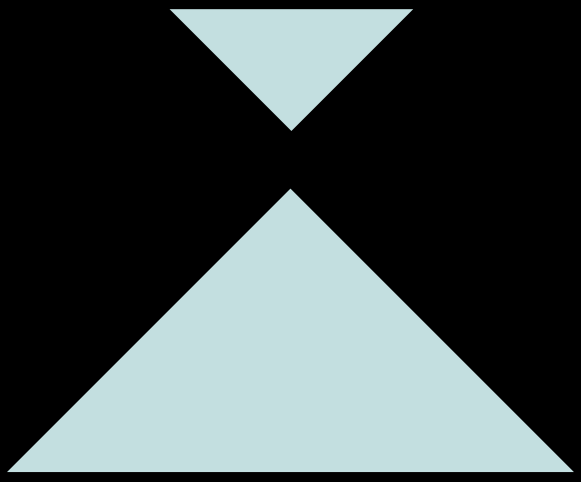

STUDENT SCHOLARSHIP DAY

STUDENT SCHOLARSHIP DAY

APRIL 9, 2008

GRAND VALLEY STATE UNIVERSITY

Student Scholarship Day (SSD) celebrates the research, scholarship, and creative work by GVSU students through oral presentations, fine art exhibits and performances, and poster presentations.

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SSD COMMITTEE

MATTHEW HART
Chemistry

SUSAN MENDOZA-JONES
Integrative Learning

ZULEMA MORET
Modern Languages & Literatures

DEBBIE MORROW
Library

FELIX NGASSA
Chemistry

ROSS REYNOLDS
Physics

ANDREA ROTZIEN
Psychology

CARL RUETZ III
Annis Water Resources Institute

SHELLEY SICKREY
Integrative Learning & General Education

MARK SCHWARTZ
Anthropology

LINDSEY TEPASTTE
University Promotions

PATRICIA VIDETICH
Geology

JANET VIGNA
Biology

JEFF WOOLLETT
College of Liberal Arts & Sciences

WELCOME TO SSD 2008

It is with great pleasure that we welcome you to celebrate the diversity and excellence of faculty-student collaboration at GVSU. In its 13th year, Student Scholarship Day continues to grow in scope, including six hundred students and mentors in over three hundred presentations. We are excited to support the achievements of these students representing 66 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. First, we thank the College of Interdisciplinary Studies and Dean Wendy Wenner for Mentoring this day. The support of the COIS staff and has been invaluable. We are especially grateful for the hard work and patience of Shelley Sickrey, who made this process manageable.

We thank the members of the 2008 SSD committee, Pat Videtich, Ross Reynolds, Felix Ngassa, Matt Hart, Debbie Morrow, Andrea Rotzien, Zulema Moret, Carl Ruetz, Mark Schwartz and Lindsey TePastte, 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 Ben Rapin and Dan Slaughter deserve our gratitude for the tremendous amount of work they put into Web Registration for SSD. They are an outstanding team. We would also like to thank the Kirkhof Center staff and Facilities Services staff for their assistance and patience. Our deepest thanks to Campus Dining to their generous contribution.

Thank you to Lynsey Schwab and Lindsey TePastte in the University Promotions Office for their outstanding work on the Abstract Book and SSD 2008 promotion material. This year's visual theme dramatically exemplifies how an event like Student Scholarship Day brings together the scholarly and creative work of individuals to shape and transform understanding. The work of this design team has added an important dimension to how we engage in this exciting day.

Thanks to our student 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 higher 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. Tyrone Hayes from UC Berkeley. It is sure to be a day of enlightening experiences.

Susan Mendoza-Jones
Director, Integrative Learning
College of Interdisciplinary Studies

Janet Vigna
Associate Professor, Biology
College of Liberal Arts & Sciences

"I had an opportunity when I was teaching in the classroom full time to also engage with undergraduate students in research. Our work was in the discipline of chemistry. What came from that was an opportunity to mentor young students in intellectual exploration. We worked in teams, reported work at conferences, presented in multiple ways and received feedback as needed. My students were also encouraged to challenge me and that was a gift.

To be a scientist was an aim for these students, meaning that critical thinking, communication, and ethics were all part of the learning outcomes. Understanding the diversity of thought was a key to their success.

As a faculty member then to see these undergraduates continue their intellectual pursuits to post graduate learning, and some leading to PhD was another gift back to me."

- PRESIDENT TOM HAAS -

"The growth of this program since 1995 is amazing! It's a tribute to the collaborative spirit and commitment to creating new knowledge found in so many of our faculty and students. These innovative presentations truly have the potential to positively impact our society."

- VICE PRESIDENT JEANNE ARNOLD -

"Student Scholarship Day celebrates the ideal collaborative learning model between faculty and students. Involvement in faculty-mentored student projects provides a chance for students to find, all in one experience, direct instruction in the processes of research and creative production, supported immersion in a focused academic endeavor, "shadow" experience in the culture of professional academics, and the personal fulfillment of discovery and innovation."

- PROVOST GAYLE DAVIS -

Announcing the newest release
of GVSU's student journal
of art and writing:

fishladder 2008

Check out the display in the main
concourse of Lake Ontario Hall.

Also, visit our new online home at:

fishladder.org

New writing and art will be added
regularly.

fishladder
A Student Journal of Art and Writing

fishladder is a student journal of art and writing. The staff is comprised entirely of Grand Valley students, and all the material considered for publication is student produced. The staff reviews submissions throughout the year, and every piece is given thorough and thoughtful consideration. *fishladder* is truly an interdisciplinary enterprise, involving students from Art, Photography, Writing, and a number of other departments. The work in this exhibit represents a sample from the forthcoming print edition, the new online edition (www.fishladder.org), as well as examples from past issues.

HISTORY OF STUDENT SCHOLARSHIP 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 and 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.

It became popular enough to get requests from students outside of science and mathematics majors who wanted to present their work. An effort to make the event a truly university-wide event was begun, 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."

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 Scholarship Day continues to grow, both in size and scope. This year's event encompasses 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. This theme is reflected through the addition of presenters using keywords to describe their work, as well captured through the SSD Artwork through the use of tangrams.

KEYNOTE LECTURE

RM. 204-KIRKHOF CENTER-4:00 P.M.

FROM SILENT SPRING TO SILENT NIGHT: WHAT HAVE WE LEARNED?

ABSTRACT

The herbicide, atrazine is a potent endocrine disrupter that chemically castrates and feminizes exposed male amphibians. Further, atrazine exposure results in neural damage and hyperactivity and induces a hormonal stress response that leads to retarded growth and development, and immune suppression. The immune suppression results in increased disease rates and mortality. Though many factors likely contribute to amphibian declines, pesticides (such as atrazine) likely play an important role even in populations that appear to decline for other reasons, such as disease. Pesticides like atrazine are ubiquitous, persistent contaminants and, though more pronounced in amphibians, the effects described above occur in all vertebrate classes (fish, amphibians, reptiles, and mammals) examined, via common mechanisms. These observations demonstrate the critical impact that pesticides have on environmental health. Furthermore, reproductive cancers and birth defects associated with exposure to many of these same chemicals (e.g. atrazine) via identical mechanisms demonstrate that the impact on environmental health is an indicator of a negative impact on public health. Many of these mechanisms are being revealed only now in the scientific literature and agencies (such as the US Environmental Protection Agency) are ill-equipped to deal with this emergent science and translate it efficiently into health-protective policies. In particular, ethnic minority and lower socio-economic communities are at risk: More likely to live in contaminated communities, work in occupations that increase hazard exposure and less likely to have educational and healthcare access. Given the importance of this science and relevance to public health, there is a strong need to translate this information and provide public access to this knowledge. Command of the science and active involvement by the public in policy decisions is vital.

TYRONE B. HAYES PH.D.

Department of Integrative Biology, Molecular Toxicology, Group in Endocrinology, Museum of Vertebrate Zoology, Energy and Resources Group, University of California at Berkeley

BIOGRAPHY

Dr. Hayes was born and raised in Columbia, South Carolina. He developed an interest in biology very early, and was particularly fascinated by amphibians and the influences that environmental changes have on their development, growth, and reproduction.

Dr. Hayes graduated from Harvard University in 1989 where he wrote an honor's thesis (which received summa cum laude recognition) on the influence of temperature on larval growth, development, metamorphosis, and sex differentiation in woodfrogs. His doctoral dissertation, done at the Department of Integrative Biology at the University of California, Berkeley, examined the role of hormones in mediating developmental responses to environmental changes in amphibians. He completed his doctoral work in 1993 and began post-doctoral studies at the National Institute of Child Health and Human Development, National Institutes of Health and the Cancer Research Laboratories, UC Berkeley (funded by the National Science Foundation), where he examined molecular mechanisms of hormone action in amphibians. In 1994, he joined the faculty at Berkeley as an Assistant Professor. In 1998, he was appointed Associate Professor with tenure at Berkeley, becoming the youngest tenured professor in the department, and in 2002 was promoted to full Professor.

Dr. Hayes holds joint appointments in the Museum of Vertebrate Zoology, the Group in Endocrinology, the Molecular Toxicology Group, and the Energy and Resources Group. He has directly trained more than sixty students in his laboratory, in addition to having taught more than 1500 in the classroom over the last 12 years. He has received the Distinguished Teaching Award and the Distinguished Mentor Award from the University of California at Berkeley, the Jennifer Altman Award for Integrity in Science (Jennifer Altman Foundation), the Rachel Carson Memorial Award (Pesticide Action Network), the National Geographic Emerging Explorer Award (NGS), the President's Citation Award (American Institute of Biological Sciences). His achievements led to the proclamation of Jan. 24, 2005, as "Dr. Tyrone Hayes Day", by the Mayor of the City of Minneapolis, Minnesota.

Dr. Hayes' primary research focuses on the role of environmental factors on growth and development in amphibians. His current research focuses on the effects of endocrine disrupting pesticides on amphibian growth, development, reproduction and immune function, and how these studies predict effects in other wildlife and humans.

SCHEDULE OF EVENTS

POSTER PRESENTATIONS
Henry Hall Atrium, Kirkhof Center, Padnos Hall
8:00 A.M. - 4:00 P.M.
See page 15 for detailed schedule.

ORAL PRESENTATIONS
Kirkhof Center and Padnos Hall
8:00 A.M. - 3:40 P.M.
See page 25 for detailed schedule.

FISHLADDER EXHIBITION
Lake Ontario Hall - Red Wall Gallery
8:00 A.M. - 4:00 P.M.

EXHIBITION OF ART
Kirkhof Center
12:00 P.M. - 5:00 P.M
See page 135 for detailed schedule.

KEYNOTE LECTURE
204 Kirkhof Center
4:00 P.M.

STATEMENT FROM THE ARTIST

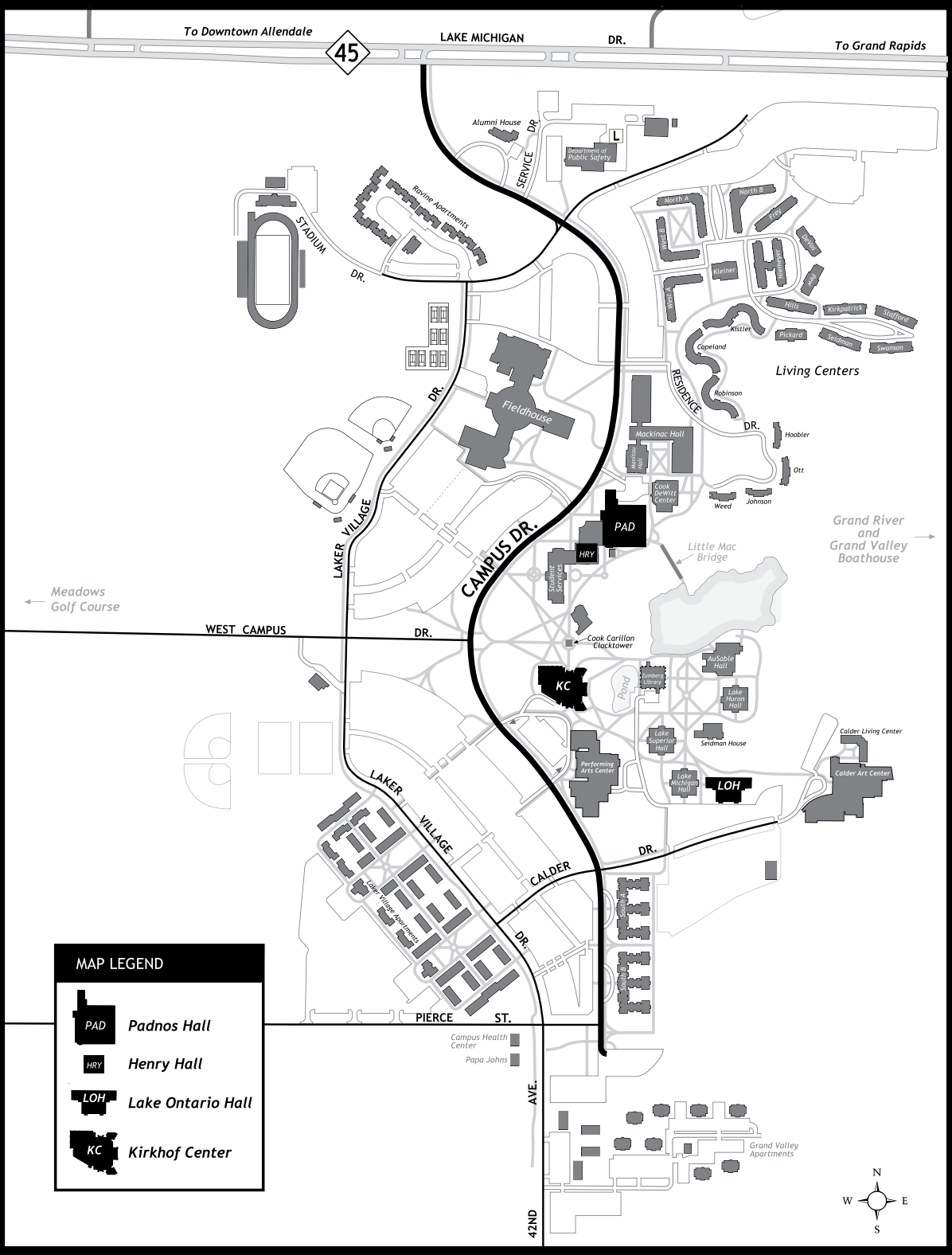
LYNSEY SCHWAB

My vision for Student Scholarship Day 2008 was to create a visual representation of interdisciplinary student scholarship. I was struck by the dynamics of a single day, during which students from all disciplines take a moment to share their research. Instead of one discipline competing with another, they all seem to magnify the importance and strength of each other.

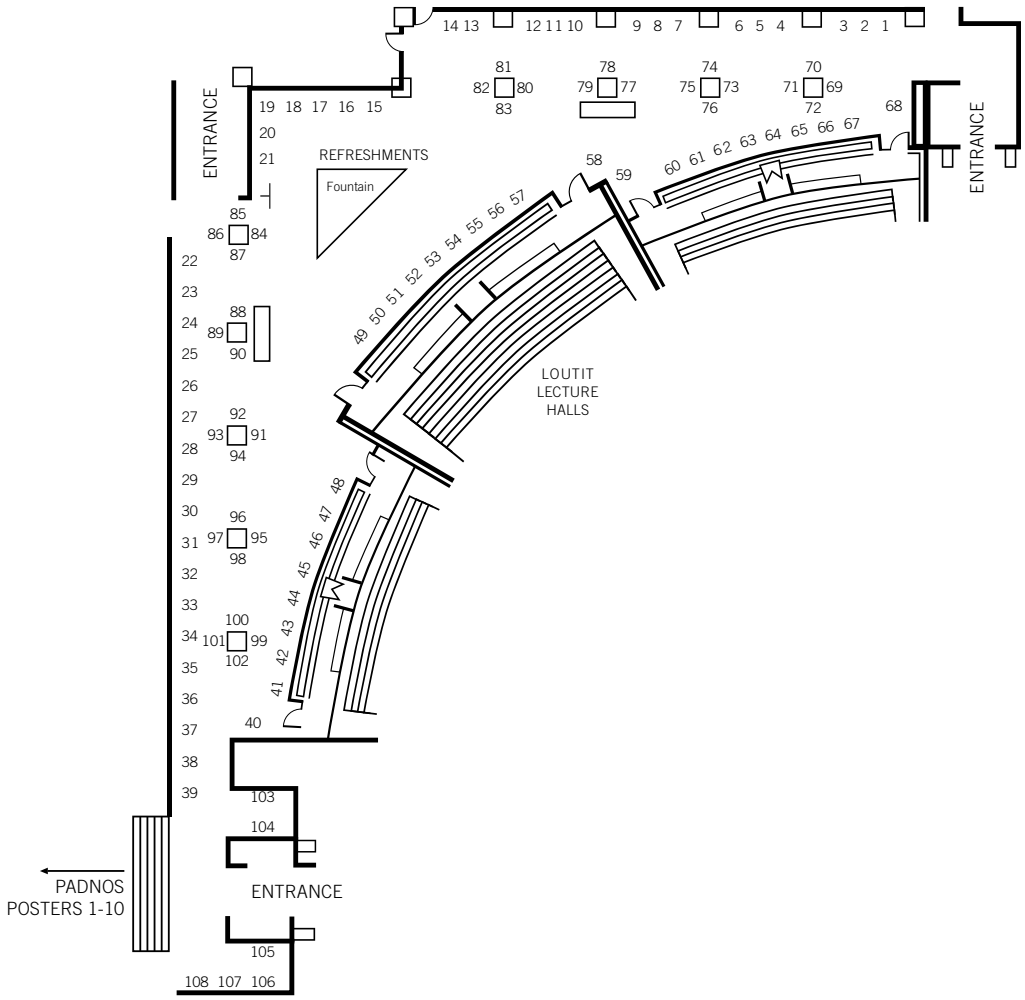
To express this visually, I chose to use tangrams; they mirrored the mission of SSD. Each shape is strong on its own, but when combined with other shapes, they form a more complete picture with a complex purpose. I was also intrigued by the seemingly infinite number of combinations, yielding unique and fascinating outcomes.

Much like the individual shapes of the tangram, each participant's research has produced more than just a presentation. It has created a crucial part of an event that has become a great Grand Valley Tradition: Student Scholarship Day.

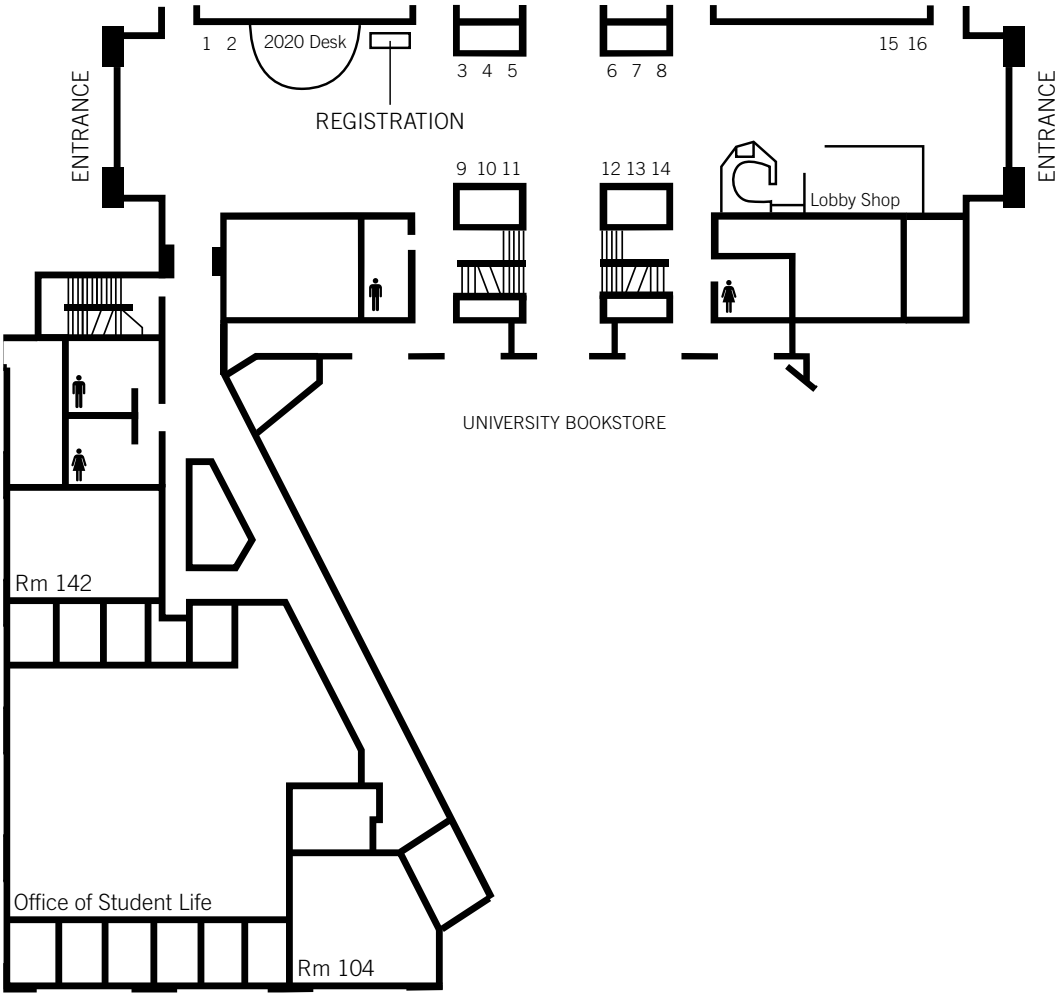
ALLENDALE CAMPUS MAP



HENRY & PADNOS HALL POSTER LOCATION MAP

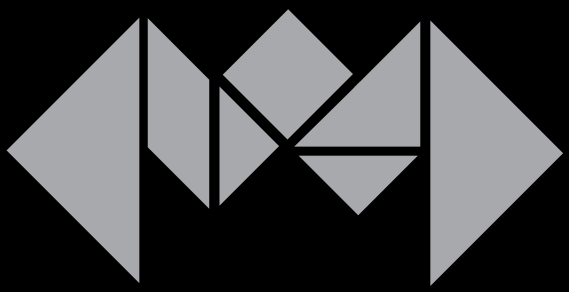


KIRKHOF CENTER POSTER LOCATION MAP



PRESENTATION SCHEDULE

APRIL 9, 2008



POSTER PRESENTATIONS	ORAL PRESENTATIONS
8:00 A.M. - 3:40 P.M.	8:00 A.M. - 4:00 P.M.

"The highlight of Student Scholarship Day for me is talking with the students about their challenges and the pleasures of intellectual discovery. It is obvious that through the process, they have come to think of themselves as researchers in the best sense of the word. The university needs to continue to find ways to expand these opportunities for students."

- DEAN WENDY WENNER -

POSTER PRESENTATIONS

8:00 A.M. - 4:00 P.M.

Henry Hall Atrium 1	Positive and Negative Perfection: Correlates With Self-Esteem, Satisfaction With Life, Rumination, and Reflection **JACLYN CHAVARRIA, DANIEL FRANCIS** Participants attending from 1:00 p.m. until 2:00 p.m
Henry Hall Atrium 2	Antimicrobial Activity of BIBR 1532 and its Derivatives **BRITTANY BENSON** Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 3	Microarray Analysis of Cd82 Expression in Prostate Cancer Cell Lines **HRISHIKESH SINGH THAKUR, VANITHA BHOOPALAN** Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 4	Generation of a Mouse Monoclonal Antibody to Ovalbumin **ASHLEY MERRICK, MIRANDA JOHNSON, REBECCA EDWARDS, EMILIA PUCCI, ELIZABETH SHINN, BRIAN BRITZ, RYAN DARO** Participants attending from 9:00 a.m. to 10:00 p.m.
Henry Hall Atrium 5	The Relationship Between Perceived Social Support and Capitalization Support **RYAN SHOREY** Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 6	Beach Volleyball **JAMEKA BROWN** Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 7	Pulsed Oscillating Mass Spectrometer **EMILY JONES, 2007 STUDENT SUMMER SCHOLAR** Participants attending from 9:00 a.m. until 10:00 a.m.
Henry Hall Atrium 8	Genes Possibly Involved in the Development of the Patagium in Flying Squirrel **MICHAEL SYLVESTER** Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 9	Further Exploration of Sonogashira Coupling in the Synthesis of Modified 2'-Deoxynucleoside Derivatives **BRANDON HAINES** Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 10	A Quantitative Study of Scientific Fields in the Grand Rapids Press & Their Correlation to the Michigan High School Graduation Requirements **MICHAEL MURRAY, MOLLY HAZEL, SARA BOSTELMAN, GERALD VERWEY, IAN MATHEWS, NICOLE HARRIS, ROBERT SLIDER, AARON RICKENS, SHEILA RUMPZ, CALVIN VANDER BOON, REBECCA SAUVE, SYDNEY COOKE, JASON HERNANDEZ, ERIN LEWIS, JOSHUA BREIMAYER, ROSS MISHLER, ADAM SCHMIDTENDORFF, ADAM JORGENSEN, DAVID CHECK, MATTHEW PISZ, BRAD HENDERSHOT, KRISTY BUTLER, LYNN BUMSTEAD, BRAD STEVENS, AMANDA STEMPKY, JODIE GRAY, ANDREW DEWITT** Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 11	TAAR Activity with Conformationally Restricted Amines **KATELIN KRUMMREY, 2007 STUDENT SUMMER SCHOLAR** Participants attending from 8:00 a.m. until 9:00 a.m.
Henry Hall Atrium 12	The Effect of Music on Novel Motor Tasks **KATELYN EVANS, MARK BARTA, KRISTY BURCROFF** Participants attending from 9:00 a.m. until 10:00 a.m.10:00 a.m.

8:00 A.M. - 4:00 P.M.

Henry Hall Atrium 13	Progress Toward the Synthesis of a Water Soluble Cavitand **SHANNON MURPHY** Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 14	The Importance of Calcium Serving Size **AMY DELANEY** Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 15	Truths and Myths about Cervical Cancer **JULIE ERIKSSON** Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 16	Color Cues in Wayfinding for Aging Individuals **AMY WEBER** Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 17	A Mysterious Meandering Mesenteric Artery **DAVID MAJKSZAK, BRIANA LONEY, JACOB MILLER** Participants attending from 11:00 a.m.. until 12:00 p.m.
Henry Hall Atrium 18	Hydrogen Fermentation by Soil Anaerobes and their Prospective Role in Environmental Cleanup and Alternative Fuel Production **MICHAEL MILLICAN** Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 19	Effects of Weight Lifting and Breathing Technique on Blood Pressure and Heart Rate **ADAM LEPLEY, 2007 STUDENT SUMMER SCHOLAR** Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 20	Schemas of Self-labeling and Non-labeling Sexual Harassment Victims **EMILY CUMMINS** Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 21	The Biopsychosocial Impact of Emphysema **NICOLE PURDY** Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 22	Exploring the Mechanism of a Class D Beta-lactamase Through Site-Saturation Mutagenesis of OXA-1 at the Valine 117 Position **JENNIFER BUCHMAN** Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 23	A Statistical Consulting Experience: Trend Analyses of Student Evaluations **JACOB BOEHMER** Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 24	Inexpensive Multiplatform Polyaniline Chemical Warfare Agent Sensors **BENJAMIN EGGLESTON** Participants attending from 3:00 p.m. until 4:00 p.m.
Henry Hall Atrium 25	A Grade Keeping Application **ADAM PARKER** Participants attending from 8:00 a.m. until 9:00 a.m.
Henry Hall Atrium 26	If You Can Believe it, You Can Achieve It: An Investigation of Imagery Use on Performance **ALEXANDER PERRY, MATTHEW WELLER** Participants attending from 9:00 a.m. until 10:00 a.m.

8:00 A.M. - 4:00 P.M.

Henry Hall Atrium 27	Bone Health: Calcium Intake Inventory Reliability/Stability **MEGAN FELDMEIER** Participants attending from 8:00 a.m. until 9:00 a.m.
Henry Hall Atrium 28	Cloning and Recombination of a Tetracysteine Tagged ipaD into the Virulence Plasmid of Shigella flexneri **DAVID MARTINSON** Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 29	Are We Greater Than the Sum of Our Parts? The Bilateral Deficit Phenomenon in Vertical Squat Jumping **RACHEL WRIGHT, LINDSEY VERSOLA** Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 30	How to Prepare for your First Ironman triathlon **MATT THOME, COREY MCALEENAN** Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 31	Identification of Novel Transcription Initiation and Polyadenylation Sites in the Hdc Gene **DAN BOOZER, 2007 STUDENT SUMMER SCHOLAR** Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 32	College Recruitment: A Comparison of Geographic Origins and Majors for University Student Populations and their Football Players (an exploratory study) **BENJAMIN SANBORN** Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 33	Strap On Your Helmet and Wipe Off Your Smile **DANIELLE HOPWOOD** Participants attending from 8:00 a.m. until 9:00 a.m.
Henry Hall Atrium 34	A Statistical Consulting Experience: Analyzing Changing Attitudes of Organized Workers in the U. S. Automotive Industry **JEFF YOUNG** Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 35	Growth Rate of Microcystis aeruginosa in Saginaw Bay and Lake Erie **MICHAEL REDISKE** Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 36	Computational Analysis of a Protein-protein Interaction Important in Actin Regulation: DID meets DAD **ELIZABETH SCHENKEL** Participants attending from 8:00 a.m. until 9:00 a.m.
Henry Hall Atrium 37	Computational Evaluation of Small Molecules Designed to Inhibit Estrogen Production **DANIEL MEYERS** Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 38	Training the Novice Tri-Athlete Age 25 to 40 **ADAM SCHMIDTENDORFF, JOSH LEASK** Participants attending from 3:00 p.m.3:00 p.m. until 4:00 p.m.4:00 p.m.
Henry Hall Atrium 39	Exploring the Limitations of POMS Mass Spectrometry **JOSEPH LOVISKA** Participants attending from 2:00 p.m. until 3:00 p.m.

8:00 A.M. - 4:00 P.M.

Henry Hall Atrium 40	Restoring Urban Riparian Habitat: Do Manipulations Affect the Behavior and Abundance of Birds **SARAH BRIDWELL, 2007 STUDENT SUMMER SCHOLAR** Participants attending from 9:00 a.m. until 10:00 a.m.
Henry Hall Atrium 41	Adaptive Management Plan for Baby's Breath on the Northern Lake Michigan Shore **JUSTIN SCHNEIDER** Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 42	Anticipating Terrorism in Detroit **RICHARD COLE** Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 43	What Does Your Pyramidalis Muscle Do for You? **DENITA WEEKS, MCNAIR SCHOLAR** Participants attending from 3:00 p.m. until 4:00 p.m.
Henry Hall Atrium 44	The Effect of Prolonged Incubation with Dihydrotestosterone on Coronary Arteries **ERICA BECHTEL** Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 45	Filling an Educational Void in the Traverse City Region Regarding the LGBT Community **TRACI JOSEPH, CHAD VANDER HENST** Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 46	Nutrient Effects on Transcript Levels of a Novel Soybean Gene **KRISTA GEISTER** Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 47	Comparative Studies of 1,3,5-cyclohexanetriol and Inositol Hydrogenation on Metal Catalysts **NATHAN CRAFT** Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 48	Comparing Prenatal and Laboring Care of Women: A look at the United States, Russia, and Zimbabwe **RACHEL JOHNSON** Participants attending from 3:00 p.m. until 4:00 p.m.
Henry Hall Atrium 49	Selective Functionalization of 3,3',5,5'-tetrakis(trifluoromethyl)biphenyl **SARAH ANZELL,** Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 50	Improving MODIS Data Using Knowledge Based Expert System **BRENT THELEN** Participants attending from 3:00 p.m. until 4:00 p.m.
Henry Hall Atrium 51	Genetic Factors Involved in the Development of the Plagiopatagium in the Southern Flying Squirrel **NATASHA SCHILLER** Participants attending from 9:00 a.m. until 10:00 a.m.
Henry Hall Atrium 52	Cosmetic Surgery Attitudes: Values and Mortality Salience **SAMANTHA SCHENK, KELLY VALDIVIA** Participants attending from 10:00 a.m. until 11:00 a.m.

8:00 A.M. - 4:00 P.M.

Henry Hall Atrium 53	Molecular Regulation of the Diaphanous-related Formins **KATE VELTMAN, 2007 STUDENT SUMMER SCHOLAR** Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 54	Stability of Reticulocytes versus Temperature and Time **KIMBERLY CLARK, LISA HARDY** Participants attending from 9:00 a.m.until 10:00 a.m.
Henry Hall Atrium 55	The Harmful Effects of Household Cleaners **JULIA VOGELSANG** Participants attending from 3:00 p.m. until 4:00 p.m.
Henry Hall Atrium 56	Analyzing Land Cover Change in the State of Michigan from 1992 to 2001 **IAN FOX** Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 57	Wayfinding Performance and Attention in Middle Aged and Older Adults **LYNDSIE ALLEN** Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 58	Do Aspects of the Self Predict Cosmetic Surgery Attitudes? **AMANDA MITCHELL, RACHEL VESEY** Participants attending from 10:00 a.m.until 11:00 a.m.
Henry Hall Atrium 59	Analyzing Land Cover Change in the State of Michigan from 1992 to 2001 **AARON CUMINGS** Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 60	Reducing Traffic Congestion on Detroit Highways Using Predictive Modeling **ANDREW VAN GARDEREN, ALLISON WEHR** Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 61	Eccentric Training and Muscle Gain for Natural Bodybuilding **JASON BINKOWSKI, JEFF SINICKI** PARTICIPANTS ATTENDING FROM 10:00 A.M. UNTIL 11:00 A.M.
Henry Hall Atrium 63	Profiles of the Godless: Characteristics of a non-religious group **MELISSA MCDONALD, BEN TOLMAN, JENNIFER LORD** Participants attending from 9:00 a.m.until 10:00 a.m.
Henry Hall Atrium 64	Faculty Course Scheduling Tool **CORY GROSS** Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 65	A Statistical Consulting Experience: Evaluating the Characteristics of Transumers at the Muskegon Summer Celebration **PATRICK DONAHUE** Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 66	The Real Guiitar Hero **STEPHEN SALERNO** Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 67	Mapping Plant Functional Types for the Great Lakes Region **GREG LOWMAN, ENZO CRESCENTINI** Participants attending from 12:00 p.m.until 1:00 p.m.
Henry Hall Atrium 68	Lean Manufacturing: A Case Study of Johnson Technology's Journey to the Next Level of Production **EVERETT SMEDLEY** Participants attending from 1:00 p.m. until 2:00 p.m.

8:00 A.M. - 4:00 P.M.

Henry Hall Atrium 69	The Effects of a Fatigue Countermeasures Program on Daytime Sleepiness and Sleep Quality in Hospital Nurses **ERIN HUGHES** Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 70	The Effects of Androgens on Coronary Arteries **DAVID MAJKSZAK, OMKAR HIREKHAN** Participants attending from 12:00 p.m.until 1:00 p.m.
Henry Hall Atrium 71	Time Flies: Improving the speed of the elite 100-meter hurdler through resistance training **JENNIFER TULPA, JAMES GALE** Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 72	The Relationship between Physical Activity and Mood **CHRISTINE SAKSA, AMANDA HILTZ, CARRIE HAUSE** Participants attending from 8:00 a.m.until 9:00 a.m.
Henry Hall Atrium 74	Dynamics of the Dual Billiard Map **DANIEL GORSKI** Participants attending from 9:00 a.m. until 10:00 a.m.
Henry Hall Atrium 75	Telomerase Inhibitor BIBR1532 and its Derivatives as Novel Antimicrobials **ARTI WALKER, 2007 STUDENT SUMMER SCHOLAR** Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 76	Rook Polynomials **ADAM ATKINS** Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 77	Neuroprotection of Porcine Retinal Ganglion Cells by Modulation of alpha7-Nicotinic Acetylcholine Receptors **MEAGAN STEWART, 2007 STUDENT SUMMER SCHOLAR** Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 78	Prevention of ACL Injury in the Female Athlete as a Component of Strength and Conditioning Program **JESSICA RHODES, STEVE SMITH** Participants attending from 9:00 a.m.9:00 a.m. until 10:00 a.m.10:00 a.m.
Henry Hall Atrium 79	Marathon Training for the Beginner **MICHAEL BIGNEY, JED HUMMEL** Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 80	Synthesis and Structural Analysis of a Novel Series of Non-beta-lactam Inhibitors of AmpC Beta-lactamase **JENNA TOMLINSON** Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 81	Leadership in the Banking Industry **SAMANTHA KLYNSTRA** Participants attending from 8:00 a.m. until 9:00 a.m.
Henry Hall Atrium 82	The Effects of Fatigue on Clinical Decisions Made by Critical Care Nurses **JONATHAN NYKAMP** Participants attending from 3:00 p.m. until 4:00 p.m.
Henry Hall Atrium 83	Functionalization of a Solvent Free Martian Bioelectrocatalytic System **RENEE BOULEY** Participants attending from 11:00 a.m. until 12:00 p.m.

8:00 A.M. - 4:00 P.M.

Henry Hall Atrium 85	The Link Between Physical Fitness and Academic Performance **SARA SHEEHAN, LACI VERDUSCO** Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 86	A Comparison of CK-MB to Troponin Levels in Normal, Slightly Elevated, and Critically High Patient Populations **LINDSAY WALKER, EVANGELINA CARMONA** Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 87	Evidence of Intragenic Recombination in the Rotavirus Enterotoxin Gene **LINDSAY RICHMOND** Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 88	Barriers To Accessing Health Care For Homeless Women and Their Children **JILLIAN ENGLAND** Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 89	Vibrational Spectroscopy of Carbonmonoxymyoglobin **JAMES MARR** Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 90	Economic Sustainability and Revitalization: A Review and Analysis of Downtown Port Huron **KATIE WHITE** Participants attending from 9:00 a.m. until 10:00 a.m.
Henry Hall Atrium 91	Relationship with Grandmothers from Adolescents' Perspective **JENNIFER RODRIGUEZ, KIM COOPER** Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 92	Design and Synthesis of Peptide Substrates for Focal Adhesion Kinase (FAK) **KATHERINE STAHRR** Participants attending from 1:00 p.m. until 2:00 p.m.
Henry Hall Atrium 93	Stream Flow Velocity Variabilty Over Time at a Riffle, Run And Pool in Sand Creek, Allendale MI **ANDREW SISSON** Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 94	Make The Horse A Different Color: Avoiding Cliche Poetry Through Unique Character Comparisons **KATIE BOOMS** Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 95	A Comparison of Serum versus Plasma in Quantitative hCG testing **TRANG BUI, AMANDA SCHOENER** Participants attending from 11:00 a.m.11:00 a.m. until 12:00 p.m.12:00 p.m.
Henry Hall Atrium 96	Characterization of Survival Pathways in Immortalized Primary Prostate Epithelial Cells **ERIC GRAF** Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 97	The Effects of Microinjections of Nitric Oxide Donor SNAP on Memory in Goldfish **EVAN GOODMAN, JOSH KOVALCHEK** Participants attending from 12:00 p.m.12:00 p.m. until 1:00 p.m.1:00 p.m.

8:00 A.M. - 4:00 P.M.

Henry Hall Atrium 98	Strength and Conditioning for the Elite 100M Breaststroke Swimmer **EARCY CHRISTMON, EVERTON DAVIDSON** Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 99	Biotinylated Peptide Synthesis & Substrate Specificity Determination Using Enzyme-Linked ImmunoSorbent Assays **EVAN LUND** Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 100	Dynamical Systems **CLIFFORD TAYLOR** Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 101	Free Radical Damage on Coronary Arteries **EMILY STIR** Participants attending from 12:00 p.m. until 1:00 p.m.
Henry Hall Atrium 102	Dispelling Rape Myths: The Impact of Expert Witness Testimony in an Acquaintance Rape Trial **SARAH LUETHY** Participants attending from 2:00 p.m. until 3:00 p.m.
Henry Hall Atrium 103	Charter Schools in the United States **JENNIFER FILLINGER** Participants attending from 11:00 a.m. until 12:00 p.m.
Henry Hall Atrium 104	Testing The Chemical Fingerprint Of Amphibolites From The Central Blue Ridge Region Of The Appalachian Mountains, North Carolina **ANDREW DEWITT** Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 105	The Impact of Post Traumatic Stress Disorder Testimony on Juror Verdict in an Acquaintance Rape Trial **BRITTNEY AUSTIN** Participants attending from 10:00 a.m. until 11:00 a.m.
Henry Hall Atrium 106	A Literature Review of At-Risk Populations and Cervical Cancer Morbidity and Mortality **CAROLE DONAZZOLO** Participants attending from 8:00 a.m. until 9:00 a.m.
Henry Hall Atrium 107	Effects of Color Salience on Developmental Differences in Preferences for Using Color Information **HILARY SWANEY** Participants attending from 8:00 a.m. until 9:00 a.m.
Henry Hall Atrium 108	The Art of Pitching **JUSTIN BOWERS, QUAN PITTMAN** Participants attending from 8:00 a.m. until 9:00 a.m.
Kirkhof Center Lobby 1	The Impact of Disordered Eating Patterns, Multidimensional Self-Esteem, and Emotional Regulation on Self-Injurious Behaviors in College Women **STEPHANIE SECORD, CHLOE SKIDMORE** Participants attending from 3:00 p.m. until 4:00 p.m.
Kirkhof Center Lobby 2	Affordable Simulated Martian Environment Chamber (SMEK) **DEREK LOUTZENHISER** Participants attending from 12:00 p.m. until 1:00 p.m.

8:00 A.M.- 4:00 P.M.

Kirkhof Center Lobby 3	An Analysis of Selected Musical Concepts Present in Significant Band Repertoire **SARA BLACK, CATHERINE MCCULLOCH, 2007 STUDENT SUMMER SCHOLARS** Participants attending from 1:00 p.m. until 2:00 p.m.
Kirkhof Center Lobby 4	A Strength and Conditioning Program for Male College Basketball Players **NICOLE DAGGY** Participants attending from 11:00 a.m. until 12:00 p.m.
Kirkhof Center Lobby 5	Effect of Cold Culture Blood Plate on Recovery of Urine Organisms **OLIVIA KORRECK, AMY KENNEDY** Participants attending from 1:00 p.m.until 2:00 p.m.
Kirkhof Center Lobby 6	LanguageWiki - A Content Management System for Learning Language Components, with a Focus on Increasing Wiki Information Reliability **IRA WOODRING** Participants attending from 8:00 a.m. until 9:00 a.m.
Kirkhof Center Lobby 7	Submerged Sinkhole Ecosystems of Lake Huron **ERIC STRICKLER** Participants attending from 2:00 p.m. until 3:00 p.m.
Kirkhof Center Lobby 8	Identification of New Boronic Acids as Inhibitors Against AmpC Beta-lactamase **RACHEL KUBIAK, 2007 STUDENT SUMMER SCHOLAR** Participants attending from 2:00 p.m. until 3:00 p.m.
Kirkhof Center Lobby 9	Hypothetical Pre-Basic Combat Training **ELIZA WEINERT, JESSICA DEKKER** Participants attending from 3:00 p.m. until 4:00 p.m.
Kirkhof Center Lobby 10	The Evolution to Become a Varsity Prep Boys Basketball Player **ELLIOTT JONES, DANELL WILKERSON** Participants attending from 3:00 p.m. until 4:00 p.m.
Kirkhof Center Lobby 11	Identification of the Met Phosphorylation Site Regulated by the Prostate Metastasis Tumor Suppressor Protein CD82 **PENNY BERGER, VANITHA BHOOPALAN** Participants attending from 12:00 p.m. until 1:00 p.m.
Kirkhof Center Lobby 12	Isolation of FGF Genes from Glaucomys Volans **NICOLE GAUCHE** Participants attending from 11:00 a.m. until 12:00 p.m.
Kirkhof Center Lobby 13	Plant Community Changes in Northern Alaska in Response to Warming **JEREMY MAY** Participants attending from 10:00 a.m. until 11:00 a.m.
Kirkhof Center Lobby 14	Flowering Success of Transplanted Species in a Longleaf Pine Savannah Restoration Experiment at the Savannah River Site, South Carolina **DAVID CHAMBERS** Participants attending from 12:00 p.m. until 1:00 p.m.
Kirkhof Center Lobby 15	Evaluation of Add-on Testing and Stability Studies for Serum Samples **STEPHANIE HILLMAN , MONICA LEEP, MONICA GILLIS** Participants attending from 8:00 a.m. until 9:00 a.m.
Kirkhof Center Lobby 16	Changes in Plasma Potassium Levels **DANIEL CALLEN** Participants attending from 8:00 a.m. until 9:00 a.m.

8:00 A.M. - 4:00 P.M.

Padnos Hall Atrium 1	A Method Comparison Study to Assess Whether Tourniquet Application for Capillary Blood Collection Could Induce Spurrious Changes in the Measured Hematocrit or Serum Potassium Levels **JASON RUDD** Participants attending from 1:00 p.m. until 2:00 p.m.
Padnos Hall Atrium 2	Overall Performance of Cassiope Tetragona in a Climate Changing Environment **AMANDA SNYDER** Participants attending from 8:00 a.m. until 9:00 a.m.
Padnos Hall Atrium 3	Assessment of Phagocytic Activity in Mouse Peritoneal Macrophages **RYAN DARO, REBECCA EDWARDS, ELIZABETH SHINN, BRIAN BRITZ, ASHLEY MERRICK, EMILIA PUCCI, MIRANDA JOHNSON** Participants attending from 10:00 a.m. until 11:00 a.m.
Padnos Hall Atrium 4	Protein Purification and Identification of GAP-43 Isoforms via Two Dimensional Isoelectric Focusing **BRIAN BRITZ, RON KRESS** Participants attending from 8:00 a.m. until 9:00 a.m.
Padnos Hall Atrium 5	Protection of Adult Pig Reintal Ganglion Cells: Early Effects & Specific Antagonist Blockade **LISA ANDERSON, DEMETRIA JONES, JORDAN ELDERSVELD** Participants attending from 1:00 p.m. until 2:00 p.m.
Padnos Hall Atrium 6	Hacklander Ware: A Great Lakes Ceramic Mystery **NATHANIEL HANSEN** Participants attending from 10:00 a.m. until 11:00 a.m.
Padnos Hall Atrium 7	Target Inquiry: Impacts of a Research Experience for Teachers **RYAN WISSNER** Participants attending from 1:00 p.m. until 2:00 p.m.
	Serum vs. Plasma in PSA Testing **MARIA BRUNETTE, ASHLY RHADIGAN** Participants attending from 8:00 a.m. until 9:00 a.m.

ORAL PRESENTATIONS

8:00 A.M.

Padnos Hall Atrium 8	Indulgence Coffee: Tech Selection in a Small Firm DAN BOLHUIS, JIN LEE, DANIEL WARARI, ANAS MUHAMMAD, JAMES SNIDER, ALISSA RICHARDS
Kirkhof Center 104	Evidence-Based Medicine Among Members of the Michigan Academy of Physician Assistants MELISSA "BLAIR" COFER, DANIELLE SIMPSON
Padnos Hall 107	Synthesis Of Thiophene Based AmpC B-Lactamase Probes UMA MISHRA
Padnos Hall 108	Bridging the Gap: A Statistical Consulting Experience with Allendale REBEKA TABBEY
Padnos Hall 209	Stream Quality and the Impacts of Land Use JESSICA SANDBORN

8:20 A.M.

Padnos Hall 262	Translating Cultures: Bridging the Ancient and Modern through Transadaptation and Performance HANNAH GAFF, 2007 STUDENT SUMMER SCHOLAR
Padnos Hall 107	Instructor Rank and General Education Foundation and Culture Courses: A Statistical Consulting Experience KATHERINE REHORST
Padnos Hall 168	Manna From Heaven Through the Eyes of Different Religious Traditions KATELYN HART
Padnos Hall 209	Local Organic Food Perceptions SARAH LEEP

8:40 A.M.

Padnos Hall 262 Padnos Hall 211	From Swash Zone to Dune Crest: a Grain Size Analysis Along the Lake Michigan Shore in Muskegon, Michigan NICOLE HARRIS
Padnos Hall 262	Select Coniferous Trees Effect on Soil pH DAVID BLY

9:00 A.M.

Kirkhof Center 104	Jewish Dietary Laws: A Healthy Way of Life or Religious Conviction? KATHERINE LAZET, 2007 STUDENT SUMMER SCHOLAR
Padnos Hall 108	The Gastrointestinal Microflora of Male and Female Isopods DE'VONA GLOVER, MCNAIR SCHOLAR
Padnos Hall 209	"Not in Our Neighborhood:" Understanding the Power Dynamics and Popular Discourse of Community Policing in Grand Rapids, Michigan HEIDI REYNOLDS-STENSON
Padnos Hall 211	Grain Size Analysis of Sand from a Lake Michigan Beach: North Muskegon, Michigan EMILY BREHM
Padnos Hall 261	Change In Body Mass Index in Obese And Non-Obese Patients Following Total Hip Replacement Surgery PATTY OLESZKIEWICZ, JOLA LANIER, TRACY MOLLAN
Padnos Hall 262	Adaptive Management Plan for *Oncorhynchus Mykiss* Spawning Habitat in the Rogue River Suburban Area MICAH MEENDERING

9:20 A.M.

Kirkhof Center 104	It's What You Say, Not How You Say It: Politeness Strategies in Arabic DIANA KLEIN
Padnos Hall 107	INRAD, Inc. Technology Audit MATTHEW HARNESS, PAUL NYSSE, JOSH MOE, JESSE FRIFELDT, BETH RUSCH
Padnos Hall 207	The Implications of Relocation for Former Campau Commons Residents RYAN AMES
Padnos Hall 209	Analysis of Sculpin Movement in a 1st order tributary, using PIT telemetry JASON DEBOER
Padnos Hall 211	Grain Size Analysis of the Parabolic Dune System at Rosy Mound Natural Area, Ottawa County, Michigan JOY GRYZENIA
Padnos Hall 261	Totally Manual: Getting J. Milito & Associates, Inc. Online RACHEL WEAVER, DAVID MURPHY, MELISSA WOODWYK, ANTHONY KEY, CHRISTOPHER BROMLEY
	A Survey of Ottawa County Residents on the Views and Perceptions of Wolves in the Lower Peninsula of Michigan JASON GUERRIN

9:40 A.M.

Padnos Hall 262 Kirkhof Center 142	Butterball Farms: Production Visibility JOE O'ROURKE, JOSE RIVAS, DAVID FLYNN, ORLANDO BONIFACIO, RYAN VIPOND
Padnos Hall 107	Sotos Syndrome Awareness LEAH TARRANT
Padnos Hall 108	Trends of CAM Reporting in an Orthopaedic Setting BETHANY MILLS, LISA DAVENPORT, CARRIE ISKRA
Padnos Hall 168	A Statistical Consulting Experience: Course Size for GVSU Theme Classes ASHLEY DEBOER
Padnos Hall 207	Insulating Properties of Changing Tundra Vegetation ROBERT SLIDER
Padnos Hall 211	The Origin of Sediment in Turkey Run State Park, Parke County, Indiana NOAH SLUITER
Padnos Hall 261	Disparities in Survival of Gastrointestinal Cancers: a Retrospective Study KRISTIN COLE, CHRISTINA BISCHOFF
	Is it Really Worth it? TIMOTHY KOLMODIN

10:00 A.M.

Padnos Hall 262 Kirkhof Center 104	Civic Engagement DAVID REDDING, 2007 STUDENT SUMMER SCHOLAR
Kirkhof Center 142	Assessment of The Incidence of Deep Venous Thrombosis and/or Pulmonary Embolism Following Total Hip Arthroplasty Utilizing a Newly-Established Total Hip Arthroplasty Registry KIMBERLY DYKSTRA, KRISTIN COX, JENNIFER STOLL
Padnos Hall 107	Mack Family Dentistry Public Relations Campaign LAUREN MACK
Padnos Hall 168	A Management Plan to Establish a Self-Sustaining Ring-Necked Pheasant Population in Ottawa County, Michigan ESON FLEMING
Padnos Hall 207	Analyzing Labor in Michigan Literature DAVID LEGAULT, 2007 STUDENT SUMMER SCHOLAR
Padnos Hall 209	"PARRHÊSIA" in the Thought of John Chrysostom DEVIN WHITE, 2007 STUDENT SUMMER SCHOLAR
Padnos Hall 211	Assessment of High Fidelity Simulation in Health Professionals Education JORDAN STEVENSON, ELIZABETH LEFFINGWELL,
Padnos Hall 261	A Statistical Consulting Experience: A Look Into How Instructor Rank Has Changed Over the Years in Theme Courses CHERI LOZON
	Comparing Sites Of The Rogue River Watershed That Are Affected By Pollution (Be It Point-Source Or Non Point Source) SCOTT MAYBORE

10:20 A.M.

Padnos Hall 262 Kirkhof Center 104	The FARC: Patterns of Revolutionary War and Insurgency in Colombia LAURA GEIKEN
Kirkhof Center 142	An Analysis of Two Non-Traditional Instructional Methods on Student Learning KRISTOFER PACHLA
Padnos Hall 107	Sex, Herpes and Guillain-Barre Syndrome AUSTIN KUIPERS
Padnos Hall 108	Animals Rights: The Controversy for Activists, Scientists, and the Everyday American ALANA KINCAID
Padnos Hall 168	A Statistical Consulting Experience with the Muskegon Summer Celebration CHRIS WINKEL
Padnos Hall 207	The Melding of Cheese and Church KATIE KUJALA
Padnos Hall 209	How Confident Grand Valley State University Pa Students are with their Education Regarding Cam and How Grand Valley State University PA Students Rate Their Counseling Skills Regarding CAM TIMOTHY PEBBLES, TESSA ZIELKE, MIKE GROTENRATH
Padnos Hall 211	Contact Between Pleistocene and Meandering Stream Sediments in Aman Park, Ottawa County, Michigan MICHELLE DAM
Padnos Hall 261	Exploring Student Understanding of Equations Through the Conservation of Energy TIM MAJOR
	Population Growth Model for Fruitport Township, Michigan JON VANDER MOLEN

10:20 A.M.

Padnos Hall 262 Kirkhof Center 104	19th Century Tenements Today in New York City JESSIE EMELANDER
Kirkhof Center 142	Analysis of Psychological Adjustment to Aging of Older Homosexual Males in Regards to Developmental Measures: A Statistical Consulting Experience MARTHA ROZSI
Padnos Hall 107	Exploration of Sonoluminescence GERRAD FOSTER
Padnos Hall 108	The Features and Reputation of the Cockney Dialect EMILY SLATER
Padnos Hall 168	Seasonal Zooplankton Biomass Variation in Nearshore and Offshore Lake Michigan Sites DANIEL RUBERG

Padnos Hall 207	Diets of Round Gobies in Lake and Wetland Habitats BETSY SHAFER
Padnos Hall 211	Study of Meteorite Impact Crater, Kentland, Indiana: Insoluble Mineral Analysis of Breccia Dikes HEATHER BRUSNAHAN
Padnos Hall 261	A Statistical Consulting Experience: Bridging the Gap Between the Allendale Community and GVSU Students ROSE VANDERWEELE
Padnos Hall 262	Should We Bag the Plastic Bags: A Cost-benefit Analysis of Eliminating Free Grocery Bags ABBY TOMASZEWSKI

11:00 A.M.

Kirkhof Center 142	A Qualitative Analysis of the Mizizi Maji Mentoring Program at Baxter Community Center JILL TALLMAN, BRYAN TRAN, GIUSEPPA LORE
Padnos Hall 107	What it Takes: The Journey Toward the Paralympics SUSAN HEARNE , TARA BROOKS, OLIVIA FLANDERS, TARESEA AMMANN, ALISON THORP , KATIE MATTESON
Padnos Hall 108	The Consumption of DHA During Pregnancy and Lactation among Low Income Women in Grand Rapids, Michigan HANH NGUYEN, MIRANDA CRISTALES, BETHANY EASTMAN
Padnos Hall 168	A Statistical Consulting Experience: Understanding the Attitudes of US Automotive Workers ALLISON WEHR
Padnos Hall 207	Analysis of Metal Artifacts from the Nineteenth Century Cabin site: Headquarters 20MU93 KATHRINE HARDCASTLE
Padnos Hall 209	Bird Use of the GVSU Ravine Ecosystem in Winter REBECCA NORRIS
Padnos Hall 211	Comparison of Growth Rates of the Caribbean Reef-building Corals *Acropora cervicornis, Acropora palmata, Montastrea annularis,* and *Porites divaricata* JASON HEIVILIN
Padnos Hall 261	The Latin American Consensus AMANDA MIRALRIO, MCNAIR SCHOLAR
Padnos Hall 262	The Millenium Development Goals Today EMMA TUCKER

11:20 A.M.

Kirkhof Center 104	A Theoryless Work KRISTOPHER SNYDER
Padnos Hall 107	Distribution of Dreissena Mussels in Great Lakes Coastal Ecosystems: Are Wetlands Resistant to Invasion? KRISTIN NELSON
Padnos Hall 168	Whitetail Management Plan in White Cloud, MI BLAKE MALLORY
Padnos Hall 207	Therapeutic Recreation As a Related Service SARAH SPRINGER, LINDSEY BERG, NICHOLE GAYNIER, CATHERINE REYNOLDS, JENNIFER SCHULTZ
Padnos Hall 209	Analysis of Radio Emissions from Multiple Celestial Sources PATRICK MINOR
Padnos Hall 261	Waterfront Film Festival: Improved Ticketing System DANA VANDENBRINK, SUZAN MWANGI, TARA EERKES, ANDREW MASSAR, TOM HAM
Padnos Hall 262	Monitoring the Distribution of Phragmites with Remote Sensing and Image Classification for West Michigan's Coastline, 2001 DUSTIN HALL

11:40 A.M.

Kirkhof Center 142	Liberalization in Iran: How Leaders and Civil Society Have Reacted STEPHANIE MYOTT
Padnos Hall 108	Evaluating Passive Integrated Transponder Tags for Tracking Movements of Round Gobies MEGAN COOKINGHAM, 2007 STUDENT SUMMER SCHOLAR
Padnos Hall 168	Comparison of United States Forest Service Forest Management Practices with Forest Stewardship Council Management Principles ERIC STRICKLER
Padnos Hall 207	Enhancing Quality of Life for Older Adults with Dementia JENNIFER NAYLOR, KELLY COTTER, KATHRYN SIEHLING, SHANON HASKINS
Padnos Hall 211	Petrography of Proterozoic and Cambrain Conglomerates in the Mount Rogers Area, Virginia CAMERON ROSS
Padnos Hall 262	Tree Health Mapping Using Remote Sensing Data at GVSU, Allendale, MI ZACHARY PENNALA

12:00 P.M.

Kirkhof Center 104	Queer Beijing: An Ethnography of Marginality VANESSA CROWLEY, 2007 STUDENT SUMMER SCHOLAR
Kirkhof Center 142	Student Teaching Placements: Understanding Cooperating Teachers and Responding to their Needs CARLY ALEXANDER WARNSHUIS
Padnos Hall 107	Risk of Predation Across a Gradient of Habitat Structure: Are Results Scale Dependent? MATTHEW ALTENRITTER, 2007 STUDENT SUMMER SCHOLAR
Padnos Hall 108	Comparison of Settling Velocities of Various Particles within Turbulent and Laminar Flow ABBEY POST
Padnos Hall 168	Student Research of Power Transformations Using Sas CASEY JELSEMA
Padnos Hall 207	A Statistical Consulting Experience: Park Developement Opportunities in Allendale Township PETER LAPHAM
Padnos Hall 209	Perceived Barriers to Accessing Community Recreation for an Individual with a Spinal Cord Injury CHRISTIEN POLANCO, MARISSA KNIGHT, BRIAN HANSON, COURTNEY LOCKE, SHELLY MCMILLEN
Padnos Hall 211	Depositional Envrionment and Diagenesis of the Cambrian Deadwood Formation, at Deadwood, South Dakota NAOMA LEONARD
Padnos Hall 261	Macroinvertebrate Community Structure in Disturbed Streams Affected by Excess Storm Water Runoff JASON NELSON
Padnos Hall 262	Grand Rapids Parks and Recreation Analysis MATT NIELSEN

12:20 P.M.

Kirkhof Center 104	Is territorial behavior in green frogs (Rana clamitans) related to defending oviposition sites or protection from predators? DENITA WEEKS, MCNAIR SCHOLAR
Kirkhof Center 142	Water Evaporation From Tropospheric Aerosols ALEX GILDE
Padnos Hall 107	Liberating a Language: A History of the Feminist Perspective on Language Use JACQUELINE HETTEL
Padnos Hall 108	Women, nature, and the attempt at male dominance in Bierce's Chickamauga JESSE MAGNAN

Padnos Hall 168	Response of the Arctic Wet Meadow Sedge, Carex Aquatilis, to Changing Temperature MICHAEL LOTHSCHUTZ
Padnos Hall 207	Beowulf: A Tale of Impotence TESS HOAGLUND
Padnos Hall 209	Structuring Identity in White Prison Society ANNA GREINKE
Padnos Hall 211	Analysis of the Precision and Accuracy of a Spectrex Laser Particle Counter MIGUEL MERINO
Padnos Hall 261	Exploring the Best Practices in TR for Individuals with Autism MEGAN WARREN
Padnos Hall 262	North Country Trail and Sleeping Bear Dunes National Lakeshore Use Patterns and User Demographic Comparison BETHANY DYKSTRA

12:40 P.M.

Padnos Hall 107	El Avance de la Tecnología BRIAN CESAROTTI, ALICIA DEMBINSKI
Padnos Hall 168	Comparing the density and demographics of backcountry campers in Sleeping Bear National Lakeshore between 2001 and 2005 NEALY MOLHOEK
Padnos Hall 209	Investigating the Formin Protein Family: A Focus on DAAM1 BRENT HEHL, MCNAIR SCHOLAR
Padnos Hall 211	Experiments Using a Stream Table to Determine Grain Size, Shape and Mineralogy Distribution Versus Length AMANDA PERRY
Padnos Hall 262	The Sustainability of Local Agriculture JOHN DENIS

1:00 P.M.

Kirkhof Center 142	Edmund's Endeavor: Pursuing Justice in King Lear CASSEY STANK
Padnos Hall 107	La Música ASHLEY ZIRKLE, CLARE MAZUR
Padnos Hall 108	Life is Art: The Use of Art in Proust's Swann's Way KELSEY KRUIS
Padnos Hall 168	A Statistical Consulting Experience: Evaluating Area K-12 Physical Education Teachers Interest in a Masters Program WHITNEY MINER
Padnos Hall 207	Gunshot Residue Chemical Enhancement Validation Study TAMIRA COOPER

Padnos Hall 209	Creating Easy Instructions for Muslims to Learn Formal Prayer WESLEY MUELLER
Padnos Hall 211	Mineralogy, Cementation, and Porosity Analysis of Ooids in the Mississippian Newman Limestone at Pound Gap: Letcher County, Kentucky ANTHONY RODRIGUEZ, MCNAIR SCHOLAR
Padnos Hall 262	Adaptive Management Plan to Increase American Beaver (Castor canadensis) Populations on Carlson Creek in Luce County, Michigan JACQUELINE TROMBLEY

1:20 P.M.

Kirkhof Center 104	Abelard and Heloise: Voyeurism in 18th and 19th Century Art AMANDA THOMSON
Kirkhof Center 142	Female Playwright - Mary Gallagher TIFFANY DUPONT, JESSICA KLEIN
Padnos Hall 107	A Theoretical Determination of the Conductivity of a Thin Metal Film NATHAN LINDY
Padnos Hall 108	To Possess is to Extinguish; Reclaiming Orality in a Text-Driven World LINDSEY DRAGER
Padnos Hall 168	Hell Through the Ages: Dante's Inferno as a Model for Gogol's Dead Souls STEFANIE HOSFORD
Padnos Hall 207	Benefits and Wellness Among GVSU Faculty and Staff: A Statistical Consulting Experience CASEY JELSEMA
Padnos Hall 209	Female Playwright - Mary Gallagher JESSICA KLEIN, TIFFANY DUPONT
Padnos Hall 211	Mineralogic Composition and Porosity of Ooids in the Middle Jurassic Great Oolite Limestone, Wealden Basin, Southern England KEISHA DURANT
Padnos Hall 262	Adaptive Management Plan for Wetland Restoration JUSTIN ULBERG

1:40 P.M.

Kirkhof Center 104	A Study in the Identification of GAP-43 Isoforms via Densitometric Analysis BRIAN BRITZ
Kirkhof Center 142	Conductivity, pH, Salinity, and Turbidity Changes as a Function of Sediments Transport Duration NOAH SLUITER
Padnos Hall 107	Tolstoy's Sevastopol in May in Sonata Form ALEX PLOTKOWSKI
Padnos Hall 168	General Education Foundations and Cultures: A Statistical Consulting Experience TRAVIS CREE

Padnos Hall 209	Sex, Power, and Ostracism: Politeness Theory in Reality Television JACQUELINE HETTEL
Padnos Hall 211	Using Marine Fossils from the Michigan Natural Storage Company Gypsum Mine to Interpret a Mississippian Paleoenvironment: Wyoming, Michigan NATHAN NOLL
Padnos Hall 262	Spatial, Temporal, and Toxic Differences of Phytoplankton Communities in Spring Lake, Michigan BRENT KASZA

2:00 P.M.

Kirkhof Center 104	Highland Group Technology Audit CORY MCDANIEL, ALISSA STIELER, BRAD ROBERTSON, JOSH TRZINSKI, DANIEL THURSTON
Kirkhof Center 142	The Symbolism of Food in Roman Myth MELANIE COUGHLIN
Padnos Hall 107	Character Education in Wyoming Public Schools DANIEL MEYERS
Padnos Hall 108	A Prodigious Poetry Presentation JESSICA PROUSE
Padnos Hall 207	Target Inquiry: Teacher professional development impacts on classroom practices involving inquiry instruction LAURA KENNEDY
Padnos Hall 209	Construction of a pHDC-eGFP transformation plasmid for Drosophila ERIK ANDERSON, MCNAIR SCHOLAR
Padnos Hall 211	Determining the Hydraulic Conductivity through Grain Size Analysis of Monitoring Wells in Aman Park ALEXANDER FRYE
Padnos Hall 261	Where Are Michigan's Giant Salamanders: The Mudpuppy (*Necturus maculosus maculosus*) and the Western Lesser Siren (*Siren intermedia nettingi*) WILLIAM FLANAGAN
Padnos Hall 262	Stepping Lightly: Reducing the Carbon Footprint of GVSU CASEY BOASE

2:20 P.M.

Kirkhof Center 104	'merican Poems ANDREW DE HAAN
Kirkhof Center 142	Digital Wingman, Inc. BRIAN RIDER
Padnos Hall 107	Humanity in Beowulf as Revealed by the Symbolism of Mail KAITLIN LAMPHERE
Padnos Hall 108	Between Black and White WHITNEY LASTER, MCNAIR SCHOLAR

Padnos Hall 207	College Experiences and the Intercultural Development of College Students - Research to Date ERIN BERG
Padnos Hall 209	Effects of experimental manipulations on restoration of urban riparian habitat COREY KAPOLKA
Padnos Hall 261	Hidden Parameter Theory in Quantum Mechanics NICHOLAS PIKE
Padnos Hall 262	Diderot's article CAFFÉ (coffee) in the Encyclopédie REBECCA BOLEN

2:40 P.M.

Kirkhof Center 142	Interactive Media—the Next Literature? LATRICIA PHILLIPS, MCNAIR SCHOLAR
Padnos Hall 207	The Critical Nexus: Deindustrialization, Racism and Urban Crises in Post-1967 Detroit DANIELLE DERUITER-WILLIAMS, MCNAIR SCHOLAR
Padnos Hall 262	Determining Forest Health Around Urban Developments in Laketown Township, Michigan ERIN WILDT

3:00 P.M.

Kirkhof Center 104	Irrationality of Love: An Analysis of Three Foreign Novels COREY FELLOWS
Kirkhof Center 142	The Significance of Red Sox Nation BENJAMIN WINEGARD
Padnos Hall 107	Religion in the Trenches: Liberation Theology and Evangelical Protestantism as Tools of Social Control in the Guatemalan Civil War (1960-1996) BRYAN MANEWAL, MCNAIR SCHOLAR
Padnos Hall 168	The Effects of Sediment Thickness on Stream Water Temperature BRIDGET BROWN
Padnos Hall 207	How to Start a Home-Based, Web Development Business JULIANNE MINNIE
Padnos Hall 209	Marie-Jeanne Riccoboni and George Sand: Views of Love and Marriage in the Best-Selling Female Novelists of Eighteenth- and Nineteenth-Century France HEIDI COLLINS, 2007 STUDENT SUMMER SCHOLAR
Padnos Hall 211	Commitment, Involvement, and Satisfaction of Union Workers: A Research Study CHERI LOZON

Padnos Hall 261	Stoic *Lekta* and Chomsky's Super-rules DONNA ST. LOUIS
Padnos Hall 262	Adaptive Management Plan for Species Diversity and Wildlife Habitat in Hardwood Stand LINDSEY GOSS

3:20 P.M.

Kirkhof Center 142	Royal Securities - Streamlining Office Communications Using Technology RYAN GIDLEY, KIMBERLY SCHMIDT, DALAN VIENGKHAM
Padnos Hall 107	Stateness and Democratization: Differing Paths in Post-Communist Europe CHRISTIAN GOETZ
Padnos Hall 108	The Care in Caregiving KRISTEN COURTEAU
Padnos Hall 211	Student Opinions on Grand Valley s General Education Program WHITNEY MINER
Padnos Hall 261	Clementia in Cicero's Pro Ligario AARON ROZEBOOM, MCNAIR SCHOLAR
Padnos Hall 262	Parent-Child Consumption Education and Socialization CESAR GONZALEZ

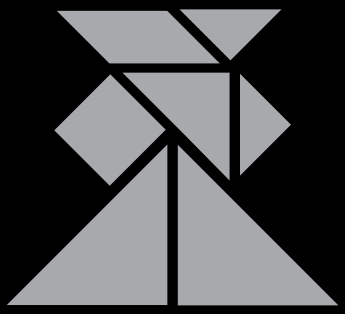
ART EXHIBITION

4:00 P.M. - 4:30 P.M.

Kirkhof Center 204	Color as Subject in Photography RYAN ESSENMACHER

POSTER PRESENTATION ABSTRACTS*

8:00 A.M. - 4:00 P.M.



"Student Scholarship Day celebrates the ideal collaborative learning model between faculty and students. Involvement in faculty-mentored student projects provides a chance for students to find, all in one experience, direct instruction in the processes of research and creative production, supported immersion in a focused academic endeavor, "shadow" experience in the culture of professional academics, and the personal fulfillment of discovery and innovation."

- DEAN GAYLE DAVIS -

*All submitted abstracts have been approved by the faculty mentor.

Henry Hall Atrium 1

Positive and Negative Perfection: Correlates with Self-Esteem, Satisfaction with Life, Rumination, and Reflection

JACLYN CHAVARRIA, DANIEL FRANCIS

Using a correlational design and a college student sample of approximately 150 male and females our findings demonstