Training on Batting Percentages of College Baseball Players

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

Presenters: Kelsea Perrin, Kenzie Fox

It's outta here! When a batter hits a home run, this is the most iconic phrase in baseball. But what influences a batter to hit well? The purpose of this study was to examine the effects resistance training has on batting percentages. Previous research has shown that free weights are most beneficial in resistance training for batters because they are more functional and allow for greater range of motion, unilateral development, and involvement of the shoulder-stabilizing muscles. Plyometric training was completed to improve lower body power. Speed drills were also done with resistance, in order to improve bat velocity. The major limitation to this study was that only college males were able to participate, this does not allow for gains in knowledge of the whole spectrum of ages for players. Developing a successful training regime to improve batting averages and increase injury prevention would increase wins for future teams, as well as success and career longevity for players.

Mentor: Amy Crawley

KIRKHOF CENTER KC14

When Death Looms...Go Top Shelf: The Effect of Mortality Salience on Consumers Desire for High Status Products

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

Presenters: Chelsea Atzinger, Erin Haley

Consumers surround themselves with material goods and experiences. Terror management theorist have long argued that material goods may be one means through which individuals seek to assuage death anxiety (Belk, 1988; Mandel & Heine, 1999). This study investigated the relationship between mortality salience and mood regulation on consumers' desire to purchase high and low status goods. Results show that mortality (vs. control) salience enhanced people's desire to purchase high status consumer goods. While salience and mood regulation did not interact, decreased mood regulation was related to increased preferences for high status products. Implications with respect to terror management theory and consumer behavior are discussed.

Mentor: Todd Williams

KIRKHOF CENTER KC15

Defining the Mechanistic Pathway of the Antibiotic Resistance Enzyme OXA-1 β Lactamase

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

Presenter: Zoe Kilbourne

β -lactam antibiotics, such as penicillin, are the biochemical key to preventing bacterial infections. As a result of the expression of four classes (A-D) of β -lactamase enzymes, bacteria have developed increased resistance to these antibiotics. Class D β -lactamases are characterized by a serine nucleophile activated by an atypical carboxylated lysine acting as the general base. Little is known about the enzymes' initial recognition of its β -lactam substrate and the subsequent mechanistic pathway. Of the nearly 160 known Class D β -lactamases contributing to resistance in bacterial infections like *Pseudomonas aeruginosa*, OXA -1 represents a subclass exhibiting increased activity against the beta-lactam antibiotic oxacillin. Using a mutant OXA-1 (Ser67Gly), the structure of the enzyme complexed with the hydrolyzed oxacillin product was determined to 1.2 Å resolution. This atomic-level structure provides insight into the nuances of Class D beta-lactamase mechanism.

Mentor: Rachel Powers

KIRKHOF CENTER KC16

Gender Biases in RateMyProfessors.com Student Evaluations of Professors: An Archival Study

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

Presenter: Melissa Parrott

Previous research has shown that evaluations of professors have had racial and gender biases based on numbered ratings of things like overall quality and easiness (Sonntag et al. (2009); Reid, 2010). Using a coding method and archival data of previous evaluations of full-time professors at Grand Valley State University, we're going to look at the choice of wording used in each evaluation in the past 6 months. Based on previous theory and research, we can expect to see more gender stereotypes held in evaluations of female professors and more achievement-related words and phrases for male professors. Mentor: Ellen Shupe

KIRKHOF CENTER KC17

What Happens When Molecules Collide? (Measurement of a Pressure-Broadening Coefficient)

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

Presenters: Stephanie Pierson, Trent Mazer

In order for any chemical reaction to take place, molecules must collide with each other. Our goal is to closely examine what is happening when they do. What we are studying is a molecular parameter called the 'pressure-broadening coefficient'. What we want to know is: as we increase the pressure, how does the absorption spectrum change? As it turns out, the effect of pressure on spectral line width is measurable, and that is what the 'pressure-broadening coefficient' (PBC) quantifies. We are currently using a very precise, home-built laser spectrometer to determine the PBC for carbon monoxide with neon as the colliding gas, and we hope to use the same technique to determine the PBC for collisions with other molecules/collider pairs that have not yet been closely studied. The PBC can then be used to give information about energy transfer during the collision step of chemical reactions.

Mentors: George McBane, Stephanie Schaertel

KIRKHOF CENTER KC18

A Genetic Analysis of Native and Invasive *Phragmites australis* along Michigan's West Coast

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

Presenter: Grady Zuiderveen

Wetland habitats are increasingly threatened by invasive plant species, particularly common reed. *Phragmites australis* (common reed) consists of a native North American group with several genetic forms, and a non-native and highly invasive introduced group with a single genetic form. Little is known about the environmental factors that affect the distribution of either form of *Phragmites*, and it is difficult to differentiate between the two based on physical characteristics alone. Thus, the goals of this study are to: 1. determine the genetic composition of common reed populations along the west Michigan coast, 2. determine the current distribution of the exotic *Phragmites*, and 3. evaluate the importance of genotype in the distribution and abundance of the native common reed. Preliminary analyses indicate that nearly all populations of *Phragmites* in western Michigan are of the non-native genotype, with a single native genotype being found in the northern lower peninsula.

Mentor: Timothy Evans

KIRKHOF CENTER KC19
Don't Spray Wasps! Using Polistes Paper Wasps for Pest Management in the Home Garden.
Participants attending from 9:00 a.m. until 10:00 a.m.
Presenter: Laura Goldsmith

Pest control poses a challenge to gardeners, especially those using organic practices. Polistes wasps are important predators of soft bodied pest insects, consuming 1000's per season. We investigated whether Polistes wasps were effective control agents in small organic gardens. We planted 8 garden plots with lettuce, cabbage, beans and tomatoes and established 8 Polistes dominulus nests in 4 of them. We did not observe any differences between the experimental and control plots in the abundance of pest insects, the extent of damage, or the weight of the plants at harvest. However, we did find that cabbage plants from plots with more wasps had less insect damage than plants from plots with fewer wasps. Although our study appears to demonstrate that Polistes wasps were not effective in controlling pests, the observation that wasp number influenced damage levels in cabbage suggests that, at least for that crop, there is a density of wasps that can be effective.
Mentor: Michael Henshaw

KIRKHOF CENTER KC20
Improving Strength and Power in the Short Off-Season of a Collegiate Tennis Player
Participants attending from 11:00 a.m. until 12:00 p.m.
Presenters: Amanda Frazier, Justin Boyd

What is more important in tennis: strength and power, or strategy? All are components to being a successful player, but as time has progressed, strength and power have become increasingly more prominent for tennis players. Collegiate players have a year round competitive season. Very little time is left for training off-season. This makes the program more crucial for the athlete, due to the lack of time to improve their strength and conditioning. Based on previous literature, a periodized, year round program for cardiovascular endurance, muscle strength and endurance, and agility was developed to improve a male collegiate tennis player's strength and power performance. By using no participants, having time restrictions, and not testing the program in practice, this training may have been limited. However, tennis players will benefit from this program by being better conditioned and prepared for the long season.
Mentor: Amy Crawley

KIRKHOF CENTER KC21
Benchmarking Passenger Service Quality at Grand Rapids Airport
Participants attending from 12:00 p.m. until 1:00 p.m.
Presenter: Allison Hayes

For years, the Gerald R Ford airport in Grand Rapids has experienced some of the highest commercial airfares in the US with many passengers paying in excess of a 25-30% premium on their air tickets. It is estimated that approximately 365,000 or 30% of airline passengers chose to fly out of Detroit (DTW) or Chicago area airports due to higher fares and limited availability at their local region airport. In 2010 a group of local businesses and community leaders, with a vested interest in the economic viability of the region, created the Regional Air Alliance of West Michigan (RAAWM). While the primary goal of the RAAWM is to facilitate the reduction of passenger airfares, a key component to attracting both airline carriers and passengers is the quality of the facilities that underpin the passenger experience. The aim of this study is to assess the perception of passenger service quality at GRR and compare a number of key benchmarks against those of a regional competitor (DTW).
Mentor: Paul Stansbie

KIRKHOF CENTER KC22
The Relationship Between the Innate Immunity and Ectoparasite Load of Adult Tree Swallows (*Tachycineta bicolor*)
Participants attending from 9:00 a.m. until 10:00 a.m.
Presenter: Mary Graham

The innate immune system is the first line of defense against pathogens. Despite this defense ectoparasite infestations still occur. Birds are commonly infested with feather chewing lice that can affect their survival and reproductive success. We examined the relationship between the damage to wing and tail feathers caused by chewing lice and innate immunity in adult Tree Swallows nesting on the GVSU campus in 2011. Holes in the wing and tail feathers may affect flight and mate choice. We estimated lice-caused feather damage by counting holes and innate immunity by the in vitro ability of whole blood to kill bacteria. We predicted there to be an inverse relationship between level of innate immunity and the number of louse-chewed holes. However, there was no relationship between innate immunity and the number of louse-chewed holes. This suggests that the acquired immune system, which develops after birth, may be the critical component in defense against feather chewing lice.
Mentors: Patrick Thorpe, Michael Lombardo

KIRKHOF CENTER KC23
Peridization Program for a Strongman Athlete
Participants attending from 1:00 p.m. until 2:00 p.m.
Presenters: Blake Diephouse, Justin Miedema

The strongman competition requires athletes to demonstrate intense movement manipulation, forceful power, brute strength, and great athleticism. To gain these attributes the athlete must take part in rigorous training protocol. The training program has to be customized and scientifically researched to meet demands of severe weight bearing loads. The purpose of this presentation was to provide an easily understood training program for the strongman athlete. The program examined the training, nutritional demands, and preparation of the strongman athlete. With every training approach there are always limitations of the general research, in this case, limited peer-reviewed articles related to strongman competitions. This training approach is significant as it should better inform the practices, training, and nutrition of the strongman athlete, so that they may be better prepared for competition.
Mentor: Amy Crawley

KIRKHOF CENTER KC24
The Relationship Between Personality Characteristics and Acceptance of Minority Influence
Participants attending from 2:00 p.m. until 3:00 p.m.
Presenter: Ryan Nicholls

This study explores the possible relationship between acceptance of minority influence and a variety of personality characteristics (openness to experience, tolerance for ambiguity). The survey administered contained measures of various personality characteristics, a vignette containing our social influence manipulation, and a thought-listing activity designed to measure divergent thinking. Past research demonstrates a link between exposure to minority influence and divergent thinking. Research also shows a link between divergent thinking and various personality characteristics. It was hypothesized that certain personality characteristics may be associated with a stronger tendency to entertain minority points of view.
Mentor: Christine Smith

KIRKHOF CENTER KC25

Main Stage at Muskegon Summer Celebration: A Statistical Consulting Experience

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

Presenters: Kathryn Collins, Zachary Madaj

The Main Stage venue at Muskegon Summer Celebration (MSC) takes place in Muskegon, Michigan. It is an event for concerts, buying food, and enjoying one's self. Becky Wilson, the MSC Survey Committee Chair, along with other members of the committee have collected data for the Main Stage venue over the past four years. As statistical consultants, Becky asked for our expertise to help discover any trends present in the responses across four years of data. This presentation explores the overall experience of learning to be an effective statistical consultant in STA 319, Statistics Project.

Mentor: Neal Rogness

KIRKHOF CENTER KC26

Effects of Race and Attire on Perceptions of Sexual Experience and Intent

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

This study's aim was to understand and illustrate the effects of a woman's race and attire on how men perceive her sexual experience. The results help connect to the larger problem of rape myth acceptance and the general population's blaming of an assault victim for how she was dressed. One hundred black and white male undergraduate students participated in this study about perceptions of females' sexual experiences and intent based on her attire. Participants were randomly assigned into one of four conditions. Two of the conditions had either a black or white female dressed conservatively; the other two had the same women dress in more revealing clothing. The picture was shown to participants and data was collected via short answer and Likert scale questions. Analysis took the form of coding for sexually charged language in the short answers and t-tests of the Likert scale questions.

Mentor: Ayana Weekley

KIRKHOF CENTER KC27

The Development of a Novel Gadolinium Chelating Agent for MRI Contrast Agents Employing Carbamoylmethyl-Phosphine Oxides (CMPOs)

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

Presenter: Kirsten Tissue

Ionized gadolinium (Gd) is a potent contrast agent used in medical resonance imaging (MRI). 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 affect on water's 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 (CMPO's), which have the potential to be more soluble in water than current commercially available agents while retaining a favorable affect on water relaxivity.

Mentor: Shannon Biros

KIRKHOF CENTER KC28

Formation of Phosphorus (III) Nitrogen Bonds

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

Presenter: Anthony Petty

The formation of P(III)N bonds is made difficult by the ease of which the P(III) is oxidized to P(V). A suitable N nucleophile must be chosen so that oxidation of the P atom is avoided. Lithium Nitride was

chosen as the nucleophile as the N is in its most reduced form. In this study, lithium nitride was reacted with phosphine chlorides with a variety of R groups to asses their reactivity towards the lithium nitride. Mentor: John Bender

KIRKHOF CENTER KC29

Using GIS to Analyze Active Tectonics in the Lake Trichonis Region of Greece

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

Presenter: Jacqueline Bussey

The Mediterranean region is tectonically active today with a unique and interesting tectonic system. Three major plates (Eurasian, African, and Arabian plates) meet to enclose the Mediterranean. However, more interestingly, numerous microplates govern the dynamics of the region. Research will focus on the area surrounding Lake Trichonis, a small lake just northwest of the Gulf of Corinth. There is evidence that the rift in which Lake Trichonis is located is relatively young (< 1 million years) and still actively subsiding. The Lake is a feature caused by active tectonics and rifting. Alluvial fans, submerged alluvial fans, deltas, stream profiles, and other geologic features will be analyzed using Geographic Information Systems (GIS) to quantify horizontal and vertical displacements.

Mentor: Peter Wampler

KIRKHOF CENTER KC30

Investigating the Role of Nrg1p and Tup1p During *Candida albicans* Chlamyospore Formation

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

Presenter: Shannon Williams

Candidiasis represents the fourth most frequent nosocomial infection both in the US and worldwide. *Candida albicans* can grow as yeast cells, pseudohyphae or hyphae and produce chlamyospores with its form being dictated by its surrounding conditions. The ability to form hyphal cells has been fundamentally linked to the disease potential of this organism. Nrg1p is a global repressor of the filamentation process of *C. albicans* and associates with the co-repressor Tup1p during this inhibition of filamentation. Nrg1p has also been shown to play a key role in chlamyospore formation, but the relevance of Tup1p is unknown. In this study we describe differences in the nature of Nrg1p dependent regulation of chlamyospore formation compared to that of filamentation and offer further insights into the functions of Nrg1p in *C. albicans*. Furthermore we establish that chlamyospore formation is independent of Tup1p.

Mentor: Derek Thomas

KIRKHOF CENTER KC31

Evolution of Parental Care in Convict Cichlids: Offspring Survival & Horizontal Transmission of Microbes

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

Presenters: Zachary Hundley, Elizabeth Sommers

Parents can benefit young by transmitting beneficial microbes, a phenomenon unexamined in fishes. We bred convict cichlids, divided broods and placed half with female and half with male parents. To identify bacteria, we collected samples of embryos, slime-coats of parents, and fry. We extracted bacterial DNA, isolated and amplified 16s rDNA (PCR), and differentiated among taxa (DGG electrophoresis stained with SYBR Green; UV transillumination image). We compared percent survival of offspring receiving male vs female care (paired-sample t-test); male vs female parental behavior (sign-rank test); and bacterial composition of male & female parents, offspring, and aquarium water (Gel2K). We created hierarchical clusters for each group (nearest-neighbor & Jaccard distance) and tested whether groupings were non-random. Parents cared for offspring after broods were split (unknown when trials began), and embryo survival did not differ significantly if cared for by female vs. male parents.

Mentor: Jodee Hunt

KIRKHOF CENTER KC32

Host Cell Susceptibility to PRD1

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

Presenter: Elizabeth Melching

The conjugative plasmid pLM2 spreads from cell to cell via sex pili. One or more of the molecules associated with these pili are used by the lytic bacteriophage PRD1 as surface receptors to initiate infection; cells lacking the plasmid are resistant to the phage. The literature is unclear on which of two scenarios best explains the mechanism of host cell susceptibility to PRD1: 1) Does PRD1 adsorb to surface molecules that are constitutively expressed by pLM2? In other words, is a cell harboring pLM2 susceptible to infection 100% of the time, whether or not it is undergoing conjugation?, or 2) Is PRD1 infection made possible (or at least enhanced) by the act of conjugation itself, via one or more components of the sex pilus? We set out to determine which of these two scenarios best explains PRD1 susceptibility.

Mentor: Doug Graham

KIRKHOF CENTER KC33

An Exploratory Study of Perceptions of Benefits and Barriers to Study Abroad for Students with Disabilities

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

Presenter: Melissa Kutsche

Although study abroad has become widely accepted as a beneficial experience for college students, students with disabilities continue to be underrepresented in international study programs. Because few empirical studies have been done to investigate this issue, little is known about the reasons for this under participation. Qualitative data analysis was used in this exploratory study to analyze responses to an open-ended survey distributed to approximately 700 college students with disabilities at a Midwestern public university. Findings summarizing the perceptions that college students with disabilities have regarding benefits and barriers to study abroad will be of particular interest to student affairs practitioners working in both disability support services and international education.

Mentor: Mary Bair

KIRKHOF CENTER KC34

Android Silencer - Take Control of Your Phone's Ringer

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

Presenters: Caleb Gomer, Benjamin Chick, Thomas Sniadecki, Erik Kremer

Silencer is a mobile application for Android phones aimed at creating an environment with fewer distractions during classes at GVSU. This is accomplished by silencing student phones during classes. The student has the ability to log into the GVSU myBanner site, enabling their phone to automatically silence itself when it knows a class is in session, and to go back to its previous volume after the class is finished. Members of the CIS Computing Club are creating this application as a way to explore the Android operating system and to experience mobile development first-hand. More functionality is actively being explored, including the ability to add non-curricular events to be silenced, using the Android phone's built-in Google Calendar to silence the device when appropriate, silencing the phone when charging (during a specified nighttime interval), and silencing the phone's startup sounds. Silencer will be available soon as a free tool on the Android Market for all GVSU students.

Mentor: Roger Ferguson

KIRKHOF CENTER KC35

Representation of Cultural Models of Emotion in Media: A Comparison Between European- and Hispanic-American Children's books

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

Presenters: Mayra Sanchez, Erica Goodrich, Briana VanderWege

Children's books may provide important models of culturally appropriate emotions. Tsai, Louie, Chen and Uchida (2007) showed that the desired positive affective state varied between Taiwanese Chinese and European Americans books. This study aims to expand the study by Tsai et al. (2007) by including negative emotions, analyzing facial and posture features, and comparing European-American (EA) and Hispanic-American (HA) children's books. Given that Caucasians favor an individualistic emotion model, whereas Hispanics favor a relation emotion model (Friedlmeier, Corapci, & Cole, 2011), we expect that Caucasian books portray negative emotions more openly and overall a greater variety of emotions than Hispanic books. A content analysis was performed on illustrations in EA and HA children's books to assess facial expressions and body posture. Preliminary results point to ethnic differences, e.g., negative emotions occurred more often in EA books and happiness more often in HA books.

Mentor: Wolfgang Friedlmeier

KIRKHOF CENTER KC36

Modified Chromenes as Precursors to TAAR Regulators

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

Presenter: Jonathan Lehmann

200 million people worldwide are living with a thyroid disorder related to a hormonal imbalance. Symptoms of this imbalance include deviations from normal heart rates and metabolic rates. Recent discoveries have shown that a compound known as T1AM is capable of affecting some of these physiological conditions. Our approach is to learn more about how T1AM activates its cognate receptor TAAR through the synthesis of novel regulators. These regulators resemble T1AM. For example, the molecular scaffold that is the basis of our target compounds (known as chromenes) is more rigid than T1AM due to the incorporation of a ring. To date, our research has focused on optimizing the reactions that produce this scaffold. The successful production of a panel of these chromenes has set the stage for subsequent reactions that will allow us to generate many T1AM analogues. By understanding the regulation of TAAR we may gain a greater understanding of its role in biology and human physiology.

Mentor: Matthew Hart

KIRKHOF CENTER KC37

Studying Polymer Confinement Using Positron Annihilation Lifetime Spectroscopy

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

Presenter: Samuel Bowerman

Polymer surface interactions are studied within the polymer nanocomposite (PNC) system of silica nanoparticles immersed in an epoxy matrix composed of diglycidyl ether of bisphenol A (DGEBA) with a 4,4'-diaminodiphenyl sulfone (DDS) hardener using positronium annihilation lifetime spectroscopy (PALS). This method offers a unique perspective because positronium localizes within the pores of the material, allowing for a measurement sensitive to the polymer free volume and not to the nanoparticles immersed within. PALS measurements determine free volume over a range of temperatures, which are used to relate the glass transition temperature to the loading weight fraction of nanoparticles.

Mentor: Richard Vallery

KIRKHOF CENTER KC38

Identification of Tissue-Specific mRNA Expression from the Hdc gene of *Drosophila melanogaster*

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

Presenter: Amy Jenkins

The Histidine decarboxylase (Hdc) gene is responsible for the synthesis of histamine in both the brain and peripheral tissues. Recently, two mRNA isoforms of the Hdc gene were identified, which differ at either end of the mRNA molecule. The goal of this project is to determine whether Hdc mRNA isoform expression is tissue-specific, reflecting the difference in histamine distribution in the adult fly. Currently, two regions of the Hdc gene are being used for anti-sense riboprobe synthesis: one probe should bind to all Hdc mRNAs, and the other probe should bind specifically to a unique mRNA isoform. DNA for probe synthesis was cloned and antisense riboprobe for the common isoform has been synthesized using a FISH Tag RNA kit. This riboprobe is currently being hybridized to tissue sections from adults to demonstrate the location of general Hdc expression. Future work will use the second probe to determine whether a unique isoform from the Hdc gene is tissue-specific.

Mentor: Martin Burg

KIRKHOF CENTER KC39

Rescue of the *Delorean* Phenotype in *Drosophila melanogaster*

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

Presenter: Kevin Mittner

Drosophila melanogaster homozygous for the *delorean* mutation exhibit a phenotype with wings that are extended away from the body and noticeably curved downward. This is in contrast to the wings of wild-type flies that are held straight back over the body and not curved. The *delorean* phenotype is recessive and thought to be due to altered expression of the *protein kinase N* (pkn) gene during wing morphogenesis. Providing the PKN protein (i.e. the product of the wild-type pkn gene) to *delorean* flies should restore the wild-type phenotype if the *delorean* phenotype is due to a disruption of PKN gene expression. To rescue the mutant phenotype of the *delorean* flies we constructed a transformation vector using the pCasper-HS plasmid engineered to contain a cDNA sequence that could produce wild-type PKN. We generated an additional construct containing the wild-type pkn gene sequence in the transformation vector pUAST to activate PKN protein expression in specific tissues.

Mentor: Georgette Sass

KIRKHOF CENTER KC40

Antagonistic Coevolution between a Bacteriophage and a Conjugative Plasmid

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

Presenter: Tyler Flora

Co-evolution is a driving force for the diversification and adaptation of many types of organisms. One method which can directly show the effects of co-evolution is the phage-host model. It is made up of a bacterial host and a viral phage. As they interact, evolutionary change can be seen from one day to the next, making it a useful study tool. The interactions within the phage-host model can be described as antagonistic, due to the selective pressure both parties impose on the other. Traditionally phage-host models consist of a host which codes for the receptors used for infection by the phage. This can create a difference in the amount of evolutionary potential each has leading to the extinction of the phage. We are minimizing the difference; using a static host whose plasmid codes for the receptors. By reducing the selective pressure applied by the bacterial host, we can observe the antagonistic co-evolution occurring between two similarly sized genomes, the plasmid and the phage.

Mentor: Doug Graham

KIRKHOF CENTER KC41

A Study of the Pulsar PSR J1907+0602

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

Presenter: Robert Scott

The pulsar PSR J1907+0602 has been observed at a variety of wavelengths over the past few years. This pulsar is located near an extended TeV gamma-ray source (MGRO J1908+06) and may be connected to it in some way. This study has been an effort to determine certain properties of this pulsar using data gathered at different wavelengths and from multiple instruments. Radio wavelength data came from the Extended Very Large Array (EVLA) in New Mexico. X-ray data came from the XMM-Newton satellite. The radio data was examined to determine if the source was a point-like or extended radio source. The X-ray data were used to search for pulsed X-ray emission as well as to determine if the pulsar is an extended X-ray source. Combining outside research at gamma-ray wavelength with the radio and X-ray data allowed for a spectral model to be fit to the spectral energy distribution of the pulsar.

Mentor: Dirk Pandel

KIRKHOF CENTER KC42

Social Dominance Orientation and Connectedness to Nature as Important Predictors of Ecologically Sustainable Behavior

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

Presenter: Jamie Zimmerman

The dispositional characteristics that are shared by people who engage in environmentally sustainable behaviors are examined in this survey design correlational study. Forty-nine undergraduates completed an array of questionnaires assessing Social Dominance Orientation (SDO), Connectedness to Nature (CN), Self-Construal (SC) and Ecologically Sustainable Behavior (ESB). ESB was measured by asking participants about the frequency with which they engage in several college-age-specific environmentally responsible behaviors. As expected, CN was a significant positive predictor of ESB. Somewhat consistent with expectations, SDO showed a marginally negative correlation with ESB. Unexpectedly, none of the self-construals were included in the complete multiple regression model. This may likely be due to overlapping variance issues in addition to limitations related to low power. Implications for future directions for sustainability-related education are discussed.

Mentor: Christine Smith

KIRKHOF CENTER KC43

Can You Use Your Hand? Mirror-tracing Familiar and Unfamiliar Objects Across Genders

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

Presenters: Bethany Hanks, Kristin Dreyer

The purpose of this study is to compare the ability of right-handed male and female college students to learn to mirror-trace familiar and unfamiliar shapes. Each student will fill out a pre-test survey to verify their age, gender, and preferred hand, and that they have no previous experience in mirror-tracing. Ten men and ten women will perform the mirror-tracing experiment with a star (known shape), while a separate ten men and ten women will perform the mirror-tracing experiment with an unknown shape. Each will trace their shape 10 times, and their scores will be recorded.

Mentors: Bradley Ambrose, James Scott, Gordon Alderink

KIRKHOF CENTER KC44

Effects of Chronic Footshock Exposure on Alcohol Self-Administration Following Abstinence: A Novel Model of Stress-Induced Alcohol Relapse

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

Presenters: Ashley Ginder, Corina Hinterman

The brain kappa opioid receptor (KOR) system, which is thought to regulate negative mood states, has recently been linked to stress-related effects of alcohol. The current project sought to develop a novel model of stress-induced alcohol consumption, and to examine the role of the KOR system in increased alcohol drinking. Rats were trained to self-administer alcohol, and were then exposed to daily 10 min sessions of footshock during a two-week period of abstinence. Afterwards, rats were allowed to self-administer alcohol to determine the ability of stress exposure to increase drinking. The ability of the KOR antagonist nor-BNI to block increases in intake was also assessed. Examining the effects of stress on alcohol consumption, and its underlying biology, is important because alcoholics often report stressful life events as a major factor in relapse. Development of this model may provide valuable information regarding the biological mechanisms underlying alcohol relapse.

Mentor: Glenn Valdez

KIRKHOF CENTER KC45

Development of Water Target for Radioisotope Production

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

Presenter: Nathan Tripp

Ongoing studies of plant physiology at TUNL require a supply of nitrogen-13 for use as a radiotracer. Production of nitrogen-13 using a water target and a proton beam follows the nuclear reaction $^{16}\text{O}(p,a)^{13}\text{N}$. Unfortunately the irradiation of oxygen-18 within a natural water target produces fluorine-18. The presence of this second radioisotope reduces the efficacy of nitrogen-13 as a radiotracer. Designing a natural water target for nitrogen-13 production at TUNL required the design of several systems. A heat exchanger thermally regulates the target water preventing the system from overheating and minimizing the effect of the cavitations occurring within the target. Alumina pellets within a scrubbing unit remove the fluorine-18 contamination from the irradiated water. The newly designed and constructed water target should meet the current and future needs of TUNL researchers in the production of nitrogen-13.

Mentor: Geoff Lenters

KIRKHOF CENTER KC46

Android Time Capsule Social Network

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

Presenters: Caleb Gomer, Ferris Jumah, Jeremy Dye

People experience a multitude of personally significant events throughout their day. What if people were able to record these events and had the power to store them in publicly accessible “time capsules”, digital posts with physical locations, at the tips of their fingers? This is what the GVSU SocNet group’s Time Capsule project explores. Implemented as a mobile application on the Android platform, we are able to create an accessible method to do this. The data collected will be useful towards examining the way people react to, seek out, and create these digital containers of the human experience. Through this, we can gain a deeper, richer understanding of our society.

Mentor: Jerry Scripps

KIRKHOF CENTER KC47

Sit Up Straight!: The Effects of Posture on Perceptions of Confidence and Engagement

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

Presenter: Elizabeth Fles

Research shows that individuals’ thoughts are influenced by facial expressions, postures, and gestures (e.g., Niedenthal, 2010). For example, an upright (vs. slouched) posture increases confidence (Brinol et al., 2009) and tolerance for risk (Carney et al., 2011). The current study examines the effects of posture on self-perceptions of confidence/doubt and activeness/passiveness 1) via reaction time responses, and 2) within a social context. We predicted that an upright (vs. slouched) posture would elicit greater confidence and engagement in general and in a social interaction with strangers specifically. Participants were randomly assigned to adopt an upright or slouched posture as they completed a lexical decision task (assessing the accessibility of activeness and engagement constructs) and rated their expectations for an ostensible social interaction. Preliminary analyses are ongoing, although suggestive. Discussion will center on implications for therapeutic interventions.

Mentor: Kristy Dean

KIRKHOF CENTER KC48

Quality Assurance of Computed Tomography

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

Presenter: Michael Dykstra

Computed Tomography is an imaging method that uses X-rays emitted and detected at different orientations to create a 3D image of the subject. To ensure that all data acquired is reliable and reproducible, the quality of the GE Micro-CT must be investigated. Two different levels of X-Ray production are measured. A quality assurance phantom was used to acquire images on the GE Micro-CT. MATLAB was then used to examine the images in terms of spatial resolution, signal to noise ratio, CT number evaluation, and geometric accuracy for two different levels of X-ray production: 40 mA and 50 mA. The results for the 40 and 50 mA images were equivalent in regards to spatial resolution, linearity with respect to attenuation, and geometric accuracy. All measured differences involved a higher level of noise on the 40 mA image. The GE Micro-CT provides images of acceptable quality at both 50 and 40 mA.

Mentors: Anthony Chang, Richard Vallery

KIRKHOF CENTER KC49

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

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

Presenter: Cody Hager

The protein Mid1, found in the fission yeast *Schizosaccharomyces pombe*, functions as a scaffolding protein that assists in the assembly and placement of the actin contractile ring by directly associating with the cell cortex and components of the contractile ring to anchor the structure in the cell center. 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 and genetic material. In this study we produced and purified GST-fusion domains of Mid1 for analysis via co-sedimentation assay and determined their association with actin filaments. To identify the specific actin binding domain within Mid1 we compared the Mid1 protein sequences of four closely related species of fission yeast to identify regions of high amino acid conservation. Results suggest that the pH domain of Mid1 directly associates with actin filaments, an essential component of the contractile ring.

Mentor: Dawn Clifford Hart

KIRKHOF CENTER KC50

The Effects of the Hyperbaric Treatments on Renal Arteries

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

Presenter: Carly Bruns

Renal arteries supply blood to the kidneys and at any moment receive 20-25% of the cardiac output. This high rate of blood flow is critical to renal function and is directed by changes in blood vessel diameter. In this experiment different gases will be used within a hyperbaric chamber to treat arteries obtained from porcine kidneys. Hyperbaric therapy involves breathing or administering gases while in a sealed chamber that has been pressurized to 1.5 times atmospheric pressure. It has been studied and used for a number of health-related applications such as carbon monoxide poisoning, severe anemia, burn injuries, skin grafts and organ storage. Arteries will be stored in a buffer and will be treated in an oxygenated hot water bath. Force transducers will measure active tension within the arteries as phenylephrine and nitroprusside are added. It is hypothesized that treatment with 100% oxygen, 100% nitrogen and room air will alter responses to vasodilators and vasoconstrictors.

Mentor: Francis Sylvester

KIRKHOF CENTER KC51

Focal Adhesion Kinase: Potential Cancer Inhibitors

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

Presenter: Jeffrey Globerson

Focal Adhesion Kinase (FAK) is a non-receptor protein kinase that plays a critical role in cell signaling, and the regulation of many cellular processes. FAK is found up regulated in a variety of metastatic cancers, and a key component for cellular migration through the extracellular matrix. FAK acts to disassemble focal adhesions constructed by the cell, enabling the cell to lay down further scaffolding for cellular movement, growth and repair. Over expression of FAK is found to be an important biomarker in invasive metastatic cancers, making this protein a target of interest for development of novel treatments.

Mentor: Laurie Witucki

KIRKHOF CENTER KC52

Nam June Paik: Technology and Zen

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

Presenter: Damon Graham

For my project, I will be researching the interplay of technology, art, and Zen aesthetics through the work of Nam June Paik. Through exploring the historical aspects of Zen and its aesthetics, I will be comparing how Paik's application of Zen has changed or remained the same. Since Paik is often attributed to the group Fluxus, I will be providing contextual information on the group and examining the work of some of Paik's contemporaries, including John Cage and Yoko Ono, who may have influenced him or contributed to the production of a piece. Some of the pieces I will be discussing include: TV Buddha 1974, Electronic Moon #2 1968, Demagnetizer 1965, Zen for Film 1962, Listening to Music through the Mouth 1963, and Participation TV 1963. Paik's manipulation of television as a new medium of art asks the audience to participate with the pieces on an unprecedented level.

Mentor: Sigrid Danielson

KIRKHOF CENTER KC53

Forecasting Effective Student-Teacher Matches by Previewing Teaching Trailers

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

Presenters: Jessica Rhodes, Andrea Mitchell, Ryan LaCross

No single ice cream flavor appeals to all. Similarly, few teachers appear to be effective for all students (Gross, Lakey, Orehek, Edinger, Heffron, 2009). Could Teaching Trailers help you wisely chose among prospective teachers, similar to how movie trailers allow you to screen films for Friday-night worthiness? To determine if students can forecast which teachers would be uniquely effective, 6-minute Teaching Trailers were created for 9 guest lecturers. Students rated the Teaching Trailers and subsequent live lectures, providing estimates of perceived effectiveness and current mood. Quizzes captured retention of guest lecture content. Data collection is complete, and data analyses are ongoing. It is not uncommon for students to seek out resources such as ratemyprofessor.com when making course selections. Our 6-minute Teaching Trailers might prove to be a more effective, empirically-validated means for students to wisely select among prospective teachers.

Mentor: Jennifer Gross

KIRKHOF CENTER KC54

Characterization of *Pkn^{dlnΔ5}*, a Derivative Allele of the *Delorean* Mutation Associated with the Protein Kinase N Gene in *Drosophila Melanogaster*

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

Presenter: Allison Burke

Wings of *Drosophila melanogaster* that are homozygous for the *delorean* mutation (*Pkn^{dln}*) are held out and arched downward in contrast to the closely held, flat wings of the wild type. The *delorean* mutation is the result of a P-element that inserted into the first intron of the Protein kinase N (*Pkn*) gene. To understand the molecular basis of the *delorean* phenotype we have generated a deletion derivative of the *Pkn^{dln}* allele, *Pkn^{dlnΔ5}*. Flies that are homozygous for this derivative show distinct differences in phenotype severity from *Pkn^{dln}*; the wings are less severe whereas fertility defects are more severe. In addition, *Pkn^{dlnΔ5}* demonstrates that the *delorean* phenotype is transvection-dependent. The molecular lesion associated with the *Pkn^{dlnΔ5}* allele is the loss of mini-white+ gene sequence from within the associated P-element. We present our analysis of the *Pkn^{dlnΔ5}* derivative with respect to the role of the *Pkn* gene in wing morphogenesis as well as its prospective role in oogenesis.

Mentor: Georgette Sass

KIRKHOF CENTER KC55

Novel Procedure Modifications for the Growth and Purification of the Mutant Forms D34K, D79K, and E118K of Horse Heart Cytochrome c Peroxidase

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

Presenter: Justine Travis

The required modifications for the growth and purification method of D34K, D79K, and E118K novel protein mutations were determined. The mutation caused changes to the growth ability of the proteins which resulted in a decreased amount of hemin needed. The hemin amount was decreased because extra hemin could disrupt the purification process and destroy the protein. Also, the amino acid's interactions with the solutions in the environment were altered due to the mutation's locations on the surface of the protein and the mutation changing the amino acid from a polar acidic to a polar basic. The change from acidic to basic caused the mutated protein to elute out with a lower concentrated mobile phase compared to the wild-type CcP. Crystallization of the D34K and D79K was achieved through the use of ion exchange chromatography, size exclusion chromatography, and dialysis.

Mentor: Cory DiCarlo

KIRKHOF CENTER KC56
The Effects of Pollutant Analogs Alkylphenol and Nonylphenol on the Nervous System and Ecology of *Orconectes Propinquus*.
Participants attending from 12:00 p.m. until 1:00 p.m.
Presenter: Christopher Adams

Crayfish are a ubiquitous keystone species that are vital to the ecological community of much of the United States and Canada. They serve as a major food source for many animals and act as predators of smaller animals themselves. Today, many invertebrates' survival may be influenced by the use of chemical applications such as alkylphenols and alkylphenol ethoxylates, used in pesticides and industrial cleaners that have been rated inert by the EPA and other environmental agencies. Our study seeks to investigate the effects of the alkylphenol analog, nonylphenol, on the nervous system of *Orconectes propinquus* by testing its effects on behavioral responses, serotonin release, and action potentials of vital ventral, dorsal, antennal, and cranial nerves. Our preliminary findings show that populations of *Orconectes propinquus* are susceptible to such chemicals, moreover juveniles show dramatically increased mortality. We expect to see deficits in neuronal responses as well.
Mentor: Dan Bergman

KIRKHOF CENTER KC57
Quality Comparison of School and Packed Lunches Selected and Consumed by Bursley Elementary Students
Participants attending from 3:00 p.m. until 4:00 p.m.
Presenters: Sarah Hall, Samantha Szegedi, Amanda Kring, Laura Blaser, Nicole Leister, Max Cookinham, Desirae Olson, Hans Hill, Christine Paul, Marissa Maftciu, Hanna Hook, Clare Horning, Jessica Goyke, Erin Golder

One of the most crucial crises of the twenty-first century in the United States is the skyrocketing prevalence of childhood obesity. Because children spend the majority of their time in the school setting, this will be our target location for implementation of a nutrition education program. The first purpose of this class project is to examine the hot and cold lunches served and consumed by the students at Bursley Elementary School in Jenison, Michigan. The second purpose is to provide 5th and 6th grade students with a nutrition education program on how to prepare and choose a nutritious school lunch. We will also be encouraging the children to taste some provided healthy snacks. The overall goal is to provide the children with information that they can utilize to make healthy lifestyle choices to prevent obesity.
Mentor: Debbie Lown

KIRKHOF CENTER KC58
Tools for Monitoring the Effects of Gene Manipulation on Cell Differentiation in the Embryonic Chick Midbrain
Participants attending from 12:00 p.m. until 1:00 p.m.
Presenter: Elizabeth King

The chick embryonic midbrain offers an effective model to monitor the effects of gene overexpression or knockdown on neural progenitor differentiation at multiple different points during development. To better characterize the effect of gene manipulation, we are analyzing the expression pattern of midbrain progenitor domains in the normal embryonic chick mesencephalon using markers that have been established in the mouse. We also have developed a quantitative PCR approach to detect changes in midbrain progenitor marker expression in response to experimental manipulation of gene expression using in ovo electroporation. These approaches will allow investigators to readily screen for changes in progenitor differentiation and be able to better analyze the effect of genes on the differentiation of mesecephalic progenitors.
Mentor: Merritt Taylor

KIRKHOF CENTER KC59
Evaluating the Performance of a Decimeter-Wave Software Defined Receiver for Radio Astronomy
Participants attending from 10:00 a.m. until 11:00 a.m.
Presenter: Steven Childs

Jupiter and the Sun emit radio waves across a broad bandwidth of frequencies due to their large magnetic fields. Studying these radio wave emissions can help us learn more about Jupiter and the sun (NASA). A group of engineering students at Grand Valley State University developed a software-defined radio receiver to monitor the radio wave emission from both Jupiter and the Sun (Behnke). Software defined radios are capable of monitoring and recording wide ranges of frequencies; this receiver was designed to record with a bandwidth of 1 MHz centered at 20.1 MHz. The software defined receiver will be set up at Stephen F. Wessling Observatory in Fremont, Michigan and its capabilities will be compared to that of the standard Jove radio receiver distributed by NASA.
Mentor: Douglas Furton

KIRKHOF CENTER KC60
Evidence for Liquefaction Resulting in Ball-and-Pillow Structures During an Ordovician Seismic Event: Fairview Formation of Northern Kentucky
Participants attending from 11:00 a.m. until 12:00 p.m.
Presenters: Laura Donker, Kayla Frisinger, Nicholas Anderson

The Fairview Formation of northern Kentucky contains Late Ordovician ball-and-pillow structures, interpreted in the literature to be seismites, and is composed of interbedded skeletal packstone, cacsiltite, shale, and rarely fine-grained skeletal grainstone. The Fairview is overlain by the Grant Lake Limestone and underlain by the Kope Formation, neither of which contain seismites. For an unbiased analysis of thin sections from the Fairview, we used the point count method and a petrographic microscope to determine the composition and porosity of two representative ball-and-pillow structures and three undeformed samples. We will look for evidence of liquefaction in the ball-and-pillow samples such as preferred orientation of grains and low porosity compared to samples which are not part of the ball-and-pillow structures. We will also determine the lithologies of all samples to see if deformed and undeformed samples are different.
Mentor: Patricia Videtich

KIRKHOF CENTER KC61
Smartphone Sensors and Detecting Road Anomalies
Participants attending from 1:00 p.m. until 2:00 p.m.
Presenter: Nathan Marculis

Data logs from accelerometers in iPads and smartphones are a source of noisy, spiky data. This data can be collected while driving on bumpy roads or from other dynamical activities. This poster will show the analyses of this data using wavelet and other mathematical tools. This research was done at the 2011 REU program at Grand Valley State University and was awarded a cash prize from the City of Boston.
Mentor: Edward Aboufadel

KIRKHOF CENTER KC62
Ratings of Prosocial Personality Traits are Contaminated by Religious Stereotype Bias
Participants attending from 10:00 a.m. until 11:00 a.m.
Presenters: Lisa Ellis, Michael Sharp, Michelle Durst, Amy Ver Wey

A religious prosociality stereotype exists such that religiosity and prosociality are presumed to be

associated. Previous research has not controlled for the religiosity of the participant nor the target subject. One measure of prosociality is the personality trait of agreeableness. The level of religiosity and personality traits of the participants were measured in a prescreening survey. Later in the semester, participants rated religiously-labeled targets (e.g., Christian, Atheist) on personality adjectives. Participants higher in religiosity attributed greater Agreeableness to religious targets, an effect mediated by stereotypes about the nonreligious. This tendency was lessened when the perceiver was more agreeable regardless of religiosity. Ratings of Agreeableness are affected to a large extent by stereotypes of religious prosociality and religious ingroup bias.
Mentor: Luke Galen

KIRKHOF CENTER KC63
Fission Yeast Cyclin-Dependent Kinase, Cdc2, Regulates the Mid1 Scaffolding Protein During Cytokinesis
Participants attending from 11:00 a.m. until 12:00 p.m.
Presenter: Justin Hackett

Cytokinesis is the final stage of cell division and relies on a highly conserved actin-myosin contractile ring to separate one cell into two. The conserved protein Mid1 is critical as the initial organizer and anchors the structure to the cell membrane. Mid1 mutants show severe defects in contractile ring assembly and placement. Coincident with contractile ring formation, Mid1 is hyper-phosphorylated by multiple mitotic kinases. Mid1 phosphorylation by the cyclin dependent kinase, Cdc2, at both the N- and C-terminus facilitates the phosphorylation of Mid1 by the polo like kinase, Plo1. Fission yeast cells expressing Mid1 phosphosite mutations show sensitivity to low dose treatments of an actin depolymerizer, and cells bypass the mitotic spindle checkpoint. Surprisingly cells that bypass an active mitotic spindle checkpoint continue through mitosis, but fail to fully separate. This research highlights a regulatory role for Plo1 and Mid1 in early and late stages of cytokinesis.
Mentor: Dawn Clifford Hart

KIRKHOF CENTER KC64
Training Program Results for Triathletes
Participants attending from 11:00 a.m. until 12:00 p.m.
Presenters: Sarah Smith, Steven Whitcomb

Triathletes demonstrate endurance and strength over the course of three physically demanding tasks, swimming, running, and cycling. In order to develop each of these strengths to the fullest potential, athletes must take part in a training regiment that has been researched thoroughly and catered to their specific performance. By analyzing the muscles and metabolic systems used in each task it is possible to accommodate their training protocol to their physical performance needs. The purpose of this presentation was to provide a periodized training protocol, individualized for each event, for the competitive triathlete. A review of previous research was completed to develop a year round training program to increase the level of performance of a triathlete. Anyone who is going to compete in a triathlon would benefit from this training program. Limitations are that all research was done on review of literature and not on subjects.
Mentor: Amy Crawley

KIRKHOF CENTER KC65
Combinatorial Synthesis of Semiconductors Used in the Photoelectrolysis of Water
Participants attending from 10:00 a.m. until 11:00 a.m.
Presenter: Alexandra Bouza

Fossil fuels are being depleted at an ever-increasing rate while becoming harder and more costly to acquire. As the costs of the continued use of fossil fuels become more profound, the need for alternative

energy development has never been so critical. The most likely source of readily affordable, “safe” and renewable of energy is the sun. Clearly effective harnessing of solar energy could move the planet away from the current crisis and to a sustainable future. The Holy Grail of solar energy conversion and storage is the photoelectrolysis of water using semiconductors as both the light absorber and energy converter, to store solar energy in the simplest chemical bond, H₂. Our research focus is to synthesize a series of semiconductors made from multicomponent metal oxides with suitable band gaps and band positions for water photoelectrolysis operating as a photoanode.
Mentor: Robert Smart

KIRKHOF CENTER KC66
Lithologies of Sedimentary Structures in the Upper Ordovician Kope Formation, Northern Kentucky
Participants attending from 11:00 a.m. until 12:00 p.m.
Presenters: Elizabeth Vanderhoef, Jonathan Vrugink, Caitlin Leslie, Andrea Rasche

Sedimentary structures form under a variety of environmental conditions including seismic events and storm deposits. Structures thought to have formed by these two conditions, Kinneyia and gutter casts, are in Ordovician strata of the Kope Formation in northern Kentucky. We hypothesize these structures are composed of different lithologies; gutter casts will differ from Kinneyia, and both structures will differ from the rest of the formation. We will analyze thin sections using point counts to quantitatively determine composition. Initial, non-quantitative observations of thin sections show Kinneyia to be fine grained and contain quartz. In hand sample, the bases of gutter casts have fragments of crinoids, interpreted to be lag deposits, and a fining upward sequence. In thin section, the samples appear largely fine grained with a variety of fossils. The rest of the formation tends to be coarser grained, quartz poor, and contains echinoids and bryozoans.
Mentor: Patricia Videtich

KIRKHOF CENTER KC67
Using GIS to Analyze Sand Dune Volumes in the Lower Peninsula of Michigan
Participants attending from 3:00 p.m. until 4:00 p.m.
Presenter: Tiffany Hackett

ArcMap 10 will be used as a tool to determine the volume of sand in dunes located within 2 km of the east coast of Lake Michigan in the Lower Peninsula of Michigan. The height of dune areas will be determined using Digital Elevation Models for each county along the coast. The elevation of Lake Michigan will be used as a base elevation for this volume analysis, because dunes do not generally extend below the lake level because waves will erode that part of the dune and carry the sediment away. A polygon layer will be created to estimate the area of land that the dunes cover by digitizing the areas on aerial photos. The 3D analyst tool will be used to calculate the volume of sand in the dunes from the DEM data and the areas of the polygon layer, representing the dune areas. The spatial variation of dune volume from north to south and in relation to major rivers will be analyzed. Aerial photos will also be used to quantify dune area covered by vegetation and assess dune stability.
Mentor: Peter Wampler

KIRKHOF CENTER KC68
The Geography of Nutrition in Grand Rapids
Participants attending from 1:00 p.m. until 2:00 p.m.
Presenter: Jeffrey Mahowski

There are various factors that influence nutrition, within social sciences it can be effective to look at geography and type of nutrition. Does the frequency of higher and lesser quality nutrition outlets correlate to economic conditions in an area? Data were gathered from CRI database, USDA Farmers

Market Directory, and Google Maps. Number of fast food and healthy alternatives were compared in two sample groups of five neighborhoods each in Grand Rapids, Michigan. In neighborhoods with >15% in poverty, 36 fast food and 14 healthy alternatives were observed. In neighborhoods with 15% of population in poverty and fast food restaurants. Healthy alternatives show noticeable disparity between sample groups, with an observed difference of 1275.81 per capita between samples. The results support the hypothesis showing more poor nutritional outlets in poverty stricken areas.

Mentor: Gwyn Madden

KIRKHOF CENTER KC69

The Effect of Hyperbaric Oxygen Treatment on Pulmonary Arteries

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

Presenters: Lauren Bald, Danyelle Burlew, Matt Figlewicz, Judy Ingles, Sara Russcher

Hyperbaric oxygen therapy can be used as a treatment for poor wound healing. Specific effects of this therapy are still unknown and it has been postulated that it may be appropriate for other clinical uses. The purpose of this study is to determine the effect of hyperbaric therapy on the function of pulmonary arteries. Pulmonary arteries are of particular interest since they are located within an oxygen-rich environment in the lungs. Pig lungs are obtained from the local abattoir. After dissection, arterial rings undergo various hyperbaric treatments for 2 hours. The arteries are then mounted in isolated organ baths, coupled to force transducers to record changes in tension in response to potassium chloride (nonreceptor-mediated vasoconstrictor), phenylephrine (receptor-mediated vasoconstrictor), and sodium nitroprusside (vasodilator). After drug treatments, recordings are compared to determine if there are any effects on the physiological function of the arterial rings.

Mentor: Francis Sylvester

KIRKHOF CENTER KC70

Hospitality Students' Perceptions of the Dining Experience in Grand Rapids 2011

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

Presenters: Kendra Haisma, Erin Pruitt

In Fall 2011, 2 sections of HTM 101, participated in this project. Pruitt & Scantlebury (2011) stated that students select 2 restaurants from 315 listed by ExperienceGR and using a four-part survey instrument (12 questions per part), gathered data on the outside, inside, the meal and staff interaction for each establishment. Each question used a four-point Likert scale. The completed surveys were the basis of reflection on high quality and excellent service. The 80 students, 40 per section, should have conducted 160 restaurant visits. Usable data for 142 visits were grouped into 5 restaurant types: Quick Service (8 visits), Ethnic (29 visits), Casual/American (71 visits), Bars & Pubs (25 visits), and Diners & Cafes (9 visits). This poster presents the consolidated findings of the 142 visits and by type. The mean score per question in the 4 categories is presented. The study establishes a benchmark for food service quality based on students' perception of the Grand Rapids dining.

Mentor: Michael Scantlebury

KIRKHOF CENTER KC71

Interactive Effects of Ostracism and ECF on Consumer Product Preferences

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

Presenter: Cody Overmyer

Previous research has found that extrinsic contingency focus (ECF) predicts participants' desire for image-oriented aspects of consumer products (Williams, 2009). High ECF individuals prefer image-oriented aspects of consumer products while low ECF individuals seem indifferent. The present research seeks to examine if level of social inclusion moderates this relationship. In this study, participants were

given false feedback designed to make them feel socially included or excluded and then evaluated a series of consumer products. Results show that social exclusion increased preference for image-oriented aspects of consumer products among high ECF individuals. Conversely low ECF individuals showed decreased preferences for the image-oriented aspects of consumer products. Social inclusion decreased high ECF participant's preference for the image oriented aspects of consumer products, whereas low ECF participants' product preferences remained unaffected. Implications are discussed.

Mentor: Todd Williams

KIRKHOF CENTER KC72

Groundwater Change in the Sahara, Gobi Desert and Great Victoria Desert Using GRACE Satellite Data

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

Presenter: Robert Fortney

The Gravity Recovery and Climate Project (GRACE) is a collaboration of NASA and the German Aerospace Center that have been making detailed measurements of Earth's gravity since March 17, 2002. GRACE shows how mass is distributed around the planet and how it changes over time. Data from the twin satellites are made into monthly gravity maps that are very accurate. Changes in mass at a given location from month to month are inferred to represent groundwater storage changes in aquifers. To see how groundwater reservoirs change in the Sahara, Gobi Desert and Great Victoria Desert GRACE monthly data from April and November from 2002 to 2011 were examined using Geographic Information System (GIS). The GIS maps help show how groundwater storage changes seasonally, over time, and from location to location.

Mentor: Peter Wampler

KIRKHOF CENTER KC73

Examination of Emotion Regulation and Alcohol Use in Dating Aggression Amongst Female Undergraduate Students

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

Presenter: Edwin Ortiz

Past psychological research has assessed various antecedent conditions that may be related to the manifestation of dating violence, most notably emotion regulation. However, research also suggests that other proximal factors, including alcohol use, are also related to perpetration of dating violence. Therefore, the purpose of this research was to examine emotion regulation and alcohol use in the context of dating aggression to determine if alcohol use mediates the relationship between emotion regulation and perpetration of dating violence amongst females. Participants (N=379) completed a series of online questionnaires about emotion regulation, patterns of alcohol use, and perpetration of physical and psychological aggression in their dating relationships. The results suggested that full mediation of alcohol use for psychological aggression, and partial mediation for physical perpetration. Implications of these findings for prevention of dating violence are also provided.

Mentor: Tara Cornelius

KIRKHOF CENTER KC74

Phospho-Regulation of the Anillin-Related Scaffolding Protein Mid1 by Sid2 in Fission Yeast Cytokinesis

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

Presenter: Ashley DeWitt

During cytokinesis, division of one cell into two identical cells occurs through constriction of a protein-rich ring structure: the contractile ring. In fission yeast, the protein Mid1 functions as a scaffold to bridge the cell cortex with the contractile ring. Coincident with its cortical accumulation, Mid1 becomes hyper-phosphorylated. Mass spectroscopy and two-dimensional phosphopeptide mapping

identified multiple Sid2 phosphorylation sites within Mid1. Phospho-site mutants were generated at the endogenous mid1 locus and analyzed. These cells displayed cell division defects, including sensitivity to low dose latrunculin A and disorganized actin localization. Also, Mid1 protein levels increased when compared to checkpoint activated cells expressing wild-type Mid1. Given that Mid1 departure from the contractile ring coincides with Sid2 relocation to the division site, Sid2 may temporally regulate the interaction of Mid1 with the membrane or other contractile ring components.

Mentor: Dawn Clifford Hart

KIRKHOF CENTER KC75

GIS Mapping of Charlton Park

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

Presenters: Aaron Howe

This poster presentation uses ARC GIS technology to understand spatial relationships and site formation processes at Indian Landing, a mid to late 19th century historic site located in Charlton Park, Barry County, Michigan. Originally thought to be a Methodist mission school for Native Americans, historic documentation and artifacts recovered from the site suggest later uses as a farmstead. GIS analysis details the depositional history, site formation processes and uses of the site, and makes possible more sophisticated interpretations.

Mentor: Janet Brashler

KIRKHOF CENTER KC76

Regioselective Nucleophilic Ring Opening of Aziridines in the Synthesis of T₁AM Analogues

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

Presenters: Olivia White, Jeremy Whitmore

Thyroxine (T₄), the primary secretion of the thyroid gland, undergoes deiodination at target tissues to produce the potent agonist Triiodothyronine (T₃). Recent work has identified a deiodinated and decarboxylated analog of T₃, T₁AM, which is a potent agonist of trace amine associated receptors. T₁AM induces physiological effects opposite to those produced by the T₃ and T₄ hormones (Scanlan et al. 2004). Presently, a regulatory relationship between T₁AM and the thyroid hormones requires a better understanding of the TAAR₁ receptor and its ligands. Elucidation of a regulatory pathway could establish more comprehensive treatment options for thyroid-related disorders. Previous work has shown agonist/antagonist regulation of TAAR₁ using the two enantiomers of apomorphine. This project describes the regioselectivity of nucleophilic ring openings on aziridines using p-methoxy phenol and presents the progress towards the synthesis of proposed TAAR₁ regulators.

Mentor: Matthew Hart

KIRKHOF CENTER KC77

GVSU Students Perceptions of Abuse of Methylphenidate and their Knowledge of Complications Associated with this Type of Abuse

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

Presenter: Hossain Roushangar

One in four American college students misuse Attention Deficit and Hyperactivity Disorder (ADHD) medications. The primary objective of this study is to determine Grand Valley State University (GVSU) undergraduate students' perception of the abuse of methylphenidate on campus. The second objective is to determine GVSU students' knowledge of the potential side effects of methylphenidate abuse. GVSU undergraduate students (n=1,600) will be offered an anonymous online survey using the student e-mail database through the Office of Institutional Analysis (OIA). The survey contains questions asking students the conditions under which methylphenidate is used and their perceptions on the benefit of this usage. Students will also select from a list of complications related to methylphenidate use. To our

knowledge, we are the first to explore the usage and knowledge of these drugs in GVSU students.

Mentor: Debbie Lown

KIRKHOF CENTER KC78

The Effects of Relationship Quality and Self-Constraint on Filial Anxiety

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

Presenter: Dayna Roe

Filial anxiety is defined as the state of worry or concern an individual experiences regarding the anticipated decline in health as well as the ability to meet caregiving needs for an aging parent, either prior to or during the provision of care (Cicirelli, 1998). Cultures are different in terms of norms and obligations towards intergenerational support. The purpose of the current study is to examine the effects that relationship quality between generations as well as personal characteristics have on filial anxiety. A sample of N=293 middle aged daughters from Michigan, US (individualistic culture) was compared to samples from rural and urban China (collectivistic culture), N=300. This study shows that there are diverse qualifiers in both cultures to be filially anxious. Not only does it depend on the individual, as measured by self-construal, but also on the overall relationship with the parents.

Mentor: Mihaela Friedlmeier

KIRKHOF CENTER KC79

Resonance and the Silicon-Carbon Double Bond

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

Presenter: Gregory Kortman

The allyl anion [CH²-CH=CH²]⁻ has been the subject of much research, and measurements of the barrier for rotation in the allyl anion provide a measure of the resonance stabilization of this molecule. Substitution of a carbon with silicon in the allyl anion yields a molecule that is a silyl anion, [SiH²-CH=CH²]⁻, with a carbon-carbon double bond in resonance with a carbon anion with a silicon-carbon double bond [CH²-CH=SiH²]⁻. We report optimization of the reaction of diphenyldichlorosilane with excess lithium and trimethylsilylchloride to form phenyl-trimethylsilylsilane and conversion of that to vinyltrimethylsilylsilane as a high yield and rapid route to this silane. The results of our studies of the reaction of the vinylsilane with potassium tert-butoxide will be discussed.

Mentor: Randy Winchester

KIRKHOF CENTER KC80

Tracking Trends in Muskegon Lake Weather, Productivity and Hypoxia in Real-Time Using a Lake Observatory Buoy

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

Presenter: Anthony Weinke

Lakes are key freshwater reservoirs and sensitive sentinels of climate change. Upon close observation, lakes reveal themselves to be very complicated and dynamic ecosystems, and many aspects of how they work still remain unknown. Since May 2011 the Biddanda Lab has deployed a buoy in the lake equipped with sensors to continuously monitor the weather and water quality parameters in real-time. Although it has only been deployed recently, scientists at the institute have already observed aspects of the lake dynamics that were not clearly noticeable in previous years. Some questions I investigated using this buoy are: Do major storm events cause a boost or lag in lake productivity? How is increased productivity of surface water in the summer linked to bottom water hypoxia? I will also discuss the lack of a simple correlation between weather and productivity, and the discovery of persistent summertime lake-wide hypoxia in the bottom water of the lake.

Mentor: Bopi Biddanda

KIRKHOF CENTER KC81

Human Stature and Nutrition in the Context of Roman and Medieval London

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

Presenter: Emily Teall

Human stature, derived from anthropometric measurements of skeletal remains, is a valuable tool to explore how diet and social factors influence health. This tool was used to answer the research question, how does the stature among the occupants of London change from Roman to Medieval times, and what does this indicate about health and sustenance in relation to sex? Adult skeletons of estimated age 18 or older were used, and only those in the sample with femurs and humeri present. The data that were used in this study were supplied by the Museum of London's Centre for Human Bioarchaeology (WORD Database 2011). The primary pair of variables that was analyzed was sex and stature; 'Roman' and 'Medieval' made up a categorical third variable, time. The synthetic results were that the biological and socially-perceived identity of sex had a relationship with the quality of nutrition experienced by individuals living in London during the time period studied.

Mentor: Gwyn Madden

KIRKHOF CENTER KC82

Microbial Behavior of Cyanobacterial Mats in a Low-Oxygen, High-Sulfur Lake Huron Sinkhole

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

Presenter: Stephen Long

A submerged freshwater sinkhole off the coast of Alpena, Michigan houses a thriving community of purple filamentous cyanobacteria-dominated mats that survive using oxygenic photosynthesis, anoxygenic photosynthesis, and chemosynthesis. The Middle Island Sinkhole (MIS) is located at a depth of 23 meters in NW Lake Huron. Conditions in the sinkhole are relatively harsh due to low light, low-oxygen and high salt content of groundwater venting out. Here, instead of the expected phytoplankton ecosystems, purple-colored benthic cyanobacteria dominate. Mat samples were collected from MIS in June 2011, ground water was sampled, photos were taken, and behavioral experiments were performed in order to learn what environmental factors allow these mats to flourish. Our findings suggest that these cyanobacterial filaments are physiologically versatile and possess the capability for rapid and diurnal mobility (both horizontal and vertical) with attendant consequences for ecosystem biogeochemistry.

Mentor: Bopi Biddanda

KIRKHOF CENTER KC83

Ai Weiwei: Irreverent Recycling and Artistic Activism

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

Presenter: Brianna Thiel

This paper discusses how artist and activist Ai Weiwei employs appropriation in his sculptural oeuvre to critique postmodern culture and politics in China. Specifically I explore how Ai's recycling of ancient materials and motifs displays a unique form of détournement. In both his Coca-Cola Vase series and his reconstructions of Ming dynasty furniture, Ai transforms China's material history into a found object, subverting its past meaning. In both Sunflower Seeds and Zodiac Heads: Circle of Animals, Ai plays with the tension between original and copy, appearance and reality. Each of these works displays Ai's experimentation with redefining society's left-overs. While Ai has gained media attention as an activist, this paper argues that Ai's art is central to that role and not a neutral by-product of his dissent. Through his poetic yet provocative sculptures, Ai confronts the injustices he perceives in his own society and creates a new form of appropriation for the postmodern art world.

Mentor: Sigrid Danielson

KIRKHOF CENTER KC84

Climate Change Demonstration through Modeling of a Thawing Permafrost

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

Presenter: Stephanie Standriff

The issue of global climate change (GCC) needs to be demonstrated and discussed in order for people to recognize its importance. Isolating and presenting a specific environmental effect of GCC can help to make the complex issue seem less daunting and overwhelming. This demonstration will look specifically at permafrost, permanently frozen ground, and the role that preservation of permafrost has in preventing GCC. The permafrost model (soil and ice layers with one side being warmed) used thermochron iButtons to measure soil temperature every ten minutes. The purpose of this presentation is to show the data collected from the model compared to scientist's data collected from real permafrost. This comparison will be shown by graphs to help the public understand the importance that data collection and analysis has for understanding GCC. The presentation will also make viewers aware of the negative effects of thawing permafrost and what they can do to help prevent permafrost from thawing.

Mentor: Steve Mattox

KIRKHOF CENTER KC85

Profanity, Slang, and Professional Language in the Writing Center

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

Presenters: Anna Worm, Claire Banner

Can a thesis written in 'lolspeak', an internet variety of English, aid a student as well as one developed in finely wrought academic speech? Can profanity serve a purpose within a writing center consultation? What happens when a student swears back? This poster explores the ways profanity, slang, and non-standard uses of language can function within the writing center as tools for creating rapport with students and for explaining topics in a manner unhindered by the sometimes intimidating confines of academic discourse. We also address consultant responses for when a student veers sharply away from professional dialogue. We hope our research provides ways to incorporate into consultations types of language generally viewed as less professional in order to build rapport and promote understanding beyond the realms of strictly academic language.

Mentor: Ellen Schendel

KIRKHOF CENTER KC86

Synthesis of Novel Peptides as Focal Adhesion Kinase Inhibitors

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

Presenter: Derek DenHartigh

Focal Adhesion Kinase (FAK) is a protein kinase involved in signal transduction at cellular focal adhesions. Protein kinases function by altering a substrate via phosphorylation, thereby altering the substrate's functionality, often turning it on or off. By targeting FAK for inhibition, it may be possible to prevent the signal transduction of cancerous cells responsible for releasing cell anchorage and metastasizing. This investigation involved designing novel peptide substrates that mimic the protein CASp130, a reported in vivo substrate. The two peptides synthesized were DH-1: DVEDVPKKK and DH-2: DIYDVPKKK. Each peptide contained a string of 6 amino acids isolated from the CASp130 protein attached to a polylysine tail required for functionality of the phosphorylation assay. The peptides were synthesized using solid phase peptide synthesis methods, both manual and automated.

Mentor: Laurie Witucki

KIRKHOF CENTER KC87

Variation of Arterial Branching Patterns in the Human Body: The Inferior Gluteal Artery and the Right Hepatic Artery

Participants attending from 9:00 a.m. until 10:00 a.m. and 1:00 p.m. until 2:00 p.m.

Presenters: Mark VanWoerkom, Adam Stefaniak, Phillip Stone

While human anatomy is often presented as a constant structural form, human cadaver dissection has repeatedly shown that variation in the structure is commonplace. Demonstrated anatomy shows that the inferior gluteal artery is the largest terminal branch of the anterior division of the internal iliac artery. Furthermore, the superior gluteal artery is a terminal branch of the posterior division of the internal iliac artery. Here we present an example of an unusual variant where the inferior gluteal artery arises from the superior gluteal artery, and both can be considered terminal branches of the posterior division of the internal iliac artery. In further demonstration of arterial variation, an unusual occurrence of the right hepatic artery arising from the superior mesenteric artery is presented.

Mentors: Chris Reed, Anthony Kegley, Tim Strickler

KIRKHOF CENTER KC88

Quality Assurance of Cerenkov Luminescence Imaging

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

Presenter: Michael Dykstra

Cerenkov radiation is a distribution of visible light emitted when a charged particle exceeds the speed of light in a medium. This method is used to view $^{2+}$ and $^{2-}$ radiation, such as the positron emitters used in PET studies. The visible light from Cerenkov radiation can be observed by optical imaging devices such as the AMI-1000. The goal of this study is to assess the quality of the AMI-1000 for taking Cerenkov Luminescence Images. The linear relationship between the activity of a radioactive source and the detected signal will be investigated by placing 11 plates with $^{2+}$ emitting 18F-Fluorodeoxy-glucose (FDG) of activities increasing linearly from 0 to 100 μ Ci into the AMI-1000. This study will be paralleled with a PET study using the same FDG samples to test for positive correlation between the two imaging methods. Lastly, this correlation will also be assessed for mice injected with FDG. This study is still under progress.

Mentors: Richard Vallery, Anthony Chang

KIRKHOF CENTER KC89

A Landscape Perspective on Bird Beak Deformity: An Epizootic of Unknown Etiology

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

Presenter: Rachelle McLaughlin

Although birds with beak deformities have been documented throughout the literature, the recent spike in occurrences in certain regions has caused concern in the scientific community. A major concern relates to the role of contaminants and environmental degradation in causing or exacerbating this epizootic. This study used spatial and statistical analyses to examine the problem from a landscape perspective in an effort to make recommendations that could guide future research and data collection. Logistic regression models were generated using known occurrences of bird beak deformity as well as randomly generated points compared with spatial data on relevant environmental variables. Generalized linear models predicted high probability ($P(\text{Deformity})=0.88$) of deformity occurring when all environmental variables were present. With more collaboration among researchers and data sharing, this method could provide insight into the currently unknown etiology of bird beak deformity.

Mentor: Shaily Menon

KIRKHOF CENTER KC90

Bio-Succinic Acid

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

Presenters: Hongjoon Yoon, Lee Jackson, Godwill Nwokocho, Eric Hansen

Succinic acid is one of the key platform molecules produced from biomass and transformed into a variety of useful chemicals. The production and usage of succinic acid as a replacement of maleic anhydride, main intermediate in petroleum based technologies, will be presented here. The versatility of the two carboxylic groups and its partial solubility in water make succinic acid a convenient starting materials for a variety of chemicals such as esters, amides, alcohols and biopolymers.

Mentor: Dalila Kovacs

KIRKHOF CENTER KC91

Maximizing Performance and Minimizing Injury Risk in Male Collegiate Gymnasts

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

Presenters: Keith Spieker, Shawn French

Gymnastics skills demand a great deal of strength, power, balance, and flexibility. At the collegiate level, athletes must maintain these physical abilities and be able to achieve peak performance during championships. The researchers developed a year training program, maximizing the gymnasts' event-specific strength and power while simultaneously minimizing injury risk. Within the strength and conditioning literature, there is limited in-depth research regarding gymnasts. Therefore limitations in knowledge are rooted in the lack of published credible research. This program was designed to provide a best practices model based on the research available. Following a well-developed and researched protocol gymnastic coaches could improve the performance of their athletes by avoiding injuries and peaking their performance at the right time.

Mentor: Amy Crawley

KIRKHOF CENTER KC92

Subcloning of a pKN cDNA from *D. melanogaster*

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

Presenter: Stephanie Maciejewski

Delorean flies contain a wing mutation which is caused by a transposon in the protein kinase N gene. The overall purpose of this experiment was to insert the pKN cDNA RH37580 into the expression vector pCaSper, which would then be inserted into *D. melanogaster* embryos. Adult flies with the expression vector would be heated to activate the heat-shock sequence of the pCasper vector and RH37580 sequence to correct the wing mutation. Using PCR and specific primers, the open reading frame of RH37580 was amplified to provide enough genetic material for ligation into the pCaSper vector. The cDNA material was then ligated into vector pGem-T Easy. The vector was successfully transformed into bacterial cells, and blue-white screening was used to identify which colonies contained the pGem-T Easy vector with the RH37580 cDNA. PCR from direct bacterial samples was used to identify the positive clones, again for amplification. Ligation was then attempted to insert the cDNA into the pCasper vector.

Mentor: Bruce Ostrow

KIRKHOF CENTER KC93
English Language Learners in Mathematics Education
Participant attending from 2:00 p.m. until 3:00 p.m.
Presenter: Paige Laurain

English as a second language (ESL) classrooms in the United States teach students that are from non-English speaking backgrounds how to speak and study in English. They also act as a resource for students who struggle in other subject courses due to the language barrier. Secondary schools and universities in Tanzania are similar to ESL classrooms in America because English is the second, third, or even fourth language that the many of the students learn. Having taught in Tanzania, I have observed the struggles students face trying to study and learn in English. In both countries, students have trouble in other subject areas because they are taught in English, a language they have not yet learned. This presentation will look at the similarities between the two cultures educationally, and portray the changes seen within a secondary Tanzanian classroom when the teacher uses a bilingual approach.
Mentor: Lisa Kasmer

KIRKHOF CENTER KC94
Kaoiki Earthquake Prediction
Participant attending from 9:00 a.m. until 10:00 a.m.
Presenter: Joseph Cherluck

In November, 1986, the American Association for the Advancement of Science published an article written by Max Wyss. This article asked the question “is it possible to predict the next earthquake at Kaoiki in Hawaii?” The prediction by Wyss was that main shock earthquakes at Kaoiki happen every 10.5 plus or minus 1.5 years. I plan to test his hypothesis by analyzing the timing and spatial distribution of recent earthquakes, supplied by USGS, HVO and other sources, using a Geographic Information System (GIS).
Mentor: Peter Wampler

KIRKHOF CENTER KC95
Modification of Antimicrobial Agent Compound by Alterations in Structure and Functionality Via Amino Acid Coupling
Participant attending from 11:00 a.m. until 12:00 p.m.
Presenter: Paul Savage

The parent compound WS.11.67 is a modified peptide analog developed by our lab to probe the specificity of Focal Adhesion Kinase (FAK), an enzyme found to be up-regulated in many cancer cases, such as breast and prostate cancers. The focus of our lab has been the modification of the compounds tyrosine residue through peptide coupling with select amino acids. Protected tryptophan residues were coupled through amid bond formation to WS.11.67 using N,N'-Dicyclohexylcarbodiimide (DCC), O-(Cyano(ethoxycarbonyl)methylenamino)-1,1,3,3-tetramethyluronium tetrafluoroborate (TOTU), or a ring closure mechanism, confirmed by 1H-NMR, 13C-NMR and Inferred Spectroscopy. These compounds and other future products will be tested for their ability to maintain similar antimicrobial potential while decreasing its affinity for Human Serum Protein compared to binding WS.11.67.
Mentor: Laurie Witucki

KIRKHOF CENTER KC96
Yearly Strength and Conditioning Program for Elite Level Female Rowers
Participants attending from 12:00 p.m. until 1:00 p.m.
Presenters: Aaron Beebe, Lauren Adolf

Rowing requires a diverse set of abilities from its athletes. Rowers must have excellent aerobic and anaerobic power, flexibility and precise technique. Weakness in any of these components results in diminished performance. This study aims to provide a periodization model for elite female rowers training for Olympic competition. Through a review of literature examining elite rowing training methods, the best training techniques were analyzed for their effectiveness and specificity. This study reviewed the methods and results of others so there are limitations as to the validity and application of the periodization model. This research is significant as it emphasizes the understanding of strength and endurance for elite female rowers, as well as the level of intensity needed for Olympic level competition. This is designed to benefit elite female rowers and coaches in building strength and speed for each individual athlete to develop the most overall boat speed possible for competition.
Mentor: Amy Crawley

KIRKHOF CENTER KC97
Conjectures and Results Involving Orderings, Posets, and Lattices
Presenters: Kurt O’Hearn, Michael Phillips, Matthew Plante

In discrete mathematics, there are partial orders on permutations relating how much they are disordered. One of these orders, the weak order, has some additional structure called a lattice. Our work presents conjectures and results from combining the weak order with other orders to form larger posets with the aim that these posets exhibit properties of a lattice. Our ideas include the use of alternative representations such as binary matrices.
Mentor: Brian Drake

KIRKHOF CENTER KC98
The Plasma Speaker
Presenter: Joseph Campbell

I constructed a plasma speaker from based on an on-line schematic. Its main components are a 555 timer, a FQP70N10 mosfet transistor, and a flyback transformer. The speaker produces an electrical arc approximately 2cm in length which has its frequency modulated by the 555 timer. An audio signal was put into the 555 timer chip, producing an audible signal produced from the electric arc.
Mentor: Ross Reynolds

KIRKHOF CENTER KC99
Disbanding the Myths of Green Chemistry
Presenters: Ross Harmon, Adam Taylor, Patrick Feurstein

In today's time the term Green means several different things. Many negative connotations have been attached to this term. Learn what Green chemistry really is and how it works in today’s world.
Mentor: Dalila Kovacs

Oral Presentations, Abstracts & Schedule

BEGINNING AT 9:00 AM

KIRKHOF CENTER 1142
The Replacement of Cattle with Eland Antelope in Namibia
Presenter: Karl Sebastian Fester

The developing country of Namibia has an arid climate; and its ecosystems are better adapted to use by native ungulates than by introduced cattle. The eland antelope is biologically and physically similar to the main cattle breeds currently being farmed in Namibia. Foraging behaviors and diets of eland are better adapted to the desert-like vegetation of Namibia, resulting in less land degradation. I will compare the eland with the heavily used africander cattle breed with respect to growth and weight, behavior, lifespan, foraging, diet, fertility, health, husbandry, and financial costs of care. The economic prospects of farming eland may show great promise in Namibia. The findings will show whether or not the eland will be viable for farming at various farm sizes.
Mentor: C. “Griff” Griffin

KIRKHOF CENTER 2201
Sex Slavery as a Human Rights Violation
Presenter: Allison Kneisel

Over the course of the semester, I will be researching what constitutes a “human rights violation” in respect to the Universal Declaration of Human Rights. I will also research the human sex trafficking industry, and I will specify and prove how aspects of this industry are clear human rights violations. My end goal will be to prove why human sex trafficking should be termed “sex slavery” in order to convey the violations that are inherent in the industry as well as to increase the attention given to this issue. By labeling this practice as “sex slavery”, it will show that it is a human rights violation and that it is an issue that must be taken more seriously by society and governments. I will discuss different methods of fighting this practice and how citizens can get involved at a local level. I will end with discussing that efforts can be made locally that may have an impact on the industry as a whole globally.
Mentor: Carl Ruetz

KIRKHOF CENTER 2216
The Effects of Pollutant Analogs Alkylphenol and Nonylphenol on the Nervous System and Ecology of Orconectes propinquus
Presenters: Megan Micallef, Stephanie Cole

Crayfish are a ubiquitous keystone species that are vital to the ecological community of much of the United States and Canada. They serve as a major food source for many animals and act as predators of smaller animals themselves. Today, many invertebrates’ survival may be influenced by the use of chemical applications such as alkylphenols and alkylphenol ethoxylates, used in pesticides and industrial cleaners that have been rated inert by the EPA and other environmental agencies. Our study seeks to investigate the effects of the alkylphenol analog, nonylphenol, on the nervous system of *Orconectes propinquus* by testing its effects on behavioral responses, serotonin release, and action potentials of vital ventral, dorsal, antennal, and cranial nerves. Our

preliminary findings show that populations of *Orconectes propinquus* are susceptible to such chemicals, moreover juveniles show dramatically increased mortality. We expect to see deficits in neuronal responses as well.
Mentor: Andrew Booth

KIRKHOF CENTER 2259
Constructing and Analyzing the Michigan Nonprofit Compensation and Benefit Survey
Presenter: Aaron Clark

For 10 years, this biennial survey has been the primary source of benchmark data for Michigan nonprofits’ compensation and benefit decisions. Compensation is usually the largest expenditure for nonprofit organizations, making an appropriate employee compensation package a key to success. Learn the detailed work and decisions that go into creating a large-scale survey instrument. Limited discussion of descriptive analyses of the survey data will be given.
Mentor: John Gabrosek

KIRKHOF CENTER 2263
“Awful Doubt, or Faith so Mild”: Skepticism and Environmental Morality in Percy Bysshe Shelley’s “Mont Blanc”
Presenter: Lisa Austin

In his preface to “A History of a Six-Weeks’ Tour,” Shelley describes the area of Mont Blanc as “a sentiment of ecstatic wonder, not unallied to madness.” Though captivated by the power of the mountain, he regards it differently than his contemporaries. While William Wordsworth describes Nature in a divine light, Shelley is an advocate for skepticism, for the inherent power of the natural world. Unsure whether the universe was created by a deity, Shelley is reticent to concede that it belongs to humanity, as the Bible may suggest. In my paper, I argue that Shelley crafts “Mont Blanc” in response to the dominionist attitude toward Nature often associated with Genesis, and that “Mont Blanc” is in conversation with Wordsworth’s “Tintern Abbey,” a poem that suffuses Nature with divine significance. I also examine the possible result of Shelley’s skepticism used as an antidote to modern dominionist mindset, and how a skeptical view may raise one’s awareness of mankind’s relation to Nature.
Mentor: Brian Deyo

KIRKHOF CENTER 2266
Rectangle Visibility Graphs
Presenters: Connor Scholten, Rebekah Simon

Graph theory is the study of pairwise relations between objects where we model the objects with dots and the relations between them with lines. Rectangle visibility graphs is a special topic in graph theory that has applications in computer chips and circuit board design. In rectangle visibility graphs, the objects are rectangles in the plane with the relations between them being horizontal or vertical lines. We will discuss the relationship between rectangle and bar visibility graphs in this presentation along with their relationships to other types of well-known graph families. We will also explore different ways to construct layouts for these graphs.
Mentor: Feryal Alayont

KIRKHOF CENTER 2270

New Perspectives for Art Making With Special Needs Students

Presenters: Christopher Fiore, Melissa Ellis, Gayle Lotterman, Amanda Ellis

Through fundamentally examining the question of fate versus free will, Milan Kundera’s *The Unbearable Lightness of Being* heavily references the fourth movement of Beethoven’s last string quartet, *Der schwer gefasste entschluss*. This quartet and Kundera’s novel share a powerful metaphorical relationship. Through careful study, the parallel motifs and structural elements between the two works are illuminated, thus providing a new perspective on Kundera’s usage of this metaphor. An enhanced understanding of this core metaphor in *The Unbearable Lightness of Being* sheds new light on the meaning of Kundera’s work and the author’s answer to the struggle between fate and free will.

Mentor: Katalin Zaszlavik

BEGINNING AT 9:30 AM

KIRKHOF CENTER 1142

Abundance and Effective Management of Buckthorn at Blandford Nature Center

Presenter: Clara Trippel

The objective of this project is to determine the extent to which the non-native and invasive shrubs, common buckthorn (*Rhamnus cathartica*) and glossy buckthorn (*Rhamnus frangula*), are invading an area of 16 acres at Blandford Nature Center. This will require the identification and mapping of them in order to record the locations of saplings and adults as well as suggest possible management options for removal and control. Methods will include walking transects within each microecosystem of the area to flag, and count and map the buckthorn. I expect to find a concentration around forest edges and wetlands because buckthorn is water tolerant and thrives in partially shaded conditions. Removal suggestions will include mechanical hand-pulling and cutting, as well as the chemical application of glyphosate. Control suggestions will include neighborhood outreach and education, early detection and rapid response, as well as the restoration of treated areas by replanting native species.

Mentor: C. “Griff” Griffin

KIRKHOF CENTER 2201

Evaluating Removal and Mark-Recapture Methods for Estimating Sculpin Abundance in Streams

Presenter: Brandon Harris

Unbiased estimates of abundance are critical for fisheries management. We evaluated mark-recapture and removal methods for estimating sculpin (*Cottus bairdii*) abundance. Objectives were to: 1) compare abundance estimates, 2) assess bias of removal methods, and 3) evaluate closed-population model assumption. We sampled 8 streams via electrofishing. On day 1, fish were marked in 3 sections of a 90-m reach. On day 2, fish were captured and temporarily removed from the stream during 4 passes. Removal abundance estimates were significantly lower than mark-recapture estimates and underestimated known abundances. Movement of marked fish was minimal among sections of the 90-m reach in most streams. Survival and mark retention of sculpin held overnight in cages were 100%. Our results suggest the closed-population assumption was valid in most streams and the removal method yielded negatively biased abundance estimates. We recommend using mark-recapture methods to estimate sculpin abundance.

Mentor: Carl Ruetz

KIRKHOF CENTER 2259

Bobo Stenson’s “Song of Ruth:” A Jazz and Classical Hybrid

Presenter: Karel Lill

Bill Evans’ performance on the landmark recording, Kind Of Blue, was the turning point which allowed other pianists to begin the transformation from the Bebop style of the 1950s, to the modern European style of artists like Bobo Stenson, John Taylor, Tomasz Stanko, and others. With unique attention to chord voicings, tone production, and harmony, Evans embedded the style of the great classical impressionists, such as Claude Debussy and Maurice Ravel, into the jazz vernacular, creating a hybrid of musical styles. The infiltration of foreign musical elements into jazz continues to this day. In this presentation, the music of Bobo Stenson, an exemplar of the European style, will be analyzed by comparing his piece, Song of Ruth, to several selected classical composers whose music contains similar stylistic elements, but predated Stenson’s by many decades. By using this method of analysis, this presentation will identify some of the salient features in the evolution of the European style.

Mentor: Kurt Ellenberger

KIRKHOF CENTER 2266

Organ Transplant in Islam

Presenter: Rebecca Payne

I chose the topic of organ transplantation because of the mystery it holds and the importance it has within the religion of Islam. When the holy book, the Qur’an, was written organ donation was not scientifically thought possible so clear guidelines for organ donation and acceptance are not defined within it. My presentation will attempt to bring to light some of the issues concerning organ transplantation within the religion of Islam. Some Muslims it is believed that organ donation damages the body and will be unable to resurrect properly or at all. Contrastingly other Muslims believe that because giving organs is for the greater good that it is permissible even though it involves tampering with the body. Many factors go into considering whether organ donation is permissible some factors to be explained through my presentation include: biologically decreased donors verses brain-dead living donors, and live donors giving unnecessary organs.

Mentor: Chad Lingwood

KIRKHOF CENTER 2270

Social and Political Actions of Women in Contemporary Argentina

Presenter: Kristen Kuhn

My research paper focuses on the social political action of women in Argentina. I have explored prominent movements and figures regarding women’s civil and political rights. I have included in my study important Argentine women such as Eva Peron, a woman with great political influence, who campaigned for women’s suffrage among other social issues. I have also included in my study movements like Las Madres de la Plaza de Mayo, a small group of women who boldly broke the silence revolving around the many disappeared people in the 1980’s, often their own children. My paper also explores Argentine women in more recent instances, such as the Piqueteras, an unemployed workers movement headed by women. The focus of my research was not solely political, as I attempted to address the social, economic, cultural and human aspects of women’s social change. I compiled a research paper that follows women’s struggle for freedom and civil rights in Argentine history over the last decades.

Mentor: Zulema Moret

BEGINNING AT 10:00 AM

KIRKHOF CENTER 1104

“Bad at Writing:” How Self-Efficacy Theory Allows Peer Tutors to Foster Confident Writers

Presenters: Dale Johnson, Lindsay Stoyka

Inevitably, writing tutors will at some point work with students who self-identify as lacking confidence in their writing abilities. When a student voices reluctance or opposition to the writing process, the relationship between student and tutor is immediately altered. The tutor is placed in the uncomfortable role of expert rather than peer. Without addressing this shift, the dynamic of a consultation changes, as does a student’s response to feedback. One lens through which to examine this difficult situation is that of self-efficacy, one’s perception of his or her ability to successfully perform a task. In this presentation, we’ll examine what self-efficacy is and how it’s determined. We’ll also present results of our primary and secondary research on how self-efficacy practices affect a writing consultation. By giving feedback with these strategies in mind, peer tutors can foster self-efficacy in students and create stronger, confident writers.

Mentor: Ellen Schendel

KIRKHOF CENTER 1142

The Influence of Stonegate Public Golf Course on Cedar Creek

Presenter: Elizabeth Mullins

Established in 2004, the Stonegate Public Golf Course lies within the Cedar Creek Watershed. With the golf course in direct contact with Cedar Creek, herbicides and fertilizers used to maintain greenways enter the waterway through runoff, impacting the water quality. During construction, the golf course stream banks were degraded, leading to excessive sedimentation in the creek. Since then, Best Management Practices (BMP’s) have been put into place in an attempt to stop the erosion. Data will be gathered below, above, and adjacent to the site to determine the amount of stream discharge, dissolved oxygen, sediment load, and biological indicators. By collecting data upstream and downstream from the golf course and erosion site, impacts of the golf course will be understood. I expect to find a decrease in the diversity and amount of macroinvertebrates downstream from the golf course and erosion site.

Mentor: C. “Griff” Griffin

KIRKHOF CENTER 2201

Food Webs and Rivers: Importance of Contiguous Habitat Interactions

Presenter: Noah Jansen-Yee

The focus of this project was to more fully understand and document the dynamic interactions and flow of energy between stream and riparian zones in wetland, cedar (*Cedrus spp.*), and alder (*Alnus spp.*) dominated reaches. Stable isotopes of carbon and nitrogen measured food web structure and estimated energy transfer rates. Habitat comparison and characterization show that many of the chemical characteristics of each reach are fairly uniform throughout each reach. Amongst all sites, strong relationships as indicated by stable isotope analysis showed trophic interactions between organic matter to terrestrial macroinvertebrates and then to fish populations. Results did not support our initial hypotheses concerning the differences between study reaches, evidence of strong interactions between aquatic and terrestrial riparian zone was found. Thus the link between aquatic and terrestrial energy sources was shown to be quite strong in all three reaches, including the wetland-dominated reach.

Mentor: Eric Snyder

KIRKHOF CENTER 2216

Use of Social Media by Nonprofit Organizations’

Presenters: Kristin Moore, Katherine Key, Lisa Copeland

Nonprofit organizations have grown tremendously in the last three decades. With growth has come greater interest from the nonprofit sector in the importance of marketing. Nonprofits application of marketing is now a well-accepted practice. Recently, nonprofits have also begun to use social media for fundraising and marketing. The perception of nonprofit organizations is different when approaching social media and traditional marketing. Through a national survey, the authors examine issues of nonprofit marketing strategy and social media from the viewpoint of the nonprofit organization. A conceptual framework for strategic implications is provided.

Mentor: Jennifer Pope

KIRKHOF CENTER 2259

Bridging the Gap in Higher Education: First-Generation Students

Presenter: John Gipson Jr.

Research shows that a wide gap exists between the graduation rates of first-generation students and one’s peers whose parental figures have college experience. However, reform can be established on college campuses and within k-12 classrooms to increase the success of members within this population. Throughout the presentation, information on first-generation students will be presented and recommendations for improvement will be outlined.

Mentor: Tom Owens

KIRKHOF CENTER 2263

The Quest for Balance, Perspectives on the Bhagavad Gita

Presenter: Brett Barrett

In this discussion, I attempt to see the Bhagavad Gita through the perspectives of modern society. Is Arjuna fighting a physical battle similar to our own conscience? Why is understanding our Dharma, our duty in this world, the key to finding balance? How can we acting without seeking the benefits of our work, dismissing the fruits of action? How does desire remove us from our higher nature? Although the disciplines, or yogas, taught in the Bhagavad Gita are not generally accepted in the western world, we can still learn from them and use them as a guide to our spiritual lives.

Mentor: Dr. D. Ihrman

KIRKHOF CENTER 2266

Genetic Demography of *Perimyotis subflavus* Reveals Regional Population Trends

Presenter: Alynn Martin

White-nose syndrome (WNS) is an epidemic affecting hibernating bats across eastern North America. It is generally associated with the presence of a white, soil dwelling fungus, *Geomyces destructans*. Since its discovery in New York in 2006, WNS has been responsible for hundreds of thousands of bat deaths. Mortality rates of affected individuals have reached 90-100% in some hibernacula. Many of the studies regarding WNS focus on little brown myotis, *Myotis lucifugus*, which has experienced an 87% decline, though at least five other species have also been significantly affected. Tri-colored bats, *Perimyotis subflavus*, have

experienced an 85% decline in the northeastern states, yet little work has been done involving *P. subflavus*. We present phylogeographic analyses of mitochondrial sequence data from *P. subflavus*, focusing on patterns of population genetic structure and estimates of effective population size.
Mentor: Amy Russell

KIRKHOF CENTER 2270
Russia’s Democratic Retreat: The Role of the Conflict in Chechnya, Declining Media Freedom, and a Subdued Middle Class
Presenter: Kristin Mahn

The fall of the Soviet Union is argued to have brought more freedom to people in the region. However, is Russia really in a better place in 2012 than it was under communism? Drawing on scholarly research, news sources, and firsthand accounts, this paper challenges the popular understanding of Russian politics by arguing that the democratic decline in Russia has eroded many of the social gains of the 1990s. The focus will be on three specific problems with Russian democracy. First, the conflict in Chechnya demonstrates that political and civil rights continue to be violated on a regular basis. Secondly, the regime’s muzzling of the media makes evident that it is still willing to violate individual rights to maintain power. Thirdly, due to the central role that middle classes historically have played in the struggle for democratization, the relative absence of middle class involvement in Russian civil society makes holding leaders accountable and defending human rights a Herculean task.
Mentor: Heather L. Tafel

BEGINNING AT 10:30 AM

KIRKHOF CENTER 1142
The Economic Implications of the Corporate Average Fuel Economy Regulations
Presenter: Jonathan Rogers

Since 1975 the Corporate Average Fuel Economy regulations (CAFE) have governed fuel efficiency in the United States. Introduced to conserve fuel after the 1973 oil embargo, the CAFE regulations have always been controversial. CAFE aims to control fuel consumption through indirect and inefficient methods. The aging regulations were built around popular vehicle models of the 1970’s (such as the Station Wagon), but do not properly regulate today’s models (i.e., SUVs and Minivans). Beyond inefficiencies there is the Rebound Effect, where a commodity will be used more the less it costs, which applies to gasoline with highly-rated mile per gallon (MPH) vehicles. A direct control (such as a tax) would be a more efficient limit on fuel consumption. Consumers and producers respond to incentives, incentives not present with current CAFE regulations.
Mentor: C. “Griff” Griffin

KIRKHOF CENTER 2201
Identification of the Late Embryogenesis Abundant Proteins Gene Family in the Orchidaceae
Presenter: Timothy Godfrey

With over 25,000 species, Orchidaceae represents one of the largest and most diverse families of flowering plants. Due to the increasing anthropogenic disturbances, long-term seed storage in seed banks is crucial for the preservation of this family. Our aim is to contribute to the understanding of orchid seed biology and hence the design of seed banking protocols for orchids. Seeds are divided up into two major groups. Orthodox seeds require low water contents and temperatures for

storage, while recalcitrant seeds cannot be dried without compromising their internal structural integrity, rendering the seed unviable. At present, it is unclear whether orchid seeds are orthodox or recalcitrant. The accumulation of late embryogenesis abundant (LEA) proteins has often been implicated with the acquisition of desiccation tolerance in orthodox seeds. In hopes of better understanding the acquisition of desiccation tolerance in orchid seeds our short-term goal was to identify members of the LEA protein gene family. Using the limited genomic orchid resources available, we were able to design primers to successfully isolate cDNA clones of four unique LEA protein genes from hybrid Phalaenopsis plants. Using the sequences obtained from this work, we hope to utilize quantitative-PCR to monitor the expression of these 4 LEA gene transcripts at varying stages of seed development.
Mentors: Sheila Blackman, Pei-Lan Tsou

KIRKHOF CENTER 2216
Therapeutic Recreation and Limb Differences
Presenters: Kristen Evans, Josh Oliver, Camella Beale, Allison Hand, Lisa Quick, Jacob Smith

Using thematic content analysis, this study examines the role of therapeutic recreation for individuals with limb differences.
Mentor: Kari Kensinger

KIRKHOF CENTER 2259
War and Economy
Presenter: Kelly Howell

War, according to scholars, has been a persistent pattern of interaction between and within nation-states and other political units throughout history. Yet, little is actually known about war and its effects on economies, cultures, and the environment. This research delves into the effects of inter-state, extra-state, and intra-state wars on the economies of nation-states. How do variables such as milex, duration, initiation, and fatalities affect economic outcomes of war? This research examines the relationship between war spending and nation-state economy. I am examining how that relationship changes over time and what factors help to create that change. With so many questions still unresolved about war’s effects on state economy, it is crucial to continue an exploration of the evidence and to promote an open dialogue about the possible long-reaching consequences.
Mentor: John Constantelos

KIRKHOF CENTER 2263
‘May all your thrash be progressive’: Resistance and the Evolving Punk Aesthetic
Presenter: Patrick Anderson

Since the early 1980s, the hardcore punk movement has been associated with resistance, rebellion, and social critique. Received conventions for evaluating music could not be easily applied to the asymmetrical phrasing, shouting vocals, and de-centering song structures, and the execution of instrumental parts carried just as much political commentary as the lyrics set to them. However, over the last 30 years, punk has been subsumed by the capitalistic music industry: many of what are today considered “punk” bands lack the political element in their music, even if they attempt

to compensate with overtly political lyrics. An aesthetic critique of two contemporary punk bands, Propagandhi and Rise Against, reveals the necessity for punk to be reflexively aware of the dangers of being co-opted into the mainstream and to continually re-invent the “sound” of punk in order to continue its legacy of challenging, rather than supporting, popular aesthetics.
Mentor: Dwayne Tunstall

KIRKHOF CENTER 2266
The Use of High Resolution micro Ultrasound to Measure Hind Limb Perfusion in an Ischemia Induced Mouse Model
Presenter: Brittany Merrifield

High-Resolution micro Ultrasound is a valuable area of small animal imaging for use in pre-clinical research. This study utilizes a mouse model of Peripheral Arterial Disease (PAD), through induced ischemia of the hind limb by femoral artery/vein ligation. A method was developed using Power Doppler micro ultrasound to accurately and precisely measure hind limb blood flow over 5 weeks’ time. Monitoring the hind limb perfusion can confirm ligation for the PAD model showing up to 60 % decreased perfusion. Also, the scans allow evaluation of the pattern of reperfusion through quantitative data and qualitative 3D images. The tissue reperfusion data is used with immunohistochemistry to study the underlying biochemical pathways activated in micro-vessel regeneration, or angiogenesis. The use of micro ultrasound proves to be a valuable tool in gaining access to the hemodynamic properties of this mouse model as it is affected by an ischemic injury and as it adapts through angiogenesis.
Mentor: Brian Kipp

KIRKHOF CENTER 2270
Effects of Experimental Warming on Phenology and Growth of Carex aquatilis-stans in Northern Alaska
Presenter: Timothy Botting

Global climate change will affect many areas of the world in differing degrees of magnitude. High latitude regions have shown the impact of climate change the most. In 1995 and 1996, two study sites were established in Barrow and Atkasuk, Alaska. Atkasuk is approximately 60 miles south of Barrow. The ongoing study uses open-top chambers to examine the response of vegetation to experimental warming. The change of numerous Arctic species has been documented. The phenology of the dominant sedge, Carex aquatilis-stans, was investigated and patterns of change have become apparent. Generally, the study has shown that Carex aquatilis-stans has grown taller, has longer leaves, and has flowered earlier over time. These patterns suggest that Carex aquatilis-stans will become an even more dominant sedge in the Arctic community since experimental warming likely altered reproduction and growth.
Mentor: Robert Hollister

BEGINNING AT 11:00 AM

KIRKHOF CENTER 1142
Wilderness Messages Available on Land Management Agency Websites
Presenter: Gareth Hickson

The Bureau of Land Management (BLM) and United States Forest Service (USFS) websites offer different information about the values described in the Wilderness Act. Using a random sample

of wilderness areas, I compared these agencies based on existing information found on their websites. I searched for information directly related to the values in the Wilderness Act and I compared each agency website based on specific values and purposes of Wilderness areas. The criteria used for comparison were: appearance of natural forces affecting the area, outstanding opportunities for solitude and primitive unconfined recreation, and ecological, geological or other features of value. Once these values have been determined I will then classify the agency website as either anthropocentric or biocentric. Finally I will offer information on specific techniques that may be useful to improve the wilderness message that land management agencies are presenting.
Mentor: C. “Griff” Griffin

KIRKHOF CENTER 2201
Prometheus: A Cyclical Theme In Literature and History
Presenter: Samuel Pfauth

The mythological figure of Prometheus will stand at the center of this presentation. This report will focus on Prometheus by Johann Wolfgang von Goethe, and Im Westen Nichts Neues (English title: All’s Quiet on the Western Front) by Erich Maria Remarque, in order to exhibit the actualization of various elements of the Promethean myth in later German history. Starting with an analysis of Goethe’s poem, I will consider the way German writers have appropriated and reworked the Prometheus myth. In this observation the similarities and disparities between the myth of Prometheus and the lives and works of Goethe and Remarque (and their public reception) as well as the consequential effects on social and philosophical thought in contemporary German culture, will be presented. In this presentation the argument will be posed that Goethe and Remarque performed the functions of Promethean archetypes. At the conclusion of the presentation, the audience will be asked to think critically as to what this theme implies in modern cultures. In contemporary societies around the world political social activists, writers, etc. are persecuted. Those who openly declare new philosophies or ideologies that are seemingly strange or unfamiliar are considered, without closer inspection, to be false, or radical, in some manner or another. Goethe’s works are picked apart centuries later, as Prometheus’ entrails. Erich Maria Remarque’s Im Westen Nichts Neues was burned during the infamous Bücherverbrennung in 1933, due to the declaration by the Main Office for Press and Propaganda of the German Student Association, that it, along with hundreds of other literary works by just as many authors were un-German. It is the hope of this presenter that members of the audience will take this insight into consideration when presented with new and seemingly foolish, or strange, information.
Mentor: Donovan Anderson

KIRKHOF CENTER 2216
Bifurcations and Chaos with Applications to Chemistry, Biology and Engineering
Presenters: Caleb Yonker, Paul Francoer, Michael Esch

We explore the mathematical concepts of bifurcation and chaos. In particular, we look at interesting examples involving these two concepts and explore interconnections between the two. We also look at interesting applications of bifurcation and chaos in Chemistry, Biology and Engineering.
Mentor: Sukanya Basu

KIRKHOF CENTER 2259
The Salience of Disability and the Impact of the Presence of a Person with a Disability (PWD) on Perceived Vulnerability to Negative Health Outcomes
Presenter: Karly Murphy

Researchers have suggested that stigma toward people with disability may stem from a feeling of vulnerability among people without disability (Fleischer & Zames, 2001). Others have suggested that stigma stems from a disability being the most defining feature of an individual (Smart, 2009). The goals of this study were to determine whether people increase in perceptions of vulnerability when meeting someone with a disability and whether the disability is the most salient or remembered characteristic. Participants were randomly assigned to have the experimenter use a wheelchair or not use a wheelchair. Participants completed measures of attitude toward disability, perceived vulnerability to a hypothetical health event, and memory recall of the experimenter’s characteristics. We tested if participants who saw the experimenter use the wheelchair reported greater vulnerability to a health event and showed lower recall for characteristics of the experimenter. Mentor: Amanda Dillard

KIRKHOF CENTER 2263
At Risk Youth and Therapeutic Recreation
Presenters: Jacquelyn Laba, Lindsay Vander Male, Lisa Beslagic, Katrina Caruso, Torry Bareman, Katelyn Fox

Using thematic content analysis this study examines the role of therapeutic recreation for at-risk youth. Mentor: Kari Kensinger

KIRKHOF CENTER 2266
Exploring Graphic Literature as a Genre and its Place in Academic Curricula
Presenter: Jeremy Llorence

The goal of this study is to identify what place, if any, graphic literature should have in academic curricula. Academic disciplines are a lot like genres in that they are subject to constraints. This means that graphic literature, as a blend of art and narrative, may not have a true place in courses devoted solely to Art or English. However, while graphic literature may not have a specific department, it can prove useful in various college courses as an engaging multimodal form. Through a variety of research methods including surveys of students and interviews with professors, this study shows that there is a strong need for more multimodal texts in the classroom by analyzing the genre of graphic literature and exploring how different students process information. Ultimately, this study argues that students and professors can potentially benefit through the use of graphic literature in addition to traditional course materials. Mentor: Chris Haven

KIRKHOF CENTER 2270
Applying Student Development Theory to Millennial Students: Does it Fit?
Presenter: John Gipson Jr.

This presentation synthesizes and expands on the works of Chickering and Reisser (1993), Perry (1981), and Rowe, Bennett, and Atkinson (1994) to create a student development theory for

traditional-age white millennial students. The work also incorporates how current theories must be revisited due to current descriptions of millennial students differing from those of the sample populations utilized by the theorists. Despite not being empirically tested, the central purpose of this theory is to encourage further research within the field of student development. The information synthesized in this presentation was first published in the MCPA Digest. Mentor: Tom Owens

BEGINNING AT 11:30 AM

KIRKHOF CENTER 1142
Monte Carlo Simulations of Cerenkov Luminescence Imaging
Presenter: Michael Dykstra

As Cerenkov Luminescence Imaging becomes more prevalent in the field of pre-clinical imaging, computer simulations must be done in order to investigate the method. In this study, simulations are done parallel to PET and Cerenkov Luminescence Imaging data. The results of these simulations will be used to test what regions of mice are the most ideal to plant sub-cutaneous tumors and get good signal. PET data for mice injected with 18F-Fluorodeoxy-glucose (FDG) was used to determine the number of events that occurred in given regions of interest. An event is defined as a decay of the radioisotope. More events will take place in regions of high metabolism, so our regions of interest included the gut, the bladder, the brain, and the heart. The simulations clearly demonstrated that signal from the heart is very minimal compared to that of the gut or the brain, so this mid-section of mice is the most ideal for the injection of subcutaneous tumors. Mentors: Anthony Chang, Richard Vallery

KIRKHOF CENTER 2201
A Quantitative Study of the Current Economy’s Impact on State Universities in Michigan
Presenter: Sandra Freeman Pikorova

The current economic slowdown has caused a significant decrease in government funding of postsecondary education. On the other hand, due to high unemployment, the demand for higher education has grown. We use quantitative data analysis to examine the effects of these two factors on enrollment, tuition and college participation rates at state universities in Michigan. Mentor: Sukanya Basu

KIRKHOF CENTER 2216
Walther von der Vogelweide Life and Music
Presenter: Evan Semeneck

This presentation will explore the cultural relevance of the music of Walther von der Vogelweide, in particular his song Palästinalied. A subsequent discussion about his life, and the European and Middle Eastern worlds in which he lived towards the end of the 12th Century. This will provide insight into his literary work, and contribute further to our understanding of the Crusades. In conjunction with perspectives on his life and times, it is intriguing to note the emergence of the German language in the vernacular, at a time, when Latin was the main written language of Christendom. What makes this such a powerful example of medieval music and culture, is that it is extremely rare since both the lyrics and semblances of early sheet music survived together on

manuscripts throughout the Middle Ages into modern times. Finally, the presentation will end in a culminating experience of a rendition of the song, which I will play on the recorder, and conclude by singing a couple of verses.
Mentor: Alice Chapman

KIRKHOF CENTER 2259
Therapeutic Recreation and Traumatic Brain Injury

Presenters: Keeli DePoister, Rene Teschke, Christine Flessland, Alicia Hass, Kristen Robach, Jenna Boeve

Using thematic content analysis this study explores the role of therapeutic recreation in the lives of individuals with traumatic brain injury.
Mentor: Kari Kensinger

KIRKHOF CENTER 2263
Health Status of Homeless People and Their Own Perspectives

Presenter: Sweta Basnet

According to the 2009-2011 report of the National Alliance to End Homelessness, 636,017 people experienced homelessness on a given night. An ethnographic survey and semi-structured interviews were used to obtain life histories and ethnographic data on personal health and demographic characteristics from homeless individuals living in downtown Grand Rapids, Michigan. This study has answered questions such as: What are the causes of homelessness? What factors contribute to poor health of the study population? What are the negative effects of homelessness on health? Preliminary findings show that 51.4% of the individuals reported barriers in obtaining proper health care while more than 70% have reported one or more health problems. The study findings will be helpful to design a socially suitable healthcare service delivery system to serve homeless population in downtown Grand Rapids as well as other US downtown areas.
Mentor: Azizur Molla

KIRKHOF CENTER 2266
Change in the Vowel System of Munich: An Exploratory Case Study

Presenter: Jonathan Havenhill

Although regional dialect use is increasing throughout Bavaria, the Bavarian capital city of Munich is experiencing the opposite phenomenon. Munich youth have begun abandoning Bavarian dialects in favor of Standard German (Hochdeutsch). This exploratory case study investigates apparent-time vowel change in the Munich variety of German as a result of this phenomenon. One 60 year-old and four 17-25 year-old Munich natives participated in recorded German-language interviews modeled after those from William Labov's 1966 NYC study. The sixteen monophthongs of German as spoken in conversational and wordlist speech styles are examined. The data reveal backing of the front closed and mid vowels ("i:", "j", "e:", "[:", and "[") in both conversational and wordlist styles. Future studies may determine whether these patterns are more widely spread and may focus on these vowels to gain a clearer sense of ongoing change in the Munich dialect.
Mentor: Kathryn Remlinger

KIRKHOF CENTER 2270
Debating the Role of Women in Ancient Greek Cuisine: Conflicting Evidence from Art and Literature
Presenter: Lauren Vignali

Reconstruction of the role of women in the ancient Greek cuisine system is complex due to conflicting information provided by different forms of evidence (e.g., literary texts and material culture). Based on an integrated analysis of both literary and pictorial data, this project suggests new interpretations of the roles women played in the ancient Greek cuisine system. First, explanations of the interpretive "gap" between the two forms of evidence are considered. A discussion follows of the role of the cuisine phase model in integration of the disparate forms of evidence, and in the development of a more nuanced understanding of gender roles in the construction of Greek cuisine. Issues such as the gendered use of space in cuisine-related contexts, both public and private, are considered. Social rank played an important role in cuisine construction, for example, with women of elite rank interacting frequently with men in public dining contexts as demonstrations of status and power.
Mentor: Melissa Morison

BEGINNING AT 12:00 PM

KIRKHOF CENTER 2216
A Comparison of EWMA Chart Statistics for Michigan Geospatial Data

Presenter: Marco Benedetti

Geographic Information Systems (GIS) are often used to accumulate and present data. Visualization of GIS data through maps is useful in displaying emerging patterns, but they can be misleading. In addition to visualization tools, one needs appropriate statistical methods to determine whether the observed data from a series of maps (constructed over a period of time) indicate that a systematic trend is developing. One statistical tool often used is the Moran's I statistic, which measures spatial autocorrelation. The author will examine the use of Exponentially Weighted Moving Average Charts in monitoring the Moran's I statistic for Michigan geo-spatial data. The focus of the presentation will be the comparison of the Average Run Length (ARL) and Average Time to Signal (ATS) as measures of how quickly a shift in spatial dispersion can be detected.

Mentor: Paul Stephenson
KIRKHOF CENTER 2259
West Michigan Church Signs
Presenter: Danielle Negus

The sign in front of a church is generally the first impression nonmembers receive about that church. From the message that the church selects to put on the sign, people form their opinion about that church regarding whether or not it is somewhere they would be interested in going, if they think their ideas would fit in with that congregation, or even basic ideas about the congregation itself. But interesting questions remain, specifically the viewpoint of the congregations of these churches. How do church members feel about their sign? What do they prefer to see on the sign? What do they believe is the best use for their sign? This project examines these questions for several churches representing several denominations in West Michigan. Data gathered from surveying of church members and interviewing those individuals responsible for maintaining the signs are analyzed and presented in this paper.
Mentor: Heather Van Wormer

KIRKHOF CENTER 2263
Applying Atmospheric Correction Methods to Landsat Imagery to Accurately Monitor Algal Blooms in Western Michigan Lakes
Presenter: Alexander Ebenstein

Nuisance algal blooms are a common problem in Michigan lakes, causing both aesthetic and ecological degradation. Cyanobacterial blooms are of special concern, since they are sometimes toxic to humans. Accurate methods of detecting and monitoring cyanobacterial blooms are therefore needed. Traditional field monitoring of Michigan’s numerous inland lakes is not feasible, but advancements in remote sensing technology have provided a low-cost alternative based on multispectral Landsat imagery. The purpose of this study is to analyze different methods of atmospheric correction so as to more accurately identify and monitor cyanobacterial blooms in inland lakes of western Michigan via remotely sensed images. IDRISI and ERDAS Imagine software are used to perform atmospheric correction of Landsat imagery, which is then processed using published algorithms to predict cyanobacterial abundance as the concentration of phycocyanin, a distinctive photosynthetic pigment of cyanobacteria.
Mentors: Wanxiao Sun, James McNair

KIRKHOF CENTER 2266
Leadership Exchange Programs: Helping Students Engage in an Experience to Gain Greater Understanding of What it Means to be a Culturally Competent Leader
Presenter: Kate DeGraaf

Even though it has been proven that students need to learn more about leadership development and cultural competence, it can be challenging for students to fit these extra opportunities into their busy schedules. How can we maximize high impact opportunities for students to gain a great cultural competence and a global perspective of leadership development? This feasibility study is intended to provide educators with a program that maximizes high impact experiences to help students grow and develop. University of West Indies (UWI) students will have the opportunity to travel to Michigan to interact with GVSU students in the fall. GVSU students have the opportunity to travel to Jamaica in March to engage in the culture at the UWI in Jamaica. The program was developed to provide students with the cross-cultural experience of studying abroad while providing experiences and reflection components to help them grow in cultural competence and global leadership development.
Mentor: Michelle Burke

KIRKHOF CENTER 2270
Lie Algebra Change of Basis
Presenter: Kermit Sharp

We present our work in Lie algebras change of basis. We investigate the problem of low dimensional matrix Lie algebras, and present an algorithm that works for Lie algebras with given structure equations. The results are helpful for studying special Lie algebra extensions and subalgebras.
Mentor: Firas Hindeleh

BEGINNING AT 12:30 PM

KIRKHOF CENTER 2216
Averroism from Aquinas to Egypt
Presenter: Noah Thelen

This essay is a brief examination of the life and philosophy of the great 12th century philosopher Averroes. Averroes (or Ibn Rushd) was instrumental in the development of both Arab and Christian philosophy. This paper looks specifically at his influence on Thomas Aquinas. The two share incredible similarities regarding their views on faith and reason and their common use of Aristotle. However the two also differ in some of their views on faith and reason and reconstructions of what came to be called Aristotle’s Active Intellect. Thus we see Averroes significantly influence Aquinas. Furthermore, Averroism, or the study of the influence of Averroes, goes forward to the 20th century to impact and consequentially fuel Egyptian Enlightenment movements through the means of reason. The philosophy of Averroes offers, in a way, advice for combating a strict Islamist regime.
Mentor: Coeli Fitzpatrick

KIRKHOF CENTER 2259
Fluted Point Sites in Three Michigan Counties
Presenter: Stefanie Gasko

Understanding Paleoindian lifeways is a major question in North American archaeology, traditionally approached by studying the distribution of diagnostic stone tools. In central West Michigan, systematic survey and evaluation of Paleoindian archaeological sites is limited, precluding asking questions of subsistence and settlement. This research explores new data collected through a previously untapped resource, artifact collectors. Results of this study expanded the site record, providing a valuable resource for future inquiries in Paleoindian site location, but have failed to show any significant correlation between site location and environment. Further inquiry is needed to expand the sample size and explore other variables.
Mentor: Janet Brashler

KIRKHOF CENTER 2266
Something Old and Something New: An Assessment of Two Numerical Solution Techniques for a Parabolic Partial Differential Equation Arising in Turbulent Particle Transport
Presenter: Zachary Madaj

Turbulent particle transport is a biologically important physical process in stream ecosystems. One of the models employed in studying this process is called the Local Exchange Model (LEM), which is a second-order parabolic partial differential equation with boundary conditions at the water surface and stream bed. A widely used numerical method known as the Crank-Nicolson scheme was used to obtain numerical solutions of the LEM. Though this method is commonly claimed to be unconditionally stable, it produced spurious oscillations for many parameter values when applied to the LEM. These oscillations were caused by the boundary conditions, which are not considered in the usual proof of stability for Crank-Nicolson. A review of the recent literature uncovered a new numerical method called exponential fitting, which was specifically designed to avoid spurious oscillations. This method successfully eliminated the oscillation problem when applied to the LEM.
Mentor: James McNair

KIRKHOF CENTER 2270
Saving Face: Linguistic Face Theory in Educational Interactions
Presenter: Rachel Amity

In linguistics, “face” refers to one’s public self-image. Everyone has face, and though we may not realize it, we constantly and unconsciously attend to face in our everyday interactions with others. There are two types of face: positive face seeks approval from others, while negative face seeks independence from others. Knowing about face allows us to communicate more effectively and to negotiate social power dynamics more efficiently. This is especially true in educational contexts, as teachers and tutors often construct, balance, and share power in the classroom through their discourse with students. This study focuses on face in writing classes and workshops, synthesizing published literature with original naturalistic observations to conclude that positive politeness strategies are most effective because they leave students feeling more comfortable in the classroom environment, more confident in their writing abilities, and more receptive to feedback from teachers and tutors.
Mentor: Ellen Schendel

BEGINNING AT 1:00 PM

KIRKHOF CENTER 1104
Ban Zhao: A Study in Chinese Gender Roles
Presenter: Cheng Tan

Ban Zhao (45-116 CE) is one of the most influential women writers in Chinese history. She represents a strong-willed, well-educated, and talented woman in her writings, and her achievements show everyone that women are talented, and they can be ambitious and successful. However, her work Precepts for My Daughters teaches women to be submissive and accept that their husbands can have concubines, while as wives they must remain faithful. In Ban Zhao’s opinion, women have to keep in mind that their husbands are on the top of the pyramid of authority in the family, and women have to show respect to their father, brothers, and all the other male relatives. In my opinion, Ban Zhao’s Precepts for My Daughters goes against how she represented herself in her writings. Unfortunately, this work “marks the beginning of a tradition of moral tracts written for women by women, in which the subordination of women to men is presented as an accepted fact of life” (Grant & Idema, 33).
Mentor: Yan Liang

KIRKHOF CENTER 2201
The U.S. and Kosovo: Why History Matters to Decision Makers
Presenter: Christopher Murphy

After the fall of the Soviet Union, the United States, free of the Cold War became the dominant Superpower of the World. Yet it was also during this time that events conspired in Somalia, Rwanda and Bosnia that tarnished the image of the United States. Within these incidences of human rights violations, there was one major intervention by the United States under Bill Clinton, Kosovo. Why was Kosovo chosen to be helped and how did the Clinton administration come to the conclusion that intervention was necessary? I seek to answer these questions with an oral presentation using analogical reasoning and history to describe how the decision makers came to the conclusion that intervention was the only way to ensure the safety of Kosovo.
Mentor: Thomas Walker

KIRKHOF CENTER 2216
Deciphering the Past: Using Diagnostic Artifacts to Discover the Purpose of the Indian Landing Site (20BA02)
Presenter: Matthew Darnell

Diagnostic artifacts are any artifact found on an archaeological site that can be used to specify the time range and purpose of the site when it was in use. This presentation is focused on diagnostic artifacts from Indian Landing, a multi-component archaeological site in Barry County, Michigan. The research focused on ceramics, coins, buttons, and other artifacts that offered some clue into the occupation and purpose of Indian Landing. Through diagnostic analysis and historical research, several key facts about Indian Landing have been uncovered: that the site had a limited time range of use (at least 1843 to 1865), there was at one time a Native American presence, it was at one time the location of a school house and a mission, it was not occupied by wealthy people, and the site experienced the effects of the Civil War. The research reveals not only the importance, purpose, and time frame of Indian Landing but also the necessity of diagnostic artifacts on archaeological sites.
Mentor: Dale Borders

KIRKHOF CENTER 2259
Creative Writing and Scholarship: A Multiple Disciplinary Approach
Presenter: Jaime Wise

The presentation will explain the necessity of sound scholarship in creative writing. A successful writer must adhere to high standards of academic integrity. However, this is true of more than academic writing. A personal essay requires the same rigorous scholarship as many scientific treatises. Furthermore, creative writers must be proficient in multiple disciplines in order to be successful in their endeavors, because of the need of a narrative for appropriate context. These assertions will be illustrated in a two-part presentation. Part one will be a reading of a finished personal essay, titled “Fan-fiction”. Part two will consist of an explanation of the multiple-disciplinary research the essay required, as well as the process of incorporating research from varied fields, such as History and Psychology into a cohesive narrative. A brief Q & A session will follow.
Mentor: Sean Prentiss

KIRKHOF CENTER 2263
Gregory the Great and the Conversion of Anglo-Saxon England
Presenter: Hillery York

This work examines the religious and political issues surrounding the conversion of the Anglo-Saxons in the late 6th century. It focuses on the political motivations behind Gregory the Great’s decision to Christianize the Anglo-Saxon people and the interplay between the major political rulers of Europe with the Roman Catholic Church. I argue that political support of Gregory the Great’s mission by key secular leaders shows a connection between the church and state in the early Middle Ages. This paper will argue that the conversion to Christianity was accomplished through non-violent means and accepted through the use of assimilated theology and selective acceptance of some pagan beliefs. Archaeological evidence will highlight comparisons between pagan theology and Christian dogma, shown through the evolution of funerary practices from pagan England to a newly Christianized England, in order to highlight the progression and proposed acceptance of the new religion.
Mentor: Alice Chapman

KIRKHOF CENTER 2266
Rook Polynomials in Higher Dimensions

Presenter: Eric Holmgren, Connor Scholten, Jeremy Babila

Rook polynomials count placements of non-attacking rooks on a board. These rooks are placed in such a way that no two rooks are in the same rank or file. These rook placements correspond naturally to matchings, studying the relations between objects. In this talk, we will describe how to generalize these rook placements from the usual 2-dimensional chess board to three and higher dimensions, and how to visualize these using graph theory.

Mentor: Feryal Alayont

KIRKHOF CENTER 2270
Beethoven in Kundera’s “Unbearable Lightness of Being”

Presenter: Blake Abraham

Through fundamentally examining the question of fate versus free will, Milan Kundera’s “The Unbearable Lightness of Being” heavily references the fourth movement of Beethoven’s last string quartet, “Der schwer gefasste Entschluss.” This quartet and Kundera’s novel share a powerful metaphorical relationship. Through careful study, the parallel motifs and structural elements between the two works are illuminated, thus providing a new perspective on Kundera’s usage of this metaphor. An enhanced understanding of this core metaphor in “The Unbearable Lightness of Being” sheds new light on the meaning of Kundera’s work and the author’s answer to the struggle between fate and free will.

Mentor: Gabriela Pozzi

BEGINNING AT 1:30 PM

KIRKHOF CENTER 1104
Cai Yan and Wang Zhaojun: Living with Barbarians

Presenter: Sarah Robbins

Wang Zhaojun was a palace lady to Emperor Yuan of the Han dynasty (206BCE-8CE). During this time, Emperor Yuan ordered that some palace ladies be sent to the northern country of Xiongnu to ensure the political stability of the region. Because of Wang Zhaojun’s unflattering portrait (due to her refusal to bribe the painter), the Emperor chose her to be the political bride of the Xiongnu prince and to live with the Xiongnu people (often referred to as barbarians by the Chinese at this time). Similar to Wang Zhaojun, Cai Yan (b. 177BCE) was abducted and forced to live with the Xiongnu people for 12 years. It is said that both Wang Zhaojun and Cai Yan wrote poetry about the sorrow they felt at having to live with the nomadic tribes. The stories of Wang Zhaojun and Cai Yan depict the growth in ethnic self-consciousness in China and how the Chinese felt about nomadic and non-Chinese people living outside of Han territory.

Mentor: Yan Liang

KIRKHOF CENTER 1142
The Ecological Implications of Wolf Re-Introduction to Rocky Mountain National Park

Presenter: William Jacques

Predators are the creatures we fear the most, understand the least, and are often vital to ecosystem health. During the settlement of the United States, wolves were hunted and trapped to near extinction.

Fortunately, re-introduction has brought the American wolf back from the brink of extinction. Wolf re-introduction was first done in Yellowstone National Park. The introduction of Yellowstone wolf predation redefined the grazing habits of many herbivores helping much of the park’s vegetation and overall ecosystem regenerate to its former health. The information Yellowstone provides is invaluable in the planning for future wolf re-introduction into other parks. Rocky Mountain National Park is at the forefront of this looming decision. A lack of predators means elk have exceeded the carrying capacity and altering vegetation. Data presented will show what future ecological implications the re-introduction of wolves may have in the park.

Mentor: C. “Griff” Griffin

KIRKHOF CENTER 2201
Sustainable Solutions

Presenters: Lisa Hackney, Greg Zuidema, Sherri Slater

In this presentation, the argument is made for business leaders to create sustainable policies that change how businesses often put limited resources at risk. This research presentation looks at how the company Nichols is working to “green” the cleaning products industry and is driving change in sustainable solutions. In the fall of 2011, GVSU students Sherri Slater, Greg Zuidema and Lisa Hackney formed Team Nichols, which participated in a campus corporate social responsibility seminar as part of a liberal studies course taught by Michael Dewilde. Team Nichols researched how Nichols can adopt triple bottom line strategies and reported findings in a business policy that proposed hypothetical sustainable possibilities. In preparation for research, text books and journals were studied and interviews were conducted. This is a project that examines where the corporate sustainability track is heading, which is a crucial issue facing companies today.

Mentor: Judy Whipps

KIRKHOF CENTER 2216
The Sincerity of Reform: The Ford Motor Company

Presenter: Eric Baumgarten

The Ford Motor Company’s Five Dollar Day labor program led to a multifaceted array of philanthropic initiatives that ran between 1914 and 1921. A progressive spirit within the company led many executives to initiate programs influenced by intellectual discourses regarding the public concern for American social structure. Often, historians have sought to analyze the entire history of the company or Henry Ford himself, especially with an orientation towards production. Contrary to this focus, this research shows how the Ford Motor Company reached beyond its employment base. A financial capacity to employ wide and powerful reforms allowed executives to pressure Detroit’s lower classes with the same coercive reform initiatives subjected to employees. The Ford Motor Company insisted on spreading its motto of “help the other fellow” as far as possible. Through this study, a brief and intense example of welfare capitalism illustrates the implications of broad corporate reach.

Mentor: Matthew Daley

KIRKHOF CENTER 2259

The Successful Integration of Buddhism with Chinese Culture: a Brief Look at the Forces of Their Amalgamation

Presenter: Xinyi Ou

Buddhism has commonly been regarded as the sole foreign religion to truly gain access to the hearts and minds of the Chinese people. Zoroastrianism, Manichaeism, Judaism, Christianity, and Islam were likewise spread along the Silk Roads to China, yet these religions did not take root. What culminating factors played a role in the acceptance of Buddhism into Chinese culture? Is it possible that Buddhism should not be regarded as a foreign religion, but as a seed of thought that was nurtured by the missionary monks and the Chinese into a form almost unrecognizable from its initial origins? Through a survey of primary sources like and existing research on this interesting topic, I seek to pose a brief explanation of the forces that led to the success of Buddhism in China during its original insemination. My research serves as an introduction and rough sketch of some of the fundamental links that exist in the puzzle of Buddhism and China's complex relationship.

Mentor: Craig Benjamin

KIRKHOF CENTER 2266

International Complicity in Denying Independence for East Timor

Presenter: Elizabeth Kingston

A portion of a small island located within the Indonesian archipelago, East Timor voted to become an independent nation in 1975. In the year prior, the Carnation Revolution had overthrown the incumbent fascist government of Portugal, which counted East Timor among its colonies. Isolationist sentiment from the new government of Portugal inspired the decolonization of their overseas assets, leading to the independence vote in East Timor. Unfortunately, independence for East Timor would not be achieved until 2002. Violating international laws of self-determination, Indonesia occupied East Timor for nearly thirty brutal years in which upwards of 25% of East Timor's citizens were murdered or starved to death. The purpose of this study is to demonstrate how the United States and other entities, inspired by economic and political self-interest, implicitly and at times explicitly condoned and supported Indonesia in this act.

Mentor: Craig Benjamin

BEGINNING AT 2:00 PM

KIRKHOF CENTER 1104

The Effect of Economic Ties on Tensions between Taiwan and China

Presenter: Kevin O'Neill

The relationship between two countries is often determined by how the two governments behave toward each other and their economic impact on each other. In the long-lasting tensions between China and Taiwan, government interaction was often hostile in rhetoric or action; however trade relations curiously did not mirror those trends precisely. This research explores the political and economic relations between China and Taiwan to determine how trade could exist among these tensions and what affect trade may have had on them. Trade data is utilized to illustrate the extent of economic ties between China and Taiwan, and to present the development of trade. Policy decisions, changes in government leadership, and the history of Taiwan and China are analyzed to demonstrate the flavor of political tensions and explore their development.

Mentor: Yi Zhao

KIRKHOF CENTER 1142

Effects of Organic vs. Traditional Agriculture on Soil Health

Presenter: Elizabeth Dunnuck

By conducting field, laboratory and library research I hope to determine what biological differences occur in soils of farms that use organic agriculture and those that use traditional practices. I will obtain samples from organic and non-organic farms and test the samples to compare percentages, ratios and abundances of various soil factors. Laboratory testing will determine the samplespH, moisture content, organic material, nutrient levels, bulk density, and texture. I expect to see less soil erosion with organic farming as well as significant differences between the soil's organic matter, moisture, and bulk density. I anticipate greater quantities of micronutrients in soils that are organically farmed but do not expect much difference in macronutrients. If my predictions are correct they could have beneficial implications for the future use of organic farming, and I may be able to use the data to convey the benefits of farming organically to farmers.

Mentor: C. "Griff" Griffin

KIRKHOF CENTER 2201

Exhibiting Holland's Legacy

Presenter: Hillery York

In times of uncertainty, communities must look to their past in order to understand the foundations upon which they may build a strong future. In an attempt to capture the spirit of a local community's past and present, I have created a museum exhibition plan that highlights important historical events, individuals, and groups that influenced the traditions of present day Holland, Michigan. The exhibition (planned specifically for the Holland Museum) provides a comprehensive experience for visitors, with the goal of sparking community interest in local history and promoting community programs through the shared understanding of Holland's legacy. Technical aspects addressed are the use of the gallery space(s) based on entrances, exits, and other permanent features; the lighting plan; the placement of objects vis-a-vis content, lines of sight, and spatial flow; and the interpretation of a broad range of historical objects in the museum's collection.

Mentor: Melissa Morison

KIRKHOF CENTER 2216

An Analysis of an Appalachian Metamorphic Suite

Presenter: Chadwick Williams

Mineral textures and compositions for sillimanite-garnet-biotite bearing samples collected from an exposure of the Chunky Gal Mountain (CGM) Fault in the Jake Ridge outcrop provide constraints on the deformation history and conditions of deformation. Rocks from this location were previously documented as amphibolite-facies (520Â°C-725Â°C, 4-6 kbar). However, the assemblages from CGM are similar to those of Winding Stair Gap (WSG) which are granulite-facies (850Â°C, 8kbar). This may indicate that CGM retains evidence of metamorphic conditions higher than amphibolite-facies. Microscopy is used to determine the deformation texture of the fault rocks. Mineral chemistry will be used to constrain pressures and temperatures of metamorphism. Results should help to further constrain the complex tectonic history of the area.

Mentor: Ginny Peterson

KIRKHOF CENTER 2259
Future Orientation Among European American Adolescents: The Importance of Beliefs About Children and Family Context
Presenter: Megan Podlaski

Future orientation is particularly prevalent in adolescent years when identity formation begins to develop and ideas about future family begin to form. How adolescents see their future plays an important role in their adjustment and involvement in problem behaviors. The purpose of this study was to examine adolescents’ expectations with regard to the number of children they wish to have as well as the age at which they want to have children by taking various sociodemographic and psychological variables into account. A sample of 270 adolescent-mother dyads from Michigan participated. Analyses showed that adolescents from large families wish to have more children. Those who perceived many costs in having children reported that they wanted to have fewer children. Optimistic adolescents want to have more children and earlier. Adolescents of highly educated mothers wished to have children at a later timepoint. Gender differences in family expectations were found and will also be discussed.
Mentor: Mihaela Friedlmeier

KIRKHOF CENTER 2263
Wheelchair Basketball and Therapeutic Recreation
Presenters: Rachel Taylor, Heather Sartorius, Leah Jones, Jodi Wise, Paige Culross, Juanakee Durden, Josh Ponder

Using thematic content analysis this study examines the role of wheelchair basketball in therapeutic recreation.
Mentor: Kari Kensinger

KIRKHOF CENTER 2266
Graph Theory Matchings
Presenters: Tony Ellero, Hannah Anderson

Graphs are used in modeling connections or relations between objects. Matchings are an interesting subtopic of graph theory. A matching corresponds to pairing objects within a graph using the available connections. In this talk, we will provide results on the number of matchings in famous graph families such as complete graphs and bipartite graphs and explain how to use linear algebra techniques to find matchings in any graph algorithmically. We will also describe powerful applications of matchings in Internet dating and tutoring.
Mentor: Feryal Alayont

KIRKHOF CENTER 2270
Magnetic Levitation
Presenter: Daniel Pawlak

The goal of this project was to create an electromagnet that adjusts its magnetic field based on the position of an object below it. The sensors are photo-transistors that are triggered by an infrared LED diode. The strength of the magnetic field is adjusted by controlling the current

through a system containing an operational amplifier and a transistor. We successfully levitated multiple objects approximately .25-.5 inches below the electromagnet.
Mentor: Ross Reynolds

BEGINNING AT 2:30 PM

KIRKHOF CENTER 1104
Dining on Progress - Geographic Disparities of Consumption and Culture in China, 1999-2009
Presenter: Nathan Krings

The impressive growth of the People’s Republic of China has led to startling inequality throughout the country, with certain provinces racing along and others falling behind. A measure for understanding the realities of these changes and the resulting disparities is suggested in the annual dining expenditure of people living in urban areas. Gross domestic product and Food Away From Home (FAFH) expenditure are mapped for the period 1999-2009. The two indicators demonstrate some correlation, particularly at the high end of the scale. But there is significant divergence in many provinces.
Mentor: Roy Cole

KIRKHOF CENTER 1142
Habitat Characteristics and Distribution of American Marten (*Martes Americana*) in the Manistee National Forest.
Presenter: Mitchell Poling

American marten (*Martes Americana*) are a species that were extirpated from Michigan and reintroduced into the state in the late 1980s. Historically, they have been know to occupy habitats that consist primarily of spruce and fir, however, many of these studies were done in the Northwestern United States. The goal of this study is to determine if they prefer these habitats in the Manistee National Forest in Michigan’s Lower Peninsula, and if not, what habitat type they are commonly found nesting in. In addition to habitat type, it is important to learn if nesting is based on random selection instead of preference, and if roads or disturbed/open areas are a factor. Five radio-collared marten will have their location periodically recorded over two months to analyze their location in relation to forest type. This information can then be applied to analyze the occurrence of these ecosystem types within their home range and in the entirety of Manistee National Forest.
Mentor: C. “Griff” Griffin

KIRKHOF CENTER 2201
Mindfulness and Relationship Violence
Presenter: Amanda Johnson

Dating violence is a widespread problem among college-aged women. Although several risk factors have been identified, one facet, mindfulness, has received little research. Mindfulness, which is the ability to be aware and open to the present moment in a nonjudgmental manner (Kabat-Zinn, 1994), may be related to dating violence. This study examined the relationship between dating violence and mindfulness and whether perpetrators of physical and psychological aggression report less mindfulness than non-perpetrators. Female participants (N=379) were examined on dating

violence and mindfulness. The results suggested that a number of facets of mindfulness were associated with a higher risk of psychological or physical aggression. Preliminary findings suggest that lower mindfulness abilities are associated with increased psychological and physical dating violence perpetration. Implications of these findings for dating violence prevention programming are identified. Mentor: Tara Cornelius

KIRKHOF CENTER 2216
Mamas, Travel Agents and Lot Lizards: Female Gender Stereotypes and Trucking
Presenter: Stephanie Sicard

This presentation, as part of a larger ongoing study, examines gender stereotypes associated with the occupation of truck driving. According to the U.S. Bureau of Labor Statistics, of the over three million people who make their living as truck drivers, only six percent are female. Using content analysis, gender roles and stereotypes are explored by analyzing a sample of The Trucker, a twice-monthly publication available both online and in print distributed to grocery stores, truck stops and other locations. Preliminary results suggest that women rarely drive solo and are employed most frequently as part of a husband-wife team, or work in dispatch or other office environments. Further, preliminary analysis of photos of women in The Trucker suggest that most women are represented as “feminine”, while relatively few women are “androgynous” or “masculine” in how they are represented. Mentor: Janet Brashler

KIRKHOF CENTER 2259
Rook Polynomials of Ferrers Boards
Presenter: Jeremy Babila

Rook polynomials count number of ways of placing non-attacking rooks on a board. One application of these polynomials is to count number of ways of matching two sets of objects, such as tasks with employees. In this talk, we consider a special type of boards called the Ferrers boards in which from left to the right the column heights do not decrease. The rook polynomials of these boards can be calculated easily using the column heights, which makes these boards special. In this talk we will investigate generalizations of Ferrers boards in higher dimensions. Mentor: Feryal Alayont

KIRKHOF CENTER 2263
On the New Reading of Archimedes’ Method, Proposition 14
Presenter: Drake Parker

Study over the past decade by the Archimedes Palimpsest Project of the Method of Mechanical Theorems, recovered in 1998, has produced evidence that the ancient Greek mathematician may have made informal use of actual infinity in his method of discovering geometric theorems. This runs contrary to the Greek tradition of rigorous proof which allows only for the use of potential infinity. We will examine the relevant argument, Proposition 14, compare it with other, more or less traditional, Greek infinitary arguments (such as his proof by exhaustion of the quadrature of the parabola), and consider the questions arising about the Greek attitude toward infinity. Greek geometry benefited from illustration and plenty will be provided. Mentor: David Austin

KIRKHOF CENTER 2266
Artificial Intelligence Tournament Framework
Presenter: David Adrian

I will be presenting a tournament framework that determines the best of a set of artificial intelligences for playing board games. This framework is written in the Java programming language and makes heavy use of reflection. This framework also has a statistical component so that it can say with high probability which AI is the best. Mentor: Zachary Kurmas

KIRKHOF CENTER 2270
The Electric Bass: Its Origins and Influence on the Evolution of Jazz and the Development of Contemporary Music
Presenter: Megan DeKievit

The electric bass was an idea of the late 1930s, when jazz bands were getting larger and it was becoming increasingly difficult to hear an upright bass. In 1951 the first electric bass was first available for mass distribution. After this instrument’s acceptance, the position that the bass held within an ensemble changed. The original function of the bass was to outline the rhythm and harmony of the tune. After the ‘70s, solo bass became more common, and jazz diverged with new innovations that continued to push boundaries. Today the electric bass is accepted as a solo instrument. This presentation shows how the perspective of the bass has changed since the introduction of the electric bass guitar, and how this change was facilitated by differences between it and the acoustic bass. It uses interviews, research, and recordings to contrast bass lines from before and after the introduction of the electric and to show the difference that this instrument has made in modern jazz music. Mentor: Timothy Froncek

BEGINNING AT 3:00 PM

KIRKHOF CENTER 1142
Increasing Composting in GVSU Campus Dining
Presenter: Allison Proffitt

Waste stations in campus dining operations have caused confusion among patrons. Landfill, compost and recycle receptacles display vague signs depicting proper waste disposal. This insufficient effort has led to the contamination of compost with non-compostable material. The use of plastic lids and bags has added to the amount of non-compostable waste mistakenly disposed of. This study will evaluate and enhance current methods relating to waste disposal. To determine the composition of waste generated in several dining locations, bags containing compost and landfill waste will be weighed and sorted. After one week, new signs depicting proper waste disposal will be placed on tables and waste stations in chosen locations. I expect to see an increase in the amount of compost generated, less landfill waste and evidence of proper disposal following a second evaluation. Suggestions for further improvement of waste stations will be offered to the dining community following the study. Mentor: C. “Griff” Griffin

KIRKHOF CENTER 2201
Power and Presages: Livia and Tanaquil as Readers of Omens
Presenter: Andrew Lund

In Suetonius’ Life of Galba (1.1), an eagle gives the future empress Livia a hen with a laurel sprig in its beak. Instead of seeking priests for guidance and explanation (as would have been expected), Livia reads this event as an omen that predicts her husband Octavian will become emperor. Livia also realizes its magnitude, for she raises the hen and plants the sprig. While Murison (1992) suggests that Suetonius is uninterested in reading the omen as presaging the Julio-Claudian dynasty’s rise to power, such a claim is untenable. Suetonius casts Livia as holding religious power and influencing politics, for she recognizes, interprets, and acts upon the omen that foretells her family’s rise to power. Moreover, I argue that Suetonius alludes to Livy’s History of Rome (1.34), wherein Tanaquil interprets an eagle omen as predicting her husband’s reign as king. Suetonius thus puts Livia--as Livy does Tanaquil--in the “male” and priestly role as an interpreter of the divine.
Mentor: Barbara Flaschenriem

KIRKHOF CENTER 2216
The Effects of Pollutant Analogs Alkylphenol and Nonylphenol on the Nervous System and Ecology of *Orconectes propinquus*
Presenter: Christopher Adams

Crayfish are a ubiquitous keystone species that are vital to the ecological community of much of the United States and Canada. They serve as a major food source for many animals and act a predators of smaller animals themselves. Today, many invertebrates’ survival may be influenced by the use of chemical applications such as alkylphenols and alkylphenol ethoxylates, used in pesticides and industrial cleaners that have been rated inert by the EPA and other environmental agencies. Our study seeks to investigate the effects of the alkylphenol analog, nonylphenol, on the nervous system of *Orconectes propinquus* by testing its effects on behavioral responses, serotonin release, and action potentials of vital ventral, dorsal, antennal, and cranial nerves. Our preliminary findings show that populations of *Orconectes propinquus* are susceptible to such chemicals, moreover juveniles show dramatically increased mortality. We expect to see deficits in neuronal responses as well.
Mentor: Dan Bergman

KIRKHOF CENTER 2259
Nature Therapy and Therapeutic Recreation
Presenter: Abigail Rausch, Nicole Titus, Emily Nicholson, Julie Born, Maria Alvesteffer, Janna Kortman

Using thematic content analysis this study explores the role of nature in the therapeutic recreation process.
Mentor: Kari Kensinger

KIRKHOF CENTER 2266
An Intersectional Analysis of Domestic Violence in India
Presenter: Amanda Pollet

This Paper examines the ongoing incidence and prevalence of domestic violence in India by addressing the intersections of oppression that contribute to its perpetuation. India startles us

with statistics of 5,000 cases of estimated dowry deaths that occur annually, 10,000 reported cases of female infanticide annually (not including forced abortions, and 45% married men reporting abusing their wives. In order to sociologically address the situation of women in India, this paper takes into consideration that domestic violence in India is not just an issue of gender or of class inequalities, but a complex system of oppressions that work together to enable each-other. It also suggests that violence against women must therefore be combated not from just one level, but across these multiple structural dimensions.
Mentor: Mary deYoung

KIRKHOF CENTER 2270
Kappa Opioid Regulation of the Enhanced Responsiveness to Stress Observed During Protracted Abstinence From Alcohol
Presenters: Kelli Gillett, Tara Truskoski

The biology behind long-term changes in alcohol withdrawal has yet to be explored. Kappa opioid receptors (KORs) may be a key mediator in the negative affect often seen with drugs of abuse. This experiment sought to determine the role of KORs in regulating stress during protracted withdrawal. Rats fed an ethanol liquid diet were exposed to a mild stressor six weeks after removal of the diet. The ability of the KOR antagonist nor-BNI to reduce anxiety-like behavior was then investigated. Behavior was also examined after injections of the KOR agonist U50,488 following removal of the diet. Rats with a history of dependence showed increased anxiety-like behavior when exposed to the mild stressor, an effect blocked by nor-BNI. Injections of U50,488 did not lead to an anxiety-like response. These results suggest that preventing KOR activation may be sufficient in reducing responsiveness to stress during long-term withdrawal. However, KORs may not be necessary in producing anxiety.
Mentor: Glenn Valdez

BEGINNING AT 3:30 PM

KIRKHOF CENTER 1142
Effects of Vermicompost on Germination of Various Vegetables
Presenter: Joseph Weis

This project explores the efficiency of incorporating worm castings into the vegetable starts at Grand Valley’s Sustainable Agriculture Farm. The germination rates, growth rates, and leaf number were observed over time. The original starting medium was analyzed and compared with the worm casting mix. Four vegetables (tomatoes, summer squash, green beans, and red bell peppers) were started in worm casting concentrations of 5%, 20%, and 50%. A control was made using no worm castings, only the starter soil being currently used by the SAP Farm. Observations on plant germination, growth, and health were recorded for four to eight weeks, depending on their particular start date. This study took place in a greenhouse with a constant temperature of 75 degrees Fahrenheit, and in an unheated hoop house during late winter in mid-Michigan. Positive results warrant further research.
Mentor: C. “Griff” Griffin

KIRKHOF CENTER 2201
Sex Slavery as a Human Rights Violation
Presenter: Elizabeth Bryker

Over the course of the semester, I will be researching what constitutes a “human rights violation” in respect to the Universal Declaration of Human Rights. I will also research the human sex trafficking industry, and I will specify and prove how aspects of this industry are clear human rights violations. My end goal will be to prove why human sex trafficking should be termed “sex slavery” in order to convey the violations that are inherent in the industry as well as to increase the attention given to this issue. By labeling this practice as “sex slavery”, it will show that it is a human rights violation and that it is an issue that must be taken more seriously by society and governments. I will discuss different methods of fighting this practice and how citizens can get involved at a local level. I will end with discussing that efforts can be made locally that may have an impact on the industry as a whole globally.
Mentor: Karen Zivi

KIRKHOF CENTER 2216
Bottlenose Dolphin Care and Training
Presenter: Kayla Morawski

Animal psychology is closely associated with the learning theories of operant and classical conditioning. Together, these are the basis of animal training by teaching animals specific responses to certain stimuli. Through my internship at Sea Life Park Hawaii, I learned the fundamentals of animal care and training. My internship focused on Bottlenose Dolphins, Tursiops truncatus. I worked alongside trainers at the park focusing on marine mammal training and husbandry. I learned that animals benefit medically, physically, and mentally through a structured training program. Trainers accomplish these benefits through positive reinforcement, which is the primary motivation for the animal to elicit a desired behavior. Through this, trainers not only draw attention to a desired behavior by rewarding it, but also form human-animal relationships. In my presentation, I will explain my experience as an Aloha intern, showing what I did on a daily basis.
Mentor: Terry Trier

KIRKHOF CENTER 2259
The Benefits of Knowing Nothing - How Taoism Fits Into John Dewey’s Dream
Presenter: Brandan Bilski

John Dewey, renowned psychologist, educator, and philosopher, saw that in order to attain the future we desire we must all “help get rid of the useless lumber that blocks our highways of thought, and strive to make straight and open the paths that lead to the future.” In order to move forward we must take the time to pause and purge ourselves of the assumptions of the past. Taoism allows us to just that and denotes the necessary nothingness to which we must strive. I shall discuss some fundamental aspects of Taoism and describe how they effectively develop the tentative and critical mind as well as explore just how necessary this revolution of thought is to creating and maintaining a better future. These philosophical concepts take on a new connotation with their conjunction and serve as tools to articulate and discover ways to overcome the polarization and dogmatic modes of thinking inherited from the past in order to start down the road of reconstruction pointed out by John Dewey.
Mentor: Ralf Hugger

KIRKHOF CENTER 2263
Movement Science House Community Development Plan
Presenter: Zachary Waugh

A Community Development Plan will be designed by Zachary Waugh to help facilitate and coordinate the institution of the newly approved Movement Science Living-Learning Community (MOV-LLC). The MOV-LLC will connect students in all four areas of the Movement Sciences (Exercise Science, Athletic Training, Sports Leadership, and Physical Education), engaging participants in and out of class in such areas as professional, academic, social and personal development, along with professional networking experiences. The community will unite students and faculty alike in the pursuit of knowledge and experience in the Movement Sciences. It is the intent of this community that the various perspectives, activities and beliefs of its members are explored, understood, and ultimately appreciated so the integrity of this community is maintained. The final product of this action plan will be used to kick-start the new community in its first year this upcoming Fall 2012 semester on the Allendale campus.
Mentors: Brian Hatzel, Kristen Evans

KIRKHOF CENTER 2266
Iron Age Ceramic Technology: A Petrographic Approach
Presenter: Amber Strick

What are the cultural consequences of migration and resettlement? As the Iron Age Empire of Urartu expanded, representatives of conquered groups were forced to move and to live together at the capital city of Ayanis. After a population movement like this, change in production of objects that express identity and status (e.g., ceramic vessels) can be an important indicator of cultural change resulting from enforced migration. Did the immigrant groups at Ayanis continue to produce vessels using their own traditional methods, or change their techniques as a result of close contact with other cultural groups? To answer this, pottery and clay samples from Ayanis and other Urartian sites were analyzed. Petrographic study (including both qualitative observation and point-counting) provided evidence for differential patterning in clay resource exploitation. Distinct fabric groups suggest continuity of regional production traditions even following compulsory migration to the capital city.
Mentor: Melissa Morison

KIRKHOF CENTER 2270
Therapeutic Recreation and Depression
Presenters: Kristen Vendeville, Julie Piccard, Danielle Hoberman, Daniel Beger, Daniel Shaw, Emily Mattoon

Using thematic content analysis, this study explores the role of therapeutic recreation for individuals with depression.
Mentor: Kari Kensinger

BEGINNING AT 4:00 PM

KIRKHOF CENTER 1104
The Living Filter: Characterization of the Structure & Function of the Biofilm in BioSand Drinking Water Systems
Presenters: Nicole Horne

Freshwater is a shrinking resource. Overuse and contamination in underdeveloped countries have resulted in unsafe drinking water. An inexpensive remedy is the use of Biosand filters delivering safe potable water. Several Hydraid® BioSand filters manufactured in Michigan are now used around the world. Whereas physical filtration of particulate impurities through sand is well known, there is poor understanding of the active microbial biofilm involved in ridding water of harmful contaminants. My research addresses this void by rigorously studying the structure and function of the biofilm in the BioSand filter. My hypotheses are: the biofilm is the life or active component of the Biosand filter and the biofilm itself is an active food web. My results show that the Biosand filter can sufficiently remove pathogens, such as Total Coliforms. Findings will contribute to scientific understanding of biofilms and establish a scientific basis for operation of Biofilter systems.
Mentors: Bopi Biddanda

KIRKHOF CENTER 1142
Germination Rates of Grass Seed With Ice-Melting Solution Applications
Presenter: Tami Brown

Sodium chloride is often used as an ice-melting agent in the winter on roads, driveways and sidewalks. This can have damaging effects on plant life. Potassium acetate and Magnesium chloride are two alternatives to sodium chloride that could be less harmful. To determine if these alternatives are safer for plants, the germination rate and growth height of grass seed was tested with Potassium acetate, Magnesium chloride and Sodium chloride. Grass seed was chosen because it is commonly used in landscapes and is the plant most likely to come in contact with ice melting chemicals. It is predicted that the Sodium chloride will show the least amount of seed germination and that the Magnesium chloride will show the largest seed germination rate.
Mentor: C. “Griff” Griffin

KIRKHOF CENTER 2201
Total Threat Analysis: Extreme Right Wing Terrorism and Radical Islamic Terrorism in the United States
Presenter: Megan Lemmen

This total threat analysis of extreme right-wing terrorism and radical Islamic terrorism in the United States employs the use of open source intelligence research. I gathered my information from class lectures, Internet website documents, textbook material, and media sources, such as video clips. This analysis focuses on the threat of terrorism in the United States from ideological and tactical points of view, both in extreme right wing terrorism and radical Islamic terrorism. Considering that terrorists most often have a background rooted in one of these two ideological beliefs, it makes logical sense that the attacks be analyzed in this manner. The conclusions drawn are based on the ideological and tactical data from recent years. Therefore, the threat projection for the future is one with a foundation of substantial evidence derived out of a variety of legitimate academic sources.
Mentor: Jonathan White

KIRKHOF CENTER 2216
In Kennedy’s Shadow: The Presidency of Lyndon B. Johnson
Presenter: Chelsea Lane

Lyndon Johnson remains one of our most enigmatic and controversial U.S. presidents. After President Kennedy’s shocking assassination, he was unexpectedly catapulted into the unenviable task of guiding a grief-stricken nation. Many of the issues-symbolic, political and personal-that plagued Johnson’s entire presidency already emerged during the first day of Johnson’s presidency, from his struggle to pay proper deference to his slain predecessor while simultaneously making his own mark on the presidency to his ongoing “hate affair” with Robert Kennedy to the private insecurities and public perceptions that plagued Johnson himself. While President Kennedy’s death enabled Johnson to become president, in many ways it also doomed his presidency to fail. By pulling larger historical threads from the aftermath of the assassination, one emerges with an intriguing portrait of a nation on the brink of chaos and the complex, oft-misunderstood man at the center of it all.
Mentor: Mary deYoung

KIRKHOF CENTER 2259
Consumption Patterns in Middle-Class Families during the Holidays
Presenter: Katherine Schulhoff

My project merges the concepts of consumption and childhood by investigating consumption as an aspect of child-rearing. How do parents consume on behalf of their children? Why do they do so? What do parents buy their children for Christmas? What factors are included in these decisions? How does it affect family relationships and dynamics? I focus primarily on the idea of consumption as a conduit to childhood wonder. Using qualitative methods, this project explores questions about consumption during the holiday season through interviews and fieldwork with middle-class families in the metro Cincinnati area.
Mentor: Joel Stillerman

KIRKHOF CENTER 2263
Philosophy’s Contribution Toward Learning Beyond Specialization
Presenter: Ashley Karcher

In ancient times, educated citizens were encouraged to practice philosophy. Today, excessive specialization marginalizes philosophy, significantly decreasing philosophical development across curricula. Yet, philosophical development occurs beyond specialization. In this paper, I discuss how philosophy’s role has changed and why implementing philosophical education across curricula is practical despite tensions between traditional vs. progressive values and developing jobs skills vs. philosophical development. I critique American higher education by comparing ancient Socratic and Confucian pedagogies, demonstrating that the conflicts that currently contribute to philosophy’s marginalization were present in ancient times. In showing that the two conflicts existed in the ancient eras supports that historically, philosophical development was a foundation of education despite the presence of these two conflicts, without abandoning traditions and practical skills.
Mentor: Judy Whipps

KIRKHOF CENTER 2266
Racial Inequalities in the Treatment of HIV/AIDS Patients
Presenter: Allison Corbett

The inequalities in the discrepant health care of African American HIV/AIDS patients are created through a multitude of societal encounters. This study looks at historical reasons showing why African Americans may be distrustful of the medical system, as well as interpersonal issues within systems and social interactions of today that have serious impacts among the population. These problems can range from getting care in different medical settings to unrecognized racial dynamics in the doctor-patient relationship. These factors create a poor match of care to need for patients, and they have greater struggles with their treatment plan often caused by lack of physician communication leaving the patients with a medical plan that they ultimately cannot follow. This study aims to show that it is this gap in understanding, failing to see the big picture, that causes African Americans to have problems following medical treatment plans, not inborn characteristics or stereotyped traits.
Mentor: Mary deYoung

KIRKHOF CENTER 2270
Investigating the World of Mathematics to Uncover How Language Proficiency Influences English Language Learners’ Performance on High Stakes Tests
Presenter: Deborah Schuitema

English language learners (ELLs) must take the mathematics portion of state standardized tests regardless of their time spent in U.S. schools. This practice follows the misconception that mathematics is a “universal language” and less language dependent, however, a significant performance gap between non-ELLs and ELLs on high stakes mathematics tests persists and must be addressed. In order to investigate the impact of language proficiency on test performance a cross-sectional study was conducted. The study included item performance data, by group, for 24,693 seventh and eighth grade students who took the 2007 and/or the 2008 mathematics Michigan Education Assessment Program (MEAP) assessment, and a questionnaire completed by 16 seventh and eighth grade participants for triangulation. The item performance data set was analyzed using a logistic regression model. Cross tabulation, content, descriptive, and frequency analyses were conducted on the questionnaire responses.
Mentor: Diarrassouba Nagnon

BEGINNING AT 4:30 PM

KIRKHOF CENTER 2259
Development in Ghana: Why it Fails and How it Will Succeed
Presenter: Ross Ezinga

Ghana is facing a new type of AIDS crisis: Acquired Import Dependency Syndrome. Developing countries rely heavily on importing goods that can be readily manufactured locally, destroying both the culture and the economy. Technology that is borrowed from the West is not appropriate for use in Ghana. Organizations that have set out to help develop countries are often contributing to this problem. Many organizations, governmental, non-governmental and faith-based attempt development projects. Many of these do little if any good for the impoverished local communities in the long term as they are not part of the fabric of the local culture and are not sustainable.

Sustainable development starts at the local level through the basic needs of the developing world: food production, sustainable shelter, local medicines, and textiles. It also mitigates developmental risk. Successful development in Ghana is nothing like what the world has thought it should be.
Mentor: Paul Lane

KIRKHOF CENTER 2266
La Marseillaise
Presenter: Leah Tremble

Since its creation in 1792, the French national anthem, “La Marseillaise,” reappeared as each new republic formed and was banned as each authoritarian ruler took control. Today, there is a call to change the two-hundred-year-old anthem. Many French, especially parents, feel that it is too violent to represent the country or teach to children. This presentation traces the history of French people’s reactions to their national anthem from 1792 through 2012.
Mentor: David Eick

KIRKHOF CENTER 2270
Land Use/Land Cover Change in Manaus, Brazil
Presenter: Cody Rose

The city of Manaus in Amazonia was the center of the 19th century rubber boom. Becoming the richest city of the Amazon, Manaus enjoys a rich history and expanding population. This study aims to show how the physical landscape has changed between 1986 and 2001 using Object-Oriented Image Segmentation and Classification with Landsat5-7 imagery. The process of classification works to determine land features (e.g. urban, forest, field, water, etc...) and can be used to find trends and statistics of land cover/land use change. The image data will be georectified and have atmospheric effects removed. The Object-Oriented Image Segmentation and Classification works by analysis of image objects and spatial relationships instead of on single pixels (i.e. traditional image classification). By creating rule sets, land cover can be extracted and classified more accurately.
Mentor: Wanxiao Sun

BEGINNING AT 5:00 PM

KIRKHOF CENTER 2201
All Tied Up: Mapping Trisecants of the Figure Eight Knot
Presenter: Alexis Johnson

The figure eight knot is commonly used in rock climbing, sailing and other activities. If you attach the two ends of this rope, you can no longer untie this knot. This is the mathematical Figure Eight Knot. Given any two points on this knot, there is a line in space that intersects both. This is known as a secant. If this line intersects the knot in at least one other point, we have identified a trisecant. For our research, we have found all of the trisecants of the Figure Eight knot. We have classified them visually by representing them on a Mobius strip and the surface of a Torus. We will explain these surfaces and the mapping process in a way that is interesting and accessible to a general audience.
Mentor: Clark Wells

KIRKHOF CENTER 2216
Charles Darwin, Karl Marx and Chinese Philosophy
Presenter: Dalelena Williams

Charles Darwin’s evidence for transmutation of animals from one organism to a variety of species clearly supports ancient Easter Philosophy’s ideas. Many of Karl Marx’s ideas are also supported by the naturalist. Darwin’s empirical evidence exhibits Taoist principles and confirms some Marxist ideals. Furthermore, The People’s Republic of China chose to affirm Marx’s communism. It seems that Marx’s ideas rest well with the Chinese people due to his underlying connection to Taoism. Taoist’s principles like balance can be found in communism’s economic controls. Because Karl Marx was influenced by Charles Darwin, and Darwin’s evidence supports Taoism, I am curious if communism is tailor-made for Chinese culture.
Mentor: Coeli Fitzpatrick

KIRKHOF CENTER 2259
Genetic Analysis of Ancient Human Remains from the Bronze Age Nomadic Steppe Cultures of Ukraine
Presenter: Jeff Pashnick

During the transition between the late Neolithic and the Early Bronze Age (EBA) proto-Indo-European languages began to spread from southeastern steppes (prairielands) westwards into Europe. Southern Ukraine (North Pontic Region, NPR) was the meeting place between the Old Europe and steppe nomadic cultures. Using mitochondrial DNA (mtDNA), we tested ancient human remains from the EBA cultures from the NPR to determine if there was genetic evidence for the mingling of these cultures. Our data shows mtDNA lineages (haplogroups) of nomadic pastoralists in the NPR to have mainly common haplogroups with European hunter-gatherer cultures, with an inclusion of haplogroups common to farming cultures of Europe. The similarities in the haplogroup composition between European Neolithic hunter-gatherers and the NPR steppe pastoralists suggests that they share a common genetic past, in part influenced by the neighboring farmers and in part stemming from the Mesolithic native European ancestry.
Mentor: Alexey Nikitin

KIRKHOF CENTER 2263
Evaluation of health literacy screening questions for use in the acute care setting
Presenters: Jessica Kuncaitis, Stephanie Welch

Currently, the only health literacy screening tools that are valid and available for assessment purposes in health care settings are not practical for everyday use, mainly due to length. The primary purpose of this study is to identify a valid, reliable and feasible 3-question health literacy screening tool for use in the acute care setting. The 3 Health Literacy Assessment Questions(HLAQs) along with the Short Test of Functional Health Literacy in Adults (S-TOFHLA) and the Newest Vital Sign (NVS) were administered to 47 English-speaking acute care patients at Spectrum Health hospitals. Cronbachs alpha was used to measure internal consistency and assess criterion validity by measuring correlations between all three tests administered. The HLAQs were found to be reliable (Cronbach alpha >0.74) and correlate well with the NVS, but not with the S-TOFHLA. The HLAQs are appropriate for use as a time-conscious screening test for health literacy in the acute care setting.
Mentor: Andrew Booth

KIRKHOF CENTER 2266
Iran: Global Insurrection and the Mahdi
Presenter: Jason Escareno

The current conflagration between Iran and the west intimates a conflict of ignorance. This conflict has amassed inordinate consequences charged with ethnocentric and ideological behavior by both sides. This argument seeks to hyphenate western perspectives of Iran with an appraisal of Iran’s political and religious history. Further, this argument believes, as the political scientist Samuel Huntington’s theory of “the clash of civilizations” intimates, that future conflicts will become increasingly more prevalent between Muslims and non-Muslims. This notion is enlightened by an examination of the Muslim belief in the return of the Mahdi. This belief invigorates the erratic and hostile behavior, including state sponsored terrorism, by the Iranian caliphate. This argument identifies and examines four critical historical criteria that have espoused Iran’s siege mentality and led to the exacerbation of Mahdi eschatology.
Mentor: Jonathan White

KIRKHOF CENTER 2270
Defining Traits of Physician Assistant Malpractice: Evidence from the National Practitioner Data Bank
Presenters: Emily Sydloski, Aleica Nylaan, Genevieve Nelson

In the United States, the annual cost of medical malpractice affects the quality and expense of healthcare. As physician assistants continue to increase their presence in the medical field, the available research on physician assistant (PA) malpractice is limited. The purpose of this study was to gain a better understanding of malpractice trends in the PA profession. A retrospective analysis of physician assistant malpractice data was conducted utilizing the National Practitioner Data Bank within the time frame of January 1, 2002 to December 31, 2010. The findings from this analysis revealed the number of payments and monetary amount of payments for PAs did not increase or decrease over the time frame of interest. Diagnosis relatedallegations had the greatest number of malpractice payments with obstetrics related allegations having the greatest payment amount. Through this study a better understanding was gained of the malpractice market as it relates to PA practice.
Mentor: Wallace Boeve

Panel Presentations and Performance Abstracts & Schedule

BEGINNING AT 10:00 AM

KIRKHOF CENTER 2215
Literary Blogs: An Active Learning Tool Panel
Presenters: Trisha Bravata, Emily Fairless, Penney Johnson

Many Spanish programs at the Undergraduate College level have adapted a Survey of Latino American Literature at an intermediate level. This is a course that teaches the students the most fundamental literature works. However, this class is challenging for many reasons: (a) Students do not feel confident reading, understanding and interpreting literature; (b) Literature is not transcribable; (c) Literature is not connected to their own reality. So, how do students see the importance of literature and most significantly how do the students feel comfortable with the literature texts? How do students gain confidence when reading and interpreting literature? We are presenting a Literary/Creative Blog that was designed for a Latin American Survey Class. We are trying to support the idea that students need to feel ownership with the literature texts to successfully overcome their anxiety when studying literature and, as a result, they become more engaged in literature.
Mentor: Natalia Gomez

BEGINNING AT 11:00 AM

KIRKHOF CENTER 2215
Relations and Changes in the Middle East Panel
Presenters: Laura Carlson, Katherine Sample, Judson Moiles

This panel is an examination of international relations, political change, and internal politics in the Middle East. Kate’s paper focuses on the dictatorships of five countries affected by the Arab Spring: Egypt, Libya, Syria, Tunisia, and Yemen. By analyzing certain characteristics of those nations, including governmental issues, societal structure, and cultural make-up, this paper discusses how and why these dictatorships collapsed in different ways. Judson’s paper focuses on how the ‘Alawis, a minority, have been able to rule a Sunni majority for so long through the examination of Syrian history right after independence and the role Assad’s Ba’ath Party played in the Syrian pan-Arab movements of the 50’s and 60’s. Finally, Laura examines the relations between Turkey and Israel from the view of Turkey. This is done with a focus on how the relations between the Turkish military and civilian government have influenced the relationship between Turkey and Israel through time.
Mentors: Gamal Gasim, James Goode

BEGINNING AT 11:30 AM

KIRKHOF CENTER 0051
Pura Poesía: A Contemporary Application of Poetry
Presenters: Christi-Anna Henders, Andrew MacLeod

Poetry describes the human condition within the terms we depend on to perceive and experience the world; sensations. These sensations, including touch, taste, hearing, seeing, and smelling, often inspire individuals to begin the poetic process of expressing these perceptions. The end

result, poetry, as we traditionally know it becomes an intangible noun. However, our inspiration was the concept of poetry being understood within tactile terms. This project is a skit based on the idea of poetry as a touchable product. We used the format of a television commercial and explored the elements of Spanish poetry using the influences of post-modern commercialization, traditional poetic techniques like alliteration, and well known Spanish poets to supplement the sketch. Although striving for a humorous interpretation from the audience, this sketch is contrasting contemporary and traditional poetic ideals and challenging the way we are accustomed to perceiving things.
Mentor: Zulema Moret

BEGINNING AT 12:00 PM

KIRKHOF CENTER 2215
Death, Music, and Cultural Identity: Three Perspectives on Alejo Carpentier’s The Kingdom of this World
The Presence of Europe in Alejo Carpentier’s The Kingdom of This World
Presenter: Nicole Johnson

Alejo Carpentier was a man of a double identity. From his childhood until his death in 1980, he moved back and forth many times between Paris and Cuba. It is clear that this oscillation between the two cultures had an impact on the author’s worldview and, as a result, on his writing. When one analyzes his novel, The Kingdom of This World, in an extra-textual manner, investigating the historical context and the biographical data available to us, one can see the European influence on his interpretation of the events that take place within the story. Being both European and Caribbean, he had to face the dilemma of discovering where his identity lay and therefore reconcile the two opposing cultural forces in his life. The juxtaposition of the Latin American and European perspectives reveals that although Carpentier appears to favor a Latin American system of beliefs, there is still a lot of the European way of thinking and perceiving the world in which he lived and about which he wrote.
Mentor: Médar Serrata

Depictions of Death: Applications of Magic Realism in The Kingdom of This World
Presenter: Amanda Crespo

In his prologue to The Kingdom of This World, Alejo Carpentier defines his theory of lo real maravilloso as a world where marvelous and seemingly magical occurrences transpire within reality. After defining his concepts in the prologue, Carpentier uses the rest of the novel to further illustrate his assertions. One of the clearest demonstrations of Magic Realism exists in the depictions of death within the novel. These instances demonstrate the importance of faith and loyalty in the application of Magic Realism. The characters that remain steadfast in the beliefs of their culture experience the possibility of an existence after death. They continue to live in a world both real and magical. However, those characters who abandon their culture, although they try to repent, suffer a definitive death without hope for more.
Mentor: Médar Serrata

The Impact of Music in Alejo Carpentier’s The Kingdom of This World
Presenter: Haley Otman

Alejo Carpentier is best known as the author of El reino de este mundo(The Kingdom of This World) and the man who coined the phrase lo real maravilloso (magical realism), but the most important

element of his life was actually music. The great influence of music in El reino de este mundo is evident in the novel’s musical structure, the events that transpire, particularly religious events, and the language used throughout the novel. In using music throughout the entire novel, Carpentier elicits strong emotions from the reader, his way of including the reader in the book.
Mentor: Médar Serrata

BEGINNING AT 1:00 PM

KIRKHOF CENTER 0051
Selections from [title of show]
Presenter: Amber VanAllen

“[title of show] is a musical about two nobodies named Hunter and Jeff who decide to write a completely original musical starring themselves and their attractive and talented ladyfriends, Susan and Heidi” (<http://www.titleofshow.com/about.html>). In a span of 90 minutes, the ensuing musical chronicles their adventures as they strive to get their show produced on Broadway. Amber VanAllen presented [title of show] in its entirety in February 2012 as her Senior Honor’s Thesis project, where she investigated and documented directing a musical. The small cast and crew are reuniting today to perform the following musical selections, which have been lifted from February’s finished product.
Mentor: Karen Libman

KIRKHOF CENTER 2215
Liberal Education and Intellectual Freedom
Presenters: Michael Skinner, Roxanne Mol, Darris Sawtelle, Andrew Cirner, Brian Scott, Dmitri Westbrook

This panel will explore the connections between Liberal Education and Intellectual Freedom through the creative and integrative perspectives of six Liberal Studies majors. Our experiences both in traditional and non-traditional forms of education and our individual and interdisciplinary ways of knowing have created a system of values, creativity, respect for diversity and reflective practice that we want to share with the GVSU community. After presenting our unique ways of understanding liberal education, we hope to engage the audience in a dialogue about the importance of liberal education and of being an engaged, global citizen in the 21st century.
Mentor: Christine Drewel

BEGINNING AT 2:00 PM

KIRKHOF CENTER 0051
Against Forgetting: Creative Remembrances of the War in Former Yugoslavia
Presenter: Kristina Pepelko

The War for Independence in former Yugoslavia has been over for seventeen years, yet the wounds still run deep, and what happened has long been ignored by the American public. Some organizations and countries offered help in the form of humanitarian aid, yet many others did nothing but watch as thousands of Croats, Bosnians, and Serbs lost their homes, their families, and their lives. Armenian poet Siamanto once wrote, “Don’t be afraid. I must tell you what I saw, so people will understand the crimes men do the men.” Heavily influenced by Siamanto and other

poets of witness, this project is a look back at what happened during the five years war raged in the former Yugoslav republic. After months of research from the examination of war photographs and video footage to the reading of wartime diaries and poetry written by Croatian and Bosnian poets, I created a short story and a group of poems as an attempt to better understand, to listen, and to remember the stories of the forgotten.
Mentors: Patricia Clark, Ivo Soljan

BEGINNING AT 2:20 PM

KIRKHOF CENTER 0051
The Choice: A Sampling of Poetry
Presenter: Krysta Thelen

For my presentation I have compiled a set of poems that reflects the theme of people experiencing different situations such as having a dream, living through the difficulties of being disabled (whether physically or mentally), confronting an issue such as abortion or an addiction, or going through the journey of life from birth to death. Each of these poems also reflects my developing writing style and techniques. Thus far, my style is not concrete in any way. I like to venture into free-verse as well as mimic other poets’ styles and practice formal styles of poems such as a sestina. These poems were also written over the course of two years. Furthermore, what I aspire to give to readers through my work is my passion for the visual aspects, the thirst for rich detail, or a deeper meaning or moral within the pieces. Most of all, I want listeners to enjoy my work and see my hunger for something new to show in my poetry.
Mentor: Patricia Clark

BEGINNING AT 2:40 PM

KIRKHOF CENTER 0051
I GOT SUMPTHIN’ TO SAY: Voices of the Overlooked and the Unheard
Presenter: Shawnkeisha Stoudamire

The motivation behind my collection of poems is that many people, and even animals, have stories that they are unable to share because they have no voice in our society. I have decided that we should listen to their stories because they live the thick of the social structure throughout their lives on a daily basis and their experiences can be used to examine that social structure. I hope that by sharing some of their stories, their thoughts on their situations will in turn bring attention to major issues in our culture that are overlooked. With that being said, I present to you “I GOT SUMPTHIN’ TO SAY: Voices of the Overlooked and the Unheard.”
Mentor: Patricia Clark

BEGINNING AT 3:00 PM

KIRKHOF CENTER 0051
Things the Trees Said to Me: The Synopsis of a Life Through Images of Nature
Presenter: Heather Thompson

This collection of poems illustrates various experiences from my life. One poem illustrates a child climbing a tree, another jumps from across the span of several years, and yet another speaks of sexuality as the narrator contemplates the male form. Each one of these poems, however, ties in images of nature in some way. I often find myself looking to nature for comfort and inspiration, and

often without intention, trees, flowers, or the Superior shore creep their way onto my pages. While these poems are unified via the images I have used to share my personal triumphs and failures, they differ in sound and form. Much like the ever changing world around us, I am dedicated to experimenting and playing with the words on the page, constantly shifting and changing my approach to writing. Thus, each poem takes on its own unique structure and form. It is my hope that in sharing these poems, the audience finds a new understanding of poetry and nature in their rawness, playfulness, and beauty.
Mentor(s): Patricia Clark

BEGINNING AT 3:20 PM

KIRKHOF CENTER 0051
HERstory: Poems from the Female Perspective
Presenter: Jennifer Stamate

HERstory takes risks, but doesn't do it for the shock value. By using simple scenes from the lives of women, this set of poetry shows what it's like to be a young woman in the modern world. A moment from a frat house party, a young girl learning about changes in her body, and a relationship between two lovers are just a few of the concepts touched upon in this series. The poems are charged with an energy of what it's like to be female, of what it's like to be a woman.
Mentor: Patricia Clark

BEGINNING AT 4:00 PM

KIRKHOF CENTER 0051
Act On Racism Performance
Presenters: Victor Ramirez, Mercedes Robinson, Dmitri Westbrook, James Sizer, Stephanie Brown, Elle Gray, Carlos Ceppi, Alec Gonzalez, Omega Barton, Nye Nye Chinyere

Act on Racism (AOR) focuses on the way racism and racial inequality operate in the US. Members of AOR gather stories from community members (professors, students, parents, and friends) about their experiences with prejudice, discrimination, institutional exclusion and marginalization, and stereotyping. Through intensive practice, member-actors negotiate ways to dramatize these stories. The resulting skits attempt to remain as true to the original incidents as possible in order to illustrate issues in our community.
Mentor: Jennifer Stewart

Index of Presenters and Mentors (sorted by last name)

A			
Aboufadel, Edward	Mentor	1:00 p.m.	Kirkhof Center KC61
Abraham, Blake	Student	1:00 p.m.	Kirkhof Center 2270
Adams, Christopher	Student	12:00 p.m.	Kirkhof Center KC56
—	Student	3:00 p.m.	Kirkhof Center 2216
Adams, Stephanie	Student	9:00 a.m.	Henry Hall Atrium 43
Adlof, Lauren	Student	12:00 p.m.	Kirkhof Center KC96
Adrian, David	Student	2:30 p.m.	Kirkhof Center 2266
Alayont, Feryal	Mentor	1:00 p.m.	Kirkhof Center 2266
—	Mentor	2:30 p.m.	Kirkhof Center 2259
—	Mentor	9:00 a.m.	Kirkhof Center 2266
—	Mentor	2:00 p.m.	Kirkhof Center 2266
Alderink, Gordon	Mentor	1:00 p.m.	Henry Hall Atrium 36
—	Mentor	11:00 a.m.	Henry Hall Atrium 12
—	Mentor	10:00 a.m.	Henry Hall Atrium 49
—	Mentor	9:00 a.m.	Henry Hall Atrium 15
—	Mentor	4:00 p.m.	Henry Hall Atrium 79
—	Mentor	12:00 p.m.	Henry Hall Atrium 84
—	Mentor	4:00 p.m.	Henry Hall Atrium 59
Alexander, Jeffrey	Student	2:00 p.m.	Henry Hall Atrium 24
Altheim, Christopher	Student	11:00 a.m.	Henry Hall Atrium 45
—	Student	11:00 a.m.	Henry Hall Atrium 5
Alvesteffer, Maria	Student	3:00 p.m.	Kirkhof Center 2259
Ambrose, Bradley	Mentor	4:00 p.m.	Henry Hall Atrium 59
—	Mentor	1:00 p.m.	Henry Hall Atrium 36
—	Mentor	4:00 p.m.	Henry Hall Atrium 79
—	Mentor	9:00 a.m.	Henry Hall Atrium 15
—	Mentor	11:00 a.m.	Henry Hall Atrium 12
—	Mentor	10:00 a.m.	Henry Hall Atrium 49
—	Mentor	12:00 p.m.	Henry Hall Atrium 84
Amity, Rachel	Student	12:30 p.m.	Kirkhof Center 2270
Anderson, Donovan	Mentor	11:00 a.m.	Kirkhof Center 2201
Anderson, Hannah	Student	2:00 p.m.	Kirkhof Center 2266
Anderson, Nicholas	Student	11:00 a.m.	Kirkhof Center KC60
Anderson, Patrick	Student	10:30 a.m.	Kirkhof Center 2263
Andrews, Justin	Student	10:00 a.m.	Henry Hall Atrium 54
Angerbrandt, Michael	Student	11:00 a.m.	Henry Hall Atrium 12
Asiala, Lillian	Student	1:00 p.m.	Kirkhof Center KC11
Atzinger, Chelsea	Student	11:00 a.m.	Kirkhof Center KC14
Austin, David	Mentor	2:30 p.m.	Kirkhof Center 2263
Austin, Lisa	Student	9:00 a.m.	Kirkhof Center 2263
—	Student	2:00 p.m.	Henry Hall Atrium 55
B			
Babila, Jeremy	Student	1:00 p.m.	Kirkhof Center 2266
—	Student	2:30 p.m.	Kirkhof Center 2259

Bachler, Zach	Student	12:00 p.m.	Henry Hall Atrium 70
Baggett, Vincent	Student	4:00 p.m.	Henry Hall Atrium 99
Bailey, Kathleen	Mentor	11:00 a.m.	Henry Hall Atrium 83
Bair, Mary	Mentor	1:00 p.m.	Kirkhof Center KC33
Baker, Morgan	Student	9:00 a.m.	Henry Hall Atrium 43
Bald, Lauren	Student	10:00 a.m.	Kirkhof Center KC 69
Ballard, Nick	Student	1:00 p.m.	Kirkhof Center KC5
Banner, Claire	Student	11:00 a.m.	Kirkhof Center KC 85
Bareman, Torry	Student	11:00 a.m.	Kirkhof Center 2263
Barnard, Molly	Student	11:00 a.m.	Kirkhof Center KC26
Barrett, Brett	Student	10:00 a.m.	Kirkhof Center 2263
Barrows, Nathan	Mentor	2:00 p.m.	Henry Hall Atrium 47
Basnet, Sweta	Student	11:30 a.m.	Kirkhof Center 2263
Basu, Sukanya	Mentor	11:00 a.m.	Kirkhof Center 2216
—	Mentor	11:30 a.m.	Kirkhof Center 2201
Baumann, Joseph	Student	1:00 p.m.	Henry Hall Atrium 95
Baumgarten, Eric	Student	1:30 p.m.	Kirkhof Center 2216
Baxter, M. Aaron	Mentor	11:00 a.m.	Henry Hall Atrium 5
—	Mentor	11:00 a.m.	Henry Hall Atrium 45
Beale, Camella	Student	10:30 a.m.	Kirkhof Center 2216
Becker, Cassandra	Student	1:00 p.m.	Kirkhof Center KC3
Beebe, Aaron	Student	12:00 p.m.	Kirkhof Center KC96
Beebe, Rebecca	Student	9:00 a.m.	Henry Hall Atrium 88
Beebe, Thomas	Student	9:00 a.m.	Henry Hall Atrium 88
Beger, Daniel	Student	3:30 p.m.	Kirkhof Center 2270
Bender, John	Mentor	2:00 p.m.	Kirkhof Center KC28
Benedetti, Marco	Student	12:00 p.m.	Kirkhof Center 2216
Benjamin, Craig	Mentor	1:30 p.m.	Kirkhof Center 2259
—	Mentor	1:30 p.m.	Kirkhof Center 2266
Bennett, James	Student	2:00 p.m.	Henry Hall Atrium 42
Bergman, Dan	Mentor	3:00 p.m.	Kirkhof Center 2216
—	Mentor	12:00 p.m.	Kirkhof Center KC56
—	Mentor	11:00 a.m.	Henry Hall Atrium 62
Beslagic, Lisa	Student	11:00 a.m.	Kirkhof Center 2263
Betz, Jordyn	Student	10:00 a.m.	Henry Hall Atrium 81
Biddanda, Bopi	Mentor	9:00 a.m.	Kirkhof Center KC 82
—	Mentor	4:00 p.m.	Kirkhof Center 1104
—	Mentor	1:00 p.m.	Kirkhof Center KC 80
Bilski, Brandan	Student	3:30 p.m.	Kirkhof Center 2259
Biros, Shannon	Mentor	10:00 a.m.	Henry Hall Atrium 96
—	Mentor	10:00 a.m.	Kirkhof Center KC27
Blackman, Sheila	Mentor	10:30 a.m.	Kirkhof Center 2201
Blaser, Laura	Student	3:00 p.m.	Kirkhof Center KC57
Boeve, Jenna	Student	11:30 a.m.	Kirkhof Center 2259
Boeve, Wallace	Mentor	5:00 p.m.	Kirkhof Center 2270
Boissoneau, Marc	Student	9:00 a.m.	Henry Hall Atrium 15
Bolen, Brett	Mentor	3:00 p.m.	Henry Hall Atrium 85
Booth, Andrew	Mentor	5:00 p.m.	Kirkhof Center 2263
—	Mentor	9:00 a.m.	Kirkhof Center 2216

Borders, Dale	Mentor	1:00 p.m.	Kirkhof Center 2216
Born, Julie	Student	3:00 p.m.	Kirkhof Center 2259
Botting, Timothy	Student	10:30 a.m.	Kirkhof Center 2270
Bouza, Alexandra	Student	10:00 a.m.	Kirkhof Center KC65
Bowerman, Samuel	Student	10:00 a.m.	Kirkhof Center KC37
Boyd, Justin	Student	11:00 a.m.	Kirkhof Center KC20
Brandon, Jaimie	Student	10:00 a.m.	Henry Hall Atrium 8
Brashler, Janet	Mentor	11:00 a.m.	Kirkhof Center KC 75
—	Mentor	12:30 p.m.	Kirkhof Center 2215
—	Mentor	2:30 p.m.	Kirkhof Center 2216
Braun, Branden	Student	9:00 a.m.	Henry Hall Atrium 101
Brennan, Jessica	Student	12:00 p.m.	Henry Hall Atrium 84
Briggs, Lauren	Student	4:00 p.m.	Kirkhof Center KC8
Briggs, Megan	Student	9:00 a.m.	Henry Hall Atrium 4
Brostman, Mark	Student	10:00 a.m.	Henry Hall Atrium 57
Brown, Tami	Student	4:00 p.m.	Kirkhof Center 1142
Bruns, Carly	Student	10:00 a.m.	Kirkhof Center KC50
Bryker, Elizabeth	Student	3:30 p.m.	Kirkhof Center 2201
Burg, Martin	Mentor	9:00 a.m.	Kirkhof Center KC38
—	Mentor	11:00 a.m.	Henry Hall Atrium 78
—	Mentor	12:00 p.m.	Henry Hall Atrium 23
—	Mentor	9:00 a.m.	Henry Hall Atrium 43
Burke, Allison	Student	12:00 p.m.	Kirkhof Center KC54
Burke, Michelle	Mentor	12:00 p.m.	Kirkhof Center 2266
Burlew, Danyelle	Student	10:00 a.m.	Kirkhof Center KC 69
Bussey, Jacqueline	Student	3:00 p.m.	Kirkhof Center KC29

C

Campbell, Joseph	Student		Kirkhof Center KC97
Canada, Kelsey	Student	4:00 p.m.	Henry Hall Atrium 59
Carlson, Laura	Student	11:00 a.m.	Kirkhof Center 2215
Caruso, Katrina	Student	11:00 a.m.	Kirkhof Center 2263
Chandler, Adrienne	Student	12:00 p.m.	Henry Hall Atrium 58
Chang, Anthony	Mentor	11:30 a.m.	Kirkhof Center 1142
—	Mentor	12:00 p.m.	Kirkhof Center KC88
—	Mentor	1:00 p.m.	Kirkhof Center KC48
Chapman, Alice	Mentor	11:30 a.m.	Kirkhof Center 2216
—	Mentor	1:00 p.m.	Kirkhof Center 2263
Cherluck, Joseph	Student	9:00 a.m.	Kirkhof Center KC94
Chick, Benjamin	Student	4:00 p.m.	Kirkhof Center KC34
Childs, Steven	Student	10:00 a.m.	Kirkhof Center KC59
Cieslak, Kyla	Student	10:00 a.m.	Henry Hall Atrium 49
Cikesh, Bryanna	Student	1:00 p.m.	Henry Hall Atrium 6
Cirner, Andrew	Student	1:00 p.m.	Kirkhof Center 2215
Cisse, Daniel	Student	9:00 a.m.	Henry Hall Atrium 97
Clark, Aaron	Student	9:00 a.m.	Kirkhof Center 2259
Clark, Patricia	Mentor	3:20 p.m.	Kirkhof Center 0051
—	Mentor	2:40 p.m.	Kirkhof Center 0051
—	Mentor	2:00 p.m.	Kirkhof Center 0051

—	Mentor	2:20 p.m.	Kirkhof Center 0051
—	Mentor	3:00 p.m.	Kirkhof Center 0051
Clifford Hart, Dawn	Mentor	1:00 p.m.	Kirkhof Center KC49
—	Mentor	3:00 p.m.	Kirkhof Center KC 74
—	Mentor	11:00 a.m.	Kirkhof Center KC63
Cole, Elisabeth	Student	2:00 p.m.	Henry Hall Atrium 41
Cole, Roy	Mentor	2:30 p.m.	Kirkhof Center 1104
Cole, Stephanie	Student	9:00 a.m.	Kirkhof Center 2216
Colley, Chelsey	Student	10:00 a.m.	Henry Hall Atrium 87
—	Student	11:00 a.m.	Henry Hall Atrium 83
Collins, Kathryn	Student	2:00 p.m.	Kirkhof Center KC25
Constantelos, John	Mentor	10:30 a.m.	Kirkhof Center 2259
Cookinham, Max	Student	3:00 p.m.	Kirkhof Center KC57
Copeland, Lisa	Student	10:00 a.m.	Kirkhof Center 2216
Corbett, Allison	Student	4:00 p.m.	Kirkhof Center 2266
Core, Alicia	Student	9:00 a.m.	Henry Hall Atrium 48
Cornelius, Tara	Mentor	2:30 p.m.	Kirkhof Center 2201
—	Mentor	3:00 p.m.	Kirkhof Center KC 73
Corrello, Sarah	Student	10:00 a.m.	Henry Hall Atrium 49
Crawley, Amy	Mentor	11:00 a.m.	Kirkhof Center KC20
—	Mentor	11:00 a.m.	Henry Hall Atrium 61
—	Mentor	10:00 a.m.	Henry Hall Atrium 57
—	Mentor	12:00 p.m.	Kirkhof Center KC13
—	Mentor	1:00 p.m.	Kirkhof Center KC5
—	Mentor	3:00 p.m.	Henry Hall Atrium 37
—	Mentor	1:00 p.m.	Kirkhof Center KC23
—	Mentor	12:00 p.m.	Henry Hall Atrium 58
—	Mentor	11:00 a.m.	Kirkhof Center KC64
—	Mentor	9:00 a.m.	Kirkhof Center KC91
—	Mentor	12:00 p.m.	Kirkhof Center KC96
Cullison, Amber	Student	10:00 a.m.	Henry Hall Atrium 49
Culross, Paige	Student	2:00 p.m.	Kirkhof Center 2263
Cynar, Paula	Student	11:00 a.m.	Henry Hall Atrium 21
D			
Daley, Matthew	Mentor	1:30 p.m.	Kirkhof Center 2216
Danielson, Sigrid	Mentor	12:00 p.m.	Kirkhof Center KC52
—	Mentor	12:00 p.m.	Kirkhof Center KC 83
Darbyshire, Paige	Student	9:00 a.m.	Henry Hall Atrium 48
Darnell, Matthew	Student	1:00 p.m.	Kirkhof Center 2216
Davies, Kelsey	Student	12:00 p.m.	Henry Hall Atrium 28
Davis, Breck	Student	11:00 a.m.	Henry Hall Atrium 45
—	Student	11:00 a.m.	Henry Hall Atrium 5
Dean, Kristy	Mentor	3:00 p.m.	Henry Hall Atrium 32
—	Mentor	1:00 p.m.	Kirkhof Center KC47
Deaner, Robert	Mentor	12:00 p.m.	Henry Hall Atrium 39
—	Mentor	12:00 p.m.	Henry Hall Atrium 34
—	Mentor	9:00 a.m.	Henry Hall Atrium 38
Deckinga, Mara	Student	2:00 p.m.	Henry Hall Atrium 71

DeGraaf, Kate	Student	12:00 p.m.	Kirkhof Center 2266
DeKievit, Megan	Student	2:30 p.m.	Kirkhof Center 2270
DeLisle, Charles	Student	10:00 a.m.	Henry Hall Atrium 96
DeMuth, Danielle	Mentor	12:00 p.m.	Henry Hall Atrium 3
DenBesten, Eli	Student	9:00 a.m.	Henry Hall Atrium 26
DenHartigh, Derek	Student	12:00 p.m.	Kirkhof Center KC86
DePoister, Keeli	Student	11:30 a.m.	Kirkhof Center 2259
DePree, Stacy	Student	4:00 p.m.	Henry Hall Atrium 7
Desautels, Allison	Student	3:00 p.m.	Henry Hall Atrium 50
Devries, Mark	Student	9:00 a.m.	Henry Hall Atrium 48
DeWitt, Ashley	Student	3:00 p.m.	Kirkhof Center KC 74
Deyo, Brian	Mentor	9:00 a.m.	Kirkhof Center 2263
deYoung, Mary	Mentor	4:00 p.m.	Kirkhof Center 2216
—	Mentor	4:00 p.m.	Kirkhof Center 2266
—	Mentor	3:00 p.m.	Kirkhof Center 2266
DiCarlo, Cory	Mentor	4:00 p.m.	Kirkhof Center KC55
—	Mentor	1:00 p.m.	Henry Hall Atrium 89
Diephouse, Blake	Student	1:00 p.m.	Kirkhof Center KC23
Dietrich, Margaret	Mentor	4:00 p.m.	Henry Hall Atrium 91
—	Mentor	12:00 p.m.	Henry Hall Atrium 1
Dillard, Amanda	Mentor	1:00 p.m.	Henry Hall Atrium 52
—	Mentor	10:00 a.m.	Henry Hall Atrium 102
—	Mentor	11:00 a.m.	Kirkhof Center 2259
Donker, Laura	Student	11:00 a.m.	Kirkhof Center KC60
Drake, Brian	Mentor		Kirkhof Center KC97
Drewel, Christine	Mentor	1:00 p.m.	Kirkhof Center Area 52
Drvinski, Kelsey	Student	4:00 p.m.	Henry Hall Atrium 56
Dueker, Gwenden	Mentor	1:00 p.m.	Henry Hall Atrium 16
Duff, Jordan	Student	1:00 p.m.	Kirkhof Center KC11
Dunnuck, Elizabeth	Student	2:00 p.m.	Kirkhof Center 1142
Durden, Juanakee	Student	2:00 p.m.	Kirkhof Center 2263
Durst, Michelle	Student	10:00 a.m.	Kirkhof Center KC62
Durston, Mary	Student	9:00 a.m.	Henry Hall Atrium 94
Dye, Jeremy	Student	10:00 a.m.	Kirkhof Center KC46
Dykstra, Michael	Student	11:30 a.m.	Kirkhof Center 1142
—	Student	12:00 p.m.	Kirkhof Center KC88
—	Student	1:00 p.m.	Kirkhof Center KC48
E			
Ebenstein, Alexander	Student	12:00 p.m.	Kirkhof Center 2263
Eick, David	Mentor	4:30 p.m.	Kirkhof Center 2266
Ellenberger, Kurt	Mentor	9:30 a.m.	Kirkhof Center 2259
Ellero, Tony	Student	2:00 p.m.	Kirkhof Center 2266
Ellis, Amanda	Student	9:00 a.m.	Kirkhof Center 2270
Ellis, Lisa	Student	10:00 a.m.	Kirkhof Center KC62
Ellis, Melissa	Student	9:00 a.m.	Kirkhof Center 2270
Emelander, Tanya	Student	11:00 a.m.	Henry Hall Atrium 21
Enoch, Erica	Student	9:00 a.m.	Henry Hall Atrium 43
Escareno, Jason	Student	5:00 p.m.	Kirkhof Center 2266

Esch, Michael	Student	11:00 a.m.	Kirkhof Center 2216
Evans, Kristen	Mentor	3:30 p.m.	Kirkhof Center 2263
Evans, Kristen	Student	10:30 a.m.	Kirkhof Center 2216
Evans, Timothy	Mentor	2:00 p.m.	Kirkhof Center KC18
Ezinga, Ross	Student	4:30 p.m.	Kirkhof Center 2259

F

Fegel, Heidi	Student	10:00 a.m.	Henry Hall Atrium 30
Ferguson, Roger	Mentor	4:00 p.m.	Kirkhof Center KC34
Fester, Karl Sebastian	Student	9:00 a.m.	Kirkhof Center 1142
Feurstein, Patrick	Student		Kirkhof Center KC99
Figlewicz, Matt	Student	10:00 a.m.	Kirkhof Center KC 69
Fiore, Christopher	Student	9:00 a.m.	Kirkhof Center 2270
Fisk, Sean	Student	9:00 a.m.	Henry Hall Atrium 68
Fitzpatrick, Coeli	Mentor	12:30 p.m.	Kirkhof Center 2216
—	Mentor	5:00 p.m.	Kirkhof Center 2216
Flaschenriem, Barbara	Mentor	3:00 p.m.	Kirkhof Center 2201
Fles, Elizabeth	Student	1:00 p.m.	Kirkhof Center KC47
Flessland, Christine	Student	11:30 a.m.	Kirkhof Center 2259
Flora, Tyler	Student	4:00 p.m.	Kirkhof Center KC40
—	Student	1:00 p.m.	Henry Hall Atrium 6
Florek, Nicholas	Student	3:00 p.m.	Kirkhof Center KC2
Fortney, Robert	Student	9:00 a.m.	Henry Hall Atrium 26
—	Student	10:00 a.m.	Kirkhof Center KC 72
Fought, Ellie	Student	2:00 p.m.	Henry Hall Atrium 47
Fox, Katelyn	Student	11:00 a.m.	Kirkhof Center 2263
Fox, Kenzie	Student	12:00 p.m.	Kirkhof Center KC13
Francoer, Paul	Student	11:00 a.m.	Kirkhof Center 2216
Frazier, Amanda	Student	11:00 a.m.	Kirkhof Center KC20
Fredrickson, Jenna	Student	1:00 p.m.	Henry Hall Atrium 65
Freeman Pikorova, Sandra	Student	11:30 a.m.	Kirkhof Center 2201
French, Shawn	Student	9:00 a.m.	Kirkhof Center KC91
Friedlmeier, Mihaela	Mentor	12:00 p.m.	Kirkhof Center KC 78
—	Mentor	2:00 p.m.	Kirkhof Center 2259
Friedlmeier, Wolfgang	Mentor	9:00 a.m.	Kirkhof Center KC35
Frisinger, Kayla	Student	11:00 a.m.	Kirkhof Center KC60
Fritz, Kasey	Student	12:00 p.m.	Henry Hall Atrium 70
Froncek, Timothy	Mentor	2:30 p.m.	Kirkhof Center 2270
Furton, Douglas	Mentor	10:00 a.m.	Kirkhof Center KC59

G

Gabrosek, John	Mentor	9:00 a.m.	Kirkhof Center 2259
Galen, Luke	Mentor	10:00 a.m.	Kirkhof Center KC62
Garlets, Zac	Student	10:00 a.m.	Henry Hall Atrium 2
Gascho, Jake	Student	4:00 p.m.	Henry Hall Atrium 59
Gasim, Gamal	Mentor	11:00 a.m.	Kirkhof Center 2215
Gasko, Stefanie	Student	12:30 p.m.	Kirkhof Center 2215
Gebre-Egziabher, Kibrom	Student	10:00 a.m.	Henry Hall Atrium 13
Gilewski, Carlene	Student	12:00 p.m.	Henry Hall Atrium 14

Gill, Becky	Student	11:00 a.m.	Henry Hall Atrium 61
Gillett, Kelli	Student	3:00 p.m.	Kirkhof Center 2270
Ginder, Ashley	Student	2:00 p.m.	Kirkhof Center KC44
Gipson Jr., John	Student	10:00 a.m.	Kirkhof Center 2259
—	Student	11:00 a.m.	Kirkhof Center 2270
Glazier, Megan	Student	10:00 a.m.	Kirkhof Center KC4
Gleason, PhD, Mark	Mentor	2:00 p.m.	Henry Hall Atrium 71
Globerson, Jeffrey	Student	1:00 p.m.	Kirkhof Center KC51
Godfrey, Timothy	Student	10:30 a.m.	Kirkhof Center 2201
Golden, John	Mentor	1:00 p.m.	Kirkhof Center KC3
Golder, Erin	Student	3:00 p.m.	Kirkhof Center KC57
Goldsmith, Laura	Student	9:00 a.m.	Kirkhof Center KC19
Gomer, Caleb	Student	10:00 a.m.	Kirkhof Center KC46
—	Student	4:00 p.m.	Kirkhof Center KC34
Goode, James	Mentor	11:00 a.m.	Kirkhof Center 2215
Goodrich, Erica	Student	9:00 a.m.	Kirkhof Center KC35
Goote, Paige	Student	11:00 a.m.	Henry Hall Atrium 62
Gort, Michele	Student	10:00 a.m.	Henry Hall Atrium 8
Goyke, Jessica	Student	3:00 p.m.	Kirkhof Center KC57
Graham, Damon	Student	12:00 p.m.	Kirkhof Center KC52
Graham, Doug	Mentor	1:00 p.m.	Henry Hall Atrium 6
—	Mentor	10:00 a.m.	Kirkhof Center KC32
—	Mentor	4:00 p.m.	Kirkhof Center KC40
Graham, Mary	Student	9:00 a.m.	Kirkhof Center KC22
—	Student	9:00 a.m.	Henry Hall Atrium 4
Graham, Molly	Student	10:00 a.m.	Henry Hall Atrium 102
Griffin, “C. “”Griff””	Mentor	2:00 p.m.	Kirkhof Center 1142
—	Mentor	2:30 p.m.	Kirkhof Center 1142
—	Mentor	4:00 p.m.	Kirkhof Center 1142
—	Mentor	9:30 a.m.	Kirkhof Center 1142
—	Mentor	11:00 a.m.	Kirkhof Center 1142
—	Mentor	3:00 p.m.	Kirkhof Center 1142
—	Mentor	1:30 p.m.	Kirkhof Center 1142
—	Mentor	3:30 p.m.	Kirkhof Center 1142
—	Mentor	9:00 a.m.	Kirkhof Center 1142
—	Mentor	10:30 a.m.	Kirkhof Center 1142
—	Mentor	10:00 a.m.	Kirkhof Center 1142
Grit, Joe	Student	10:00 a.m.	Henry Hall Atrium 35
Gross, Jennifer	Mentor	1:00 p.m.	Kirkhof Center KC53
Grysen, Brian	Student	4:00 p.m.	Henry Hall Atrium 7
Gulgin, Heather	Mentor	1:00 p.m.	Henry Hall Atrium 51

H

Haapala, Michelle	Student	9:00 a.m.	Henry Hall Atrium 48
Hackett, Justin	Student	11:00 a.m.	Kirkhof Center KC63
Hackett, Tiffany	Student	3:00 p.m.	Kirkhof Center KC67
Hackney, Lisa	Student	1:30 p.m.	Kirkhof Center 2201
Hage, Anthony	Student	11:00 a.m.	Henry Hall Atrium 78
Hager, Cody	Student	1:00 p.m.	Kirkhof Center KC49

Haisma, Kendra	Student	9:00 a.m.	Kirkhof Center KC 70
Hake, Benjamin	Student	9:00 a.m.	Kirkhof Center KC7
Haley, Erin	Student	11:00 a.m.	Kirkhof Center KC14
Hall, Sarah	Student	3:00 p.m.	Kirkhof Center KC57
Hamilton, Lacey	Student	10:00 a.m.	Henry Hall Atrium 81
Hand, Allison	Student	10:30 a.m.	Kirkhof Center 2216
Hansen, Anthony	Student	4:00 p.m.	Henry Hall Atrium 91
Hansen, Eric	Student	1:00 p.m.	Kirkhof Center KC90
Harmon, Ross	Student		Kirkhof Center KC99
Harris, Brandon	Student	9:30 a.m.	Kirkhof Center 2201
Hart, Matthew	Mentor	12:00 p.m.	Kirkhof Center KC36
—	Mentor	1:00 p.m.	Kirkhof Center KC 76
Harvey, Matthew	Student	1:00 p.m.	Henry Hall Atrium 36
Hass, Alicia	Student	11:30 a.m.	Kirkhof Center 2259
Hatzel, Brian	Mentor	10:00 a.m.	Kirkhof Center KC1
—	Mentor	3:30 p.m.	Kirkhof Center 2263
Haven, Chris	Mentor	11:00 a.m.	Kirkhof Center 2266
Havenhill, Jonathan	Student	11:30 a.m.	Kirkhof Center 2266
—	Student	10:00 a.m.	Henry Hall Atrium 76
Hayes, Allison	Student	12:00 p.m.	Kirkhof Center KC21
Hecht, Steven	Mentor	10:00 a.m.	Henry Hall Atrium 87
Henderleiter, Julie	Mentor	1:00 p.m.	Henry Hall Atrium 20
Henders, Christi-Anna	Student	11:40 a.m.	Kirkhof Center 0051
Henshaw, Michael	Mentor	10:00 a.m.	Henry Hall Atrium 73
—	Mentor	9:00 a.m.	Kirkhof Center KC19
Herrington, Deborah	Mentor	10:00 a.m.	Henry Hall Atrium 35
Hickson, Gareth	Student	11:00 a.m.	Kirkhof Center 1142
Hill, Hans	Student	3:00 p.m.	Kirkhof Center KC57
Hindeleh, Firas	Mentor	12:00 p.m.	Kirkhof Center 2270
Hiner, Margaret	Student	1:00 p.m.	Henry Hall Atrium 36
Hinman, Amy	Student	11:00 a.m.	Henry Hall Atrium 12
Hinterman, Corina	Student	2:00 p.m.	Kirkhof Center KC44
Hoberman, Danielle	Student	3:30 p.m.	Kirkhof Center 2270
Hodge, Jonathan	Mentor	3:00 p.m.	Henry Hall Atrium 27
Hollister, Robert	Mentor	10:30 a.m.	Kirkhof Center 2270
—	Mentor	12:00 p.m.	Kirkhof Center KC6
Holmes, Trent	Student	10:00 a.m.	Henry Hall Atrium 57
Holmgren, Eric	Student	1:00 p.m.	Kirkhof Center 2266
Hook, Hanna	Student	3:00 p.m.	Kirkhof Center KC57
Hoop, Caitlin	Student	9:00 a.m.	Henry Hall Atrium 63
Horne, Nicole	Student	4:00 p.m.	Kirkhof Center 1104
Horning, Clare	Student	3:00 p.m.	Kirkhof Center KC57
Horvat, Emily	Student	9:00 a.m.	Henry Hall Atrium 48
Howe, Aaron	Student	11:00 a.m.	Kirkhof Center KC 75
Howell, Kelly	Student	10:30 a.m.	Kirkhof Center 2259
Hugger, Ralf	Mentor	3:30 p.m.	Kirkhof Center 2259
Hundley, Zachary	Student	10:00 a.m.	Kirkhof Center KC31
Hunt, Jodee	Mentor	12:00 p.m.	Henry Hall Atrium 82
—	Mentor	10:00 a.m.	Kirkhof Center KC31

Hurd, Kayla	Student	12:00 p.m.	Henry Hall Atrium 67
Huyghe, Meghan	Student	11:00 a.m.	Henry Hall Atrium 33
I			
Ihrman, Dr. D.	Mentor	10:00 a.m.	Kirkhof Center 2263
Ingles, Judy	Student	10:00 a.m.	Kirkhof Center KC 69
J			
Jackson, Lee	Student	1:00 p.m.	Kirkhof Center KC90
Jacques, William	Student	1:30 p.m.	Kirkhof Center 1142
Jacquot, Joseph	Mentor	11:00 a.m.	Henry Hall Atrium 72
Jahnke, Amber	Student	12:00 p.m.	Henry Hall Atrium 39
Jansen-Yee, Noah	Student	10:00 a.m.	Kirkhof Center 2201
Jenkins, Amy	Student	9:00 a.m.	Kirkhof Center KC38
Johnson, Alexis	Student	5:00 p.m.	Kirkhof Center 2201
Johnson, Amanda	Student	2:30 p.m.	Kirkhof Center 2201
Johnson, Dale	Student	10:00 a.m.	Kirkhof Center 1104
Johnson, Ingrid	Mentor	11:00 a.m.	Henry Hall Atrium 21
Johnson, Nicole	Student	9:00 a.m.	Kirkhof Center Area 52
Jones, Leah	Student	2:00 p.m.	Kirkhof Center 2263
Jumah, Ferris	Student	10:00 a.m.	Kirkhof Center KC46
K			
Karabon, Patrick	Student	9:00 a.m.	Henry Hall Atrium 101
Karasinski, Courtney	Mentor	4:00 p.m.	Henry Hall Atrium 7
Karcher, Ashley	Student	4:00 p.m.	Kirkhof Center 2263
Kasmer, Lisa	Mentor	12:00 p.m.	Henry Hall Atrium 66
—	Mentor	2:00 p.m.	Kirkhof Center KC93
Kazdan, Joshua	Student	1:00 p.m.	Henry Hall Atrium 20
Keenlance, Paul	Mentor	11:00 a.m.	Henry Hall Atrium 72
Kegley, Anthony	Mentor	9:00 a.m.	Kirkhof Center KC 87
Kensinger, Kari	Mentor	11:30 a.m.	Kirkhof Center 2259
—	Mentor	2:00 p.m.	Kirkhof Center 2263
—	Mentor	11:00 a.m.	Kirkhof Center 2263
—	Mentor	10:30 a.m.	Kirkhof Center 2216
—	Mentor	3:00 p.m.	Kirkhof Center 2259
—	Mentor	3:30 p.m.	Kirkhof Center 2270
Key, Katherine	Student	10:00 a.m.	Kirkhof Center 2216
Kilbourne, Zoe	Student	10:00 a.m.	Kirkhof Center KC15
Kim, Sung	Student	10:00 a.m.	Henry Hall Atrium 8
King, Elizabeth	Student	12:00 p.m.	Kirkhof Center KC58
Kingston, Elizabeth	Student	1:30 p.m.	Kirkhof Center 2266
Kipp, Brian	Mentor	10:30 a.m.	Kirkhof Center 2266
Kirschling, Alyssa	Student	1:00 p.m.	Henry Hall Atrium 80
klosinski, Joshua	Student	2:00 p.m.	Henry Hall Atrium 24
Kneisel, Allison	Student	9:00 a.m.	Kirkhof Center 2201
Kootsillas-Conybeare, Dominic	Student	1:00 p.m.	Henry Hall Atrium 25
Kopperl, Sheldon	Mentor	1:00 p.m.	Henry Hall Atrium 65
Korson, Ryan	Student	10:00 a.m.	Henry Hall Atrium 46

Kortman, Gregory	Student	1:00 p.m.	Kirkhof Center KC 79
Kortman, Janna	Student	3:00 p.m.	Kirkhof Center 2259
Koster, Jordan	Student	12:00 p.m.	Henry Hall Atrium 70
Kovacs, Dalila	Mentor	1:00 p.m.	Kirkhof Center KC90
—	Mentor	1:00 p.m.	Henry Hall Atrium 22
—	Mentor		Kirkhof Center KC99
Kremer, Erik	Student	4:00 p.m.	Kirkhof Center KC34
Kring, Amanda	Student	3:00 p.m.	Kirkhof Center KC57
Krings, Nathan	Student	2:30 p.m.	Kirkhof Center 1104
Kuhn, Kristen	Student	9:30 a.m.	Kirkhof Center 2270
Kuncaitis, Jessica	Student	5:00 p.m.	Kirkhof Center 2263
Kurby, Christopher	Mentor	1:00 p.m.	Kirkhof Center KC11
Kurjiaka, David	Mentor	3:00 p.m.	Henry Hall Atrium 50
Kurmas, Zachary	Mentor	2:30 p.m.	Kirkhof Center 2266
Kutsche, Melissa	Student	1:00 p.m.	Kirkhof Center KC33
L			
Laba, Jacquelyn	Student	11:00 a.m.	Kirkhof Center 2263
LaCross, Ryan	Student	1:00 p.m.	Kirkhof Center KC53
Lakey, Brian	Mentor	10:00 a.m.	Henry Hall Atrium 54
Lane, Chelsea	Student	4:00 p.m.	Kirkhof Center 2216
Lane, Paul	Mentor	4:30 p.m.	Kirkhof Center 2259
Lantz, Andrew	Mentor	2:00 p.m.	Henry Hall Atrium 42
Larabee, Luke	Student	4:00 p.m.	Henry Hall Atrium 79
Laurain, Paige	Student	2:00 p.m.	Kirkhof Center KC93
Lawrence, Patrick	Student	1:00 p.m.	Henry Hall Atrium 51
Lehmann, Jonathan	Student	12:00 p.m.	Kirkhof Center KC36
Leister, Nicole	Student	3:00 p.m.	Kirkhof Center KC57
Lemke, Shelby	Student	12:00 p.m.	Henry Hall Atrium 23
Lemmen, Megan	Student	4:00 p.m.	Kirkhof Center 2201
Lenters, Geoff	Mentor	2:00 p.m.	Kirkhof Center KC45
Leslie, Caitlin	Student	12:00 p.m.	Kirkhof Center KC10
—	Student	11:00 a.m.	Kirkhof Center KC66
Letherby, Erin	Student	4:00 p.m.	Henry Hall Atrium 59
Liang, Yan	Mentor	1:00 p.m.	Kirkhof Center 1104
—	Mentor	1:30 p.m.	Kirkhof Center 1104
Libman, Karen	Mentor	3:00 p.m.	Kirkhof Center 2204
Liebig, Jennifer	Student	12:00 p.m.	Kirkhof Center KC6
Lill, Karel	Student	9:30 a.m.	Kirkhof Center 2259
Lingwood, Chad	Mentor	9:30 a.m.	Kirkhof Center 2266
Liquigli, Elle	Student	1:00 p.m.	Henry Hall Atrium 80
Llorence, Jeremy	Student	11:00 a.m.	Kirkhof Center 2266
Lombardo, Michael	Mentor	9:00 a.m.	Kirkhof Center KC22
—	Mentor	9:00 a.m.	Henry Hall Atrium 4
Lone, Daniel	Student	2:00 p.m.	Henry Hall Atrium 44
Long, Stephen	Student	9:00 a.m.	Kirkhof Center KC82
Longo, Lauren	Student	3:00 p.m.	Henry Hall Atrium 29
Lotterman, Gayle	Student	9:00 a.m.	Kirkhof Center 2270
Lou, Liang	Mentor	4:00 p.m.	Henry Hall Atrium 56

Lowen, Aaron	Mentor	3:00 p.m.	Henry Hall Atrium 18
—	Mentor	12:00 p.m.	Henry Hall Atrium 34
Lown, Debbie	Mentor	3:00 p.m.	Kirkhof Center KC57
—	Mentor	10:00 a.m.	Kirkhof Center KC 77
Lucas, Daniel	Student	9:00 a.m.	Henry Hall Atrium 101
Luchies, Megan	Student	9:00 a.m.	Henry Hall Atrium 38
Lucksted, Danielle	Student	3:00 p.m.	Henry Hall Atrium 32
Lund, Andrew	Student	3:00 p.m.	Kirkhof Center 2201
Lund, Jen	Student	11:00 a.m.	Henry Hall Atrium 61
Luttenton, Mark	Mentor	12:00 p.m.	Henry Hall Atrium 17
M			
Macaulay, Beth	Mentor	9:00 a.m.	Henry Hall Atrium 88
MacCallum, Colleen	Student	2:00 p.m.	Henry Hall Atrium 11
Machiele, Meaghan	Student	1:00 p.m.	Henry Hall Atrium 25
Maciejewski, Stephanie	Student	4:00 p.m.	Kirkhof Center KC92
MacLean, Garett	Student	1:00 p.m.	Henry Hall Atrium 89
MacLeod, Andrew	Student	11:40 a.m.	Kirkhof Center 0051
Madaaj, Zachary	Student	2:00 p.m.	Kirkhof Center KC25
—	Student	12:30 p.m.	Kirkhof Center 2266
Madden, Gwyn	Mentor	9:00 a.m.	Henry Hall Atrium 63
—	Mentor	9:00 a.m.	Kirkhof Center KC81
—	Mentor	1:00 p.m.	Kirkhof Center KC68
Maftciu, Marissa	Student	3:00 p.m.	Kirkhof Center KC57
Mahn, Kristin	Student	10:00 a.m.	Kirkhof Center 2270
Mahowski, Jeffrey	Student	1:00 p.m.	Kirkhof Center KC 68
Main, Jackie	Student	1:00 p.m.	Henry Hall Atrium 52
Maouene, Josita	Mentor	1:00 p.m.	Henry Hall Atrium 25
—	Mentor	9:00 a.m.	Henry Hall Atrium 101
Marculis, Nathan	Student	3:00 p.m.	Henry Hall Atrium 27
—	Student	1:00 p.m.	Kirkhof Center KC61
Marshall, Aaron	Student	1:00 p.m.	Henry Hall Atrium 22
Martin, Alynn	Student	10:00 a.m.	Kirkhof Center 2266
Martin, Amanda	Student	2:00 p.m.	Henry Hall Atrium 44
Mason, Alex	Student	9:00 a.m.	Henry Hall Atrium 98
Mattoon, Emily	Student	3:30 p.m.	Kirkhof Center 2270
Mattox, Steve	Mentor	3:00 p.m.	Kirkhof Center KC84
Mazer, Trent	Student	3:00 p.m.	Kirkhof Center KC17
McBane, George	Mentor	3:00 p.m.	Kirkhof Center KC17
McDonald, Mitchell	Student	9:00 a.m.	Henry Hall Atrium 43
McLaughlin, Rachelle	Student	9:00 a.m.	Kirkhof Center KC89
McNair, James	Mentor	12:30 p.m.	Kirkhof Center 2266
—	Mentor	12:00 p.m.	Kirkhof Center 2263
Mehl, Sian	Student	1:00 p.m.	Henry Hall Atrium 36
Melching, Elizabeth	Student	10:00 a.m.	Kirkhof Center KC32
Menon, Shaily	Mentor	9:00 a.m.	Kirkhof Center KC89
Merrifield, Brittany	Student	10:30 a.m.	Kirkhof Center 2266
Micallef, Megan	Student	9:00 a.m.	Kirkhof Center 2216
Michalek, Jason	Student	9:00 a.m.	Henry Hall Atrium 98

Miedema, Justin	Student	1:00 p.m.
Miller, Julie	Student	4:00 p.m.
Mills, Steven	Student	1:00 p.m.
Mitchell, Andrea	Student	1:00 p.m.
Mittner, Kevin	Student	3:00 p.m.
Mock, Sara	Student	9:00 a.m.
Mohnke, Brittney	Student	12:00 p.m.
Mohr, Amy	Student	4:00 p.m.
Moiles, Judson	Student	11:00 a.m.
Mol, Roxanne	Student	1:00 p.m.
Molla, Azizur	Mentor	11:30 a.m.
—	Mentor	12:00 p.m.
Monsma, Nicholas	Student	9:00 a.m.
Moore, Kristin	Student	10:00 a.m.
Moore, Taylor	Student	9:00 a.m.
Moran, Rachel	Student	12:00 p.m.
Morawski, Kayla	Student	3:30 p.m.
Moret, Zulema	Mentor	9:30 a.m.
—	Mentor	11:40 a.m.
Morgan, Rod	Mentor	1:00 p.m.
Morison, Melissa	Mentor	3:30 p.m.
—	Mentor	11:30 a.m.
—	Mentor	2:00 p.m.
Mullen, Brian	Student	11:00 a.m.
Mulling, Adam	Student	4:00 p.m.
Mullins, Elizabeth	Student	10:00 a.m.
Munson, James	Student	11:00 a.m.
Murphy, Christopher	Student	1:00 p.m.
Murphy, Karly	Student	11:00 a.m.

N

Nagnon, Diarrasssouba	Mentor	4:00 p.m.
Near, Deb	Student	9:00 a.m.
Negus, Danielle	Student	12:00 p.m.
Nelson, Genevieve	Student	5:00 p.m.
Nesheim, Meghan	Student	9:00 a.m.
Nicholls, Ryan	Student	2:00 p.m.
Nicholson, Emily	Student	3:00 p.m.
Nieves, Yeni	Student	2:00 p.m.
Nikitin, Alexey	Mentor	5:00 p.m.
—	Mentor	4:00 p.m.
Nordstrand, Desiree	Student	10:00 a.m.
Nwokocha, Godwill	Student	1:00 p.m.
Nytaan, Aleica	Student	5:00 p.m.

O

O’Hearn, Kurt	Student	9:00 a.m.
—	Student	
O’Neill, Kevin	Student	2:00 p.m.

Kirkhof Center KC23
Henry Hall Atrium 79
Kirkhof Center KC11
Kirkhof Center KC53
Kirkhof Center KC39
Henry Hall Atrium 97
Henry Hall Atrium 66
Henry Hall Atrium 53
Kirkhof Center 2215
Kirkhof Center 2215
Kirkhof Center 2263
Henry Hall Atrium 28
Henry Hall Atrium 43
Kirkhof Center 2216
Henry Hall Atrium 101
Henry Hall Atrium 14
Kirkhof Center 2216
Kirkhof Center 2270
Kirkhof Center 0051
Henry Hall Atrium 95
Kirkhof Center 2266
Kirkhof Center 2270
Kirkhof Center 2201
Henry Hall Atrium 86
Henry Hall Atrium 77
Kirkhof Center 1142
Henry Hall Atrium 74
Kirkhof Center 2201
Kirkhof Center 2259

Kirkhof Center 2270
Henry Hall Atrium 4
Kirkhof Center 2259
Kirkhof Center 2270
Henry Hall Atrium 101
Kirkhof Center KC24
Kirkhof Center 2259
Henry Hall Atrium 69
Kirkhof Center 2259
Henry Hall Atrium 93
Henry Hall Atrium 46
Kirkhof Center KC90
Kirkhof Center 2270

Henry Hall Atrium 68
Kirkhof Center KC97
Kirkhof Center 1104

Oliver, Josh	Student	10:30 a.m.
Olson, Desirae	Student	3:00 p.m.
Oostdyk, Ryan	Student	11:00 a.m.
Ortiz, Edwin	Student	3:00 p.m.
Ostrenga, Josh	Student	11:00 a.m.
Ostrow, Bruce	Mentor	4:00 p.m.
Otieno, Sango	Mentor	10:00 a.m.
—	Mentor	9:00 a.m.
—	Mentor	11:00 a.m.
—	Mentor	9:00 a.m.
—	Mentor	1:00 p.m.
Ou, Xinyi	Student	1:30 p.m.
Ouillet, Tara	Student	10:00 a.m.
Overmyer, Cody	Student	2:00 p.m.
Owens, Tom	Mentor	11:00 a.m.
—	Mentor	10:00 a.m.

P

Pace, Diana	Mentor	11:00 a.m.
Pandel, Dirk	Mentor	3:00 p.m.
Parker, Drake	Student	2:30 p.m.
Parrott, Melissa	Student	4:00 p.m.
Pashnick, Jeff	Student	5:00 p.m.
Patel, Osman	Mentor	10:00 a.m.
Paul, Christine	Student	3:00 p.m.
Pawlak, Daniel	Student	2:00 p.m.
Payne, Rebecca	Student	9:30 a.m.
Pellegrini, Zachary A	Student	1:00 p.m.
Pentecost, Thomas	Mentor	1:00 p.m.
—	Mentor	10:00 a.m.
Pepelko, Kristina	Student	2:00 p.m.
Perrin, Kelsea	Student	12:00 p.m.
Peruzzi, Michael	Student	10:00 a.m.
Petersen, Stephanie	Student	12:00 p.m.
Peterson, Ginny	Mentor	2:00 p.m.
Petty, Anthony	Student	2:00 p.m.
Pfauth, Samuel	Student	11:00 a.m.
Phillips, Michael	Student	
Piccard, Julie	Student	3:30 p.m.
Pierson, Stephanie	Student	3:00 p.m.
Plante, Matthew	Student	
Podlaski, Megan	Student	2:00 p.m.
Poling, Mitchell	Student	2:30 p.m.
Pollet, Amanda	Student	3:00 p.m.
Ponder, Josh	Student	2:00 p.m.
Pope, Jennifer	Mentor	10:00 a.m.
Porambo, Alexander	Student	11:00 a.m.
Powers, Rachel	Mentor	10:00 a.m.
Pozzi, Gabriela	Mentor	1:00 p.m.

Kirkhof Center 2216
Kirkhof Center KC57
Henry Hall Atrium 12
Kirkhof Center KC 73
Henry Hall Atrium 86
Kirkhof Center KC92
Henry Hall Atrium 8
Henry Hall Atrium 97
Henry Hall Atrium 86
Henry Hall Atrium 101
Henry Hall Atrium 25
Kirkhof Center 2259
Henry Hall Atrium 102
Kirkhof Center KC 71
Kirkhof Center 2270
Kirkhof Center 2259

Henry Hall Atrium 33
Kirkhof Center KC41
Kirkhof Center 2263
Kirkhof Center KC16
Kirkhof Center 2259
Henry Hall Atrium 13
Kirkhof Center KC57
Kirkhof Center 2270
Kirkhof Center 2266
Kirkhof Center KC5
Henry Hall Atrium 31
Henry Hall Atrium 81
Kirkhof Center 0051
Kirkhof Center KC13
Henry Hall Atrium 96
Henry Hall Atrium 66
Kirkhof Center 2216
Kirkhof Center KC28
Kirkhof Center 2201
Kirkhof Center KC97
Kirkhof Center 2270
Kirkhof Center KC17
Kirkhof Center KC97
Kirkhof Center 2259
Kirkhof Center 1142
Kirkhof Center 2266
Kirkhof Center 2263
Kirkhof Center 2216
Kirkhof Center KC12
Kirkhof Center KC15
Kirkhof Center 2270

Prentiss, Sean	Mentor	1:00 p.m.	Kirkhof Center 2259
Proffitt, Allison	Student	3:00 p.m.	Kirkhof Center 1142
Pruitt, Erin	Student	9:00 a.m.	Kirkhof Center KC 70
Putschko, Kevin	Student	1:00 p.m.	Henry Hall Atrium 25

Q

Quick, Lisa	Student	10:30 a.m.	Kirkhof Center 2216
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R

Ramic, Alen	Student	9:00 a.m.	Henry Hall Atrium 43
Rasche, Andrea	Student	11:00 a.m.	Kirkhof Center KC66
Rausch, Abbigail	Student	3:00 p.m.	Kirkhof Center 2259
Reddick, Alison	Student	12:00 p.m.	Henry Hall Atrium 58
—	Student	10:00 a.m.	Kirkhof Center KC1
Reed, Chris	Mentor	9:00 a.m.	Kirkhof Center KC 87
—	Mentor	10:00 a.m.	Kirkhof Center KC4
Regan, Cassandra	Student	9:00 a.m.	Henry Hall Atrium 15
Remlinger, Kathryn	Mentor	9:00 a.m.	Henry Hall Atrium 98
—	Mentor	10:00 a.m.	Henry Hall Atrium 76
—	Mentor	11:30 a.m.	Kirkhof Center 2266
—	Mentor	2:00 p.m.	Henry Hall Atrium 55
Renaud, Chelsea	Student	2:00 p.m.	Henry Hall Atrium 55
Reynolds, Ross	Mentor	2:00 p.m.	Kirkhof Center 2270
—	Mentor	12:00 p.m.	Henry Hall Atrium 92
—	Mentor	4:00 p.m.	Henry Hall Atrium 53
—	Mentor		Kirkhof Center KC97
Rhodes, Jessica	Student	1:00 p.m.	Kirkhof Center KC53
Rietema, Sarah	Student	4:00 p.m.	Henry Hall Atrium 7
Riley, Jessica	Student	4:00 p.m.	Henry Hall Atrium 93
Ringerwole, Neal	Student	2:00 p.m.	Henry Hall Atrium 24
Robach, Kristen	Student	11:30 a.m.	Kirkhof Center 2259
Robbins, Sarah	Student	1:30 p.m.	Kirkhof Center 1104
Rodge, Katherine	Student	10:00 a.m.	Henry Hall Atrium 46
Roe, Dayna	Student	12:00 p.m.	Kirkhof Center KC 78
Rogers, Jonathan	Student	10:30 a.m.	Kirkhof Center 1142
Rogers, Thomas	Student	2:00 p.m.	Henry Hall Atrium 60
Rogness, Neal	Mentor	2:00 p.m.	Henry Hall Atrium 11
—	Mentor	2:00 p.m.	Kirkhof Center KC25
Romanczuk, Chelsea	Student	11:00 a.m.	Henry Hall Atrium 19
Rose, Cody	Student	4:30 p.m.	Kirkhof Center 2270
Rostic, Amanda	Student	9:00 a.m.	Henry Hall Atrium 4
Roushangar, Hossain	Student	10:00 a.m.	Kirkhof Center KC 77
Rowe, Patricia	Mentor	11:00 a.m.	Henry Hall Atrium 21
Rowlader, Conner	Student	12:00 p.m.	Henry Hall Atrium 70
Ruetz, Carl	Mentor	9:30 a.m.	Kirkhof Center 2201
—	Mentor	9:00 a.m.	Kirkhof Center 2201
Russcher, Sara	Student	10:00 a.m.	Kirkhof Center KC 69
Russell, Amy	Mentor	10:00 a.m.	Kirkhof Center 2266

S

Sample, Katherine	Student	11:00 a.m.	Kirkhof Center 2215
Sanchez, Mayra	Student	9:00 a.m.	Kirkhof Center KC35
Sartain, Hope	Student	10:00 a.m.	Henry Hall Atrium 96
Sartorius, Heather	Student	2:00 p.m.	Kirkhof Center 2263
Sass, Georgette	Mentor	1:00 p.m.	Henry Hall Atrium 64
—	Mentor	12:00 p.m.	Kirkhof Center KC54
—	Mentor	3:00 p.m.	Kirkhof Center KC39
Sauer, Christine	Student	3:00 p.m.	Henry Hall Atrium 18
Savage, Paul	Student	11:00 a.m.	Kirkhof Center KC95
Sawtelle, Darris	Student	1:00 p.m.	Kirkhof Center 2215
Scantlebury, Michael	Mentor	9:00 a.m.	Kirkhof Center KC 70
Schaertel, Stephanie	Mentor	3:00 p.m.	Kirkhof Center KC17
Scheiber, Christopher	Student	9:00 a.m.	Henry Hall Atrium 43
Schendel, Ellen	Mentor	11:00 a.m.	Kirkhof Center KC 85
—	Mentor	12:30 p.m.	Kirkhof Center 2270
—	Mentor	10:00 a.m.	Kirkhof Center 1104
Schlewitz, Andrew	Mentor	10:00 a.m.	Henry Hall Atrium 30
Schlueter, David	Student	1:00 p.m.	Henry Hall Atrium 40
Schmitt, Erika	Student	12:00 p.m.	Henry Hall Atrium 34
Schnotala, Tony	Student	11:00 a.m.	Henry Hall Atrium 19
Scholten, Connor	Student	9:00 a.m.	Kirkhof Center 2266
—	Student	1:00 p.m.	Kirkhof Center 2266
Schuitema, Deborah	Student	4:00 p.m.	Kirkhof Center 2270
Schulhoff, Katherine	Student	4:00 p.m.	Kirkhof Center 2259
Schulte, Brian	Student	3:00 p.m.	Henry Hall Atrium 37
Schwartz, Mark	Mentor	2:00 p.m.	Henry Hall Atrium 71
Scott, Brian	Student	1:00 p.m.	Kirkhof Center 2215
Scott, James	Mentor	4:00 p.m.	Henry Hall Atrium 59
—	Mentor	10:00 a.m.	Henry Hall Atrium 49
—	Mentor	4:00 p.m.	Henry Hall Atrium 79
—	Mentor	1:00 p.m.	Henry Hall Atrium 36
—	Mentor	12:00 p.m.	Henry Hall Atrium 84
—	Mentor	11:00 a.m.	Henry Hall Atrium 12
—	Mentor	9:00 a.m.	Henry Hall Atrium 15
Scott, Robert	Student	3:00 p.m.	Kirkhof Center KC41
Scripps, Jerry	Mentor	10:00 a.m.	Kirkhof Center KC46
Semeneck, Evan	Student	11:30 a.m.	Kirkhof Center 2216
Sepsey, Amber	Student	9:00 a.m.	Henry Hall Atrium 101
Serrata, Médar	Mentor	12:00 p.m.	Kirkhof Center 2215
Shallman, Devon	Student	9:00 a.m.	Henry Hall Atrium 43
Sharp, Kermit	Student	12:00 p.m.	Kirkhof Center 2270
Sharp, Michael	Student	10:00 a.m.	Kirkhof Center KC62
Shaw, Daniel	Student	3:30 p.m.	Kirkhof Center 2270
Shreeve, Magee	Student	10:00 a.m.	Henry Hall Atrium 87
Shultz, Bruce	Student	11:00 a.m.	Henry Hall Atrium 75
Shupe, Ellen	Mentor	4:00 p.m.	Kirkhof Center KC16
Sicard, Stephanie	Student	2:30 p.m.	Kirkhof Center 2216
Simon, Kristen	Student	1:00 p.m.	Henry Hall Atrium 31

Simon, Rebekah	Student	9:00 a.m.	Kirkhof Center 2266
Simonson, Scott	Student	3:00 p.m.	Henry Hall Atrium 9
Skinner, Michael	Student	1:00 p.m.	Kirkhof Center 2215
Slater, Sherri	Student	1:30 p.m.	Kirkhof Center 2201
Smart, Robert	Mentor	10:00 a.m.	Kirkhof Center KC65
—	Mentor	1:00 p.m.	Henry Hall Atrium 95
Smith, Christine	Mentor	2:00 p.m.	Kirkhof Center KC42
—	Mentor	2:00 p.m.	Kirkhof Center KC24
Smith, Danielle	Student	9:00 a.m.	Henry Hall Atrium 4
Smith, Jacob	Student	10:30 a.m.	Kirkhof Center 2216
Smith, Sarah	Student	11:00 a.m.	Kirkhof Center KC64
Sniadecki, Thomas	Student	4:00 p.m.	Kirkhof Center KC34
Snyder, Eric	Mentor	10:00 a.m.	Kirkhof Center 2201
Soljan, Ivo	Mentor	2:00 p.m.	Kirkhof Center 0051
Sommers, Elizabeth	Student	10:00 a.m.	Kirkhof Center KC31
Spencer, Eric	Student	3:00 p.m.	Henry Hall Atrium 50
—	Student	9:00 a.m.	Henry Hall Atrium 43
Spieker, Keith	Student	9:00 a.m.	Kirkhof Center KC91
Sridhar, Suganthi	Mentor	2:00 p.m.	Henry Hall Atrium 60
—	Mentor	9:00 a.m.	Henry Hall Atrium 94
Stamate, Jennifer	Student	3:20 p.m.	Kirkhof Center 0051
Standridge, Charlie	Mentor	2:00 p.m.	Henry Hall Atrium 69
Standriff, Stephanie	Student	3:00 p.m.	Kirkhof Center KC 84
Stansbie, Paul	Mentor	12:00 p.m.	Kirkhof Center KC21
—	Mentor	10:00 a.m.	Henry Hall Atrium 8
Steavenson, Benjamin	Student	9:00 a.m.	Henry Hall Atrium 26
Stefaniak, Adam	Student	9:00 a.m.	Kirkhof Center KC 87
Stephenson, Paul	Mentor	12:00 p.m.	Kirkhof Center 2216
Stewart, Jennifer	Mentor	4:00 p.m.	Kirkhof Center 0051
—	Mentor	11:00 a.m.	Henry Hall Atrium 74
Stillerman, Joel	Mentor	4:00 p.m.	Kirkhof Center 2259
Stilwell, Kellen	Student	1:00 p.m.	Henry Hall Atrium 10
Stone, Phillip	Student		Kirkhof Center KC 87
Stoudamire, Shawnkeisha	Student	2:40 p.m.	Kirkhof Center 0051
Stover, Kim	Student	4:00 p.m.	Henry Hall Atrium 7
Stoyka, Lindsay	Student	10:00 a.m.	Kirkhof Center 1104
—	Student	12:00 p.m.	Henry Hall Atrium 82
Strick, Amber	Student	4:00 p.m.	Henry Hall Atrium 90
—	Student	3:30 p.m.	Kirkhof Center 2266
Strickler, Anthony	Mentor	9:00 a.m.	Kirkhof Center KC 87
Stuart, Gavin	Student	3:00 p.m.	Henry Hall Atrium 37
Suh, Jiyeon	Mentor	1:00 p.m.	Henry Hall Atrium 40
Sun, Wanxiao	Mentor	12:00 p.m.	Kirkhof Center 2263
—	Mentor	4:30 p.m.	Kirkhof Center 2270
—	Mentor	2:00 p.m.	Henry Hall Atrium 41
Swanson, Neal	Student	12:00 p.m.	Henry Hall Atrium 17
Swets, Benjamin	Mentor	11:00 a.m.	Henry Hall Atrium 19
Sydloski, Emily	Student	5:00 p.m.	Kirkhof Center 2270
Sylvester, Francis	Mentor	9:00 a.m.	Kirkhof Center KC7

—	Mentor	10:00 a.m.	Kirkhof Center KC 69
—	Mentor	10:00 a.m.	Kirkhof Center KC50
Szegedi, Samantha	Student	3:00 p.m.	Kirkhof Center KC57
T			
Tafel, Heather L.	Mentor	10:00 a.m.	Kirkhof Center 2270
Tan, Cheng	Student	1:00 p.m.	Kirkhof Center 1104
Taylor, Adam	Student		Kirkhof Center KC99
Taylor, Merritt	Mentor	12:00 p.m.	Kirkhof Center KC58
Taylor, Rachel	Student	2:00 p.m.	Kirkhof Center 2263
Teall, Emily	Student	9:00 a.m.	Kirkhof Center KC 81
Teschke, Rene	Student	11:30 a.m.	Kirkhof Center 2259
Thelen, Krysta	Student	2:20 p.m.	Kirkhof Center 0051
Thelen, Noah	Student	12:30 p.m.	Kirkhof Center 2216
Thiel, Brianna	Student	12:00 p.m.	Kirkhof Center KC 83
Thomas, Derek	Mentor	10:00 a.m.	Kirkhof Center KC30
Thomasma, Elsa	Student	11:00 a.m.	Henry Hall Atrium 19
Thompson, Heather	Student	3:00 p.m.	Kirkhof Center 0051
Thorpe, Patrick	Mentor	9:00 a.m.	Kirkhof Center KC22
—	Mentor	9:00 a.m.	Henry Hall Atrium 4
Thorpe, Taylor	Student	4:00 p.m.	Kirkhof Center KC8
Tissue, Kirsten	Student	10:00 a.m.	Kirkhof Center KC27
Titus, Nicole	Student	3:00 p.m.	Kirkhof Center 2259
Toma, Alyssa	Student	4:00 p.m.	Henry Hall Atrium 7
Travis, Justine	Student	4:00 p.m.	Kirkhof Center KC55
Trefftz, Christian	Mentor	9:00 a.m.	Henry Hall Atrium 68
Tremble, Leah	Student	4:30 p.m.	Kirkhof Center 2266
Trier, Terry	Mentor	3:30 p.m.	Kirkhof Center 2216
Tripp, Nathan	Student	2:00 p.m.	Kirkhof Center KC45
Trippel, Clara	Student	9:30 a.m.	Kirkhof Center 1142
Trudeau, David	Student	9:00 a.m.	Henry Hall Atrium 26
Truskoski, Tara	Student	3:00 p.m.	Kirkhof Center 2270
Tsou, Pei-Lan	Mentor	10:30 a.m.	Kirkhof Center 2201
Tunstall, Dwayne	Mentor	10:30 a.m.	Kirkhof Center 2263
V			
Valdez, Glenn	Mentor	2:00 p.m.	Kirkhof Center KC44
—	Mentor	3:00 p.m.	Kirkhof Center 2270
Vallery, Richard	Mentor	9:00 a.m.	Kirkhof Center KC9
—	Mentor	1:00 p.m.	Kirkhof Center KC48
—	Mentor	10:00 a.m.	Kirkhof Center KC37
—	Mentor	12:00 p.m.	Kirkhof Center KC88
—	Mentor	11:30 a.m.	Kirkhof Center 1142
Van Brocklin, Misty	Student	12:00 p.m.	Henry Hall Atrium 1
Van Oeveren, Eric	Student	3:00 p.m.	Henry Hall Atrium 85
Van Tiflin, Elizabeth	Student	11:00 a.m.	Henry Hall Atrium 21
Van Wormer, Heather	Mentor	12:00 p.m.	Kirkhof Center 2259
VanAllen, Amber	Student	3:00 p.m.	Kirkhof Center 2204
Vander Male, Lindsay	Student	11:00 a.m.	Kirkhof Center 2263

Vanderhoef, Elizabeth	Student	11:00 a.m.	Kirkhof Center KC66	Wells, Clark	Mentor	5:00 p.m.	Kirkhof Center 2201
Vandervelde, Mark	Student	12:00 p.m.	Henry Hall Atrium 92	Wendland, Peter	Student	9:00 a.m.	Henry Hall Atrium 43
VanderWege, Briana	Student	9:00 a.m.	Kirkhof Center KC35	Westbrook, Dmitri	Student	4:00 p.m.	Kirkhof Center 0051
VanOeveren, Sarah	Student	1:00 p.m.	Henry Hall Atrium 64	—	Student	1:00 p.m.	Kirkhof Center Area 52
VanWoerkom, Mark	Student	1:00 p.m.	Kirkhof Center KC 87	Whipps, Judy	Mentor	1:30 p.m.	Kirkhof Center 2201
Vendeville, Kristen	Student	3:30 p.m.	Kirkhof Center 2270	—	Mentor	4:00 p.m.	Kirkhof Center 2263
Ver Wey, Amy	Student	10:00 a.m.	Kirkhof Center KC62	Whitcomb, Steven	Student	11:00 a.m.	Kirkhof Center KC64
Videtich, Patricia	Mentor	2:00 p.m.	Henry Hall Atrium 24	White, Jonathan	Mentor	5:00 p.m.	Kirkhof Center 2266
—	Mentor	12:00 p.m.	Henry Hall Atrium 14	—	Mentor	4:00 p.m.	Kirkhof Center 2201
—	Mentor	11:00 a.m.	Kirkhof Center KC66	White, Olivia	Student	1:00 p.m.	Kirkhof Center KC 76
—	Mentor	11:00 a.m.	Kirkhof Center KC60	Whitmore, Jeremy	Student	1:00 p.m.	Kirkhof Center KC 76
—	Mentor	12:00 p.m.	Henry Hall Atrium 70	Wicklund, Kyle	Student	4:00 p.m.	Henry Hall Atrium 56
—	Mentor	9:00 a.m.	Henry Hall Atrium 26	Williams, Chadwick	Student	2:00 p.m.	Kirkhof Center 2216
Vignali, Lauren	Student	11:30 a.m.	Kirkhof Center 2270	Williams, Dalelena	Student	5:00 p.m.	Kirkhof Center 2216
Voetberg, Jacob	Student	9:00 a.m.	Kirkhof Center KC9	Williams, Shannon	Student	10:00 a.m.	Kirkhof Center KC30
Vruggink, Jonathan	Student	11:00 a.m.	Kirkhof Center KC66	Williams, Todd	Mentor	11:00 a.m.	Kirkhof Center KC14
—				—	Mentor	2:00 p.m.	Kirkhof Center KC 71
—				Wilson, Trevor	Student	1:00 p.m.	Henry Hall Atrium 25
—				Winchester, Randy	Mentor	1:00 p.m.	Kirkhof Center KC 79
—				—	Mentor	1:00 p.m.	Henry Hall Atrium 10
—				Winczkowski, Kara	Student	3:00 p.m.	Henry Hall Atrium 50
—				Wise, Jaime	Student	1:00 p.m.	Kirkhof Center 2259
—				Wise, Jodi	Student	2:00 p.m.	Kirkhof Center 2263
—				Witucki, Laurie	Mentor	11:00 a.m.	Kirkhof Center KC95
—				—	Mentor	1:00 p.m.	Kirkhof Center KC51
—				—	Mentor	12:00 p.m.	Henry Hall Atrium 67
—				—	Mentor	12:00 p.m.	Kirkhof Center KC86
Wampler, Peter	Mentor	9:00 a.m.	Kirkhof Center KC94	Wolffe, Greg	Mentor	9:00 a.m.	Henry Hall Atrium 68
—	Mentor	3:00 p.m.	Henry Hall Atrium 9	Worm, Anna	Student	11:00 a.m.	Kirkhof Center KC 85
—	Mentor	3:00 p.m.	Kirkhof Center KC29	—	Student	12:00 p.m.	Henry Hall Atrium 3
—	Mentor	11:00 a.m.	Henry Hall Atrium 75	Wright, Amanda	Student	11:00 a.m.	Henry Hall Atrium 19
—	Mentor	4:00 p.m.	Henry Hall Atrium 90	Wrona, Nicole	Student	4:00 p.m.	Henry Hall Atrium 7
—	Mentor	3:00 p.m.	Kirkhof Center KC67	Wu, Shinian	Mentor	9:00 a.m.	Henry Hall Atrium 97
—	Mentor	4:00 p.m.	Henry Hall Atrium 77	Wycech, Jody	Student	12:00 p.m.	Henry Hall Atrium 14
—	Mentor	10:00 a.m.	Kirkhof Center KC 72				
—	Mentor	12:00 p.m.	Kirkhof Center KC10				
Watkins, Julie	Student	10:00 a.m.	Henry Hall Atrium 73	X			
—	Student	11:00 a.m.	Henry Hall Atrium 72	Xu, Xandra	Mentor	2:00 p.m.	Henry Hall Atrium 44
Waugh, Zachary	Student	3:30 p.m.	Kirkhof Center 2263				
Webb, Elizabeth	Student	9:00 a.m.	Henry Hall Atrium 15	Y			
Weber, Jared	Student	12:00 p.m.	Henry Hall Atrium 84	Yakamovich, Sara	Student	11:00 a.m.	Henry Hall Atrium 86
Weekley, Ayana	Mentor	1:00 p.m.	Henry Hall Atrium 80	Yeow, Raymond	Student	12:00 p.m.	Henry Hall Atrium 100
—	Mentor	11:00 a.m.	Kirkhof Center KC26	Yonker, Caleb	Student	11:00 a.m.	Kirkhof Center 2216
Weimer, Sara	Student	10:00 a.m.	Henry Hall Atrium 46	Yoon, Hongjoon	Student	1:00 p.m.	Kirkhof Center KC90
Weinke, Anthony	Student	1:00 p.m.	Kirkhof Center KC 80	York, Hillery	Student	2:00 p.m.	Kirkhof Center 2201
Weis, Joseph	Student	3:30 p.m.	Kirkhof Center 1142	—	Student	1:00 p.m.	Kirkhof Center 2263
Weiss, Nicholas	Student	2:00 p.m.	Henry Hall Atrium 24				
Weiss, Rebekah	Student	10:00 a.m.	Henry Hall Atrium 46	Z			
Welch, Stephanie	Student	5:00 p.m.	Kirkhof Center 2263	Zaszlavik, Katalin	Mentor	9:00 a.m.	Henry Hall Atrium 48

—	Mentor	10:00 a.m.	Henry Hall Atrium 46
—	Mentor	9:00 a.m.	Kirkhof Center 2270
Zeitler, David	Mentor	2:00 p.m.	Henry Hall Atrium 69
Zelinsky, Megan	Student	1:00 p.m.	Henry Hall Atrium 16
Zhao, Yi	Mentor	2:00 p.m.	Kirkhof Center 1104
Zimmerman, Jamie	Student	2:00 p.m.	Kirkhof Center KC42
Zivi, Karen	Mentor	3:30 p.m.	Kirkhof Center 2201
Zucker, Noah	Student	3:00 p.m.	Henry Hall Atrium 50
Zuidema, Greg	Student	1:30 p.m.	Kirkhof Center 2201
Zuiderveen, Grady	Student	2:00 p.m.	Kirkhof Center KC18
	Mentor	2:00 p.m.	Kirkhof Center KC8
	Student	4:00 p.m.	Henry Hall Atrium 56





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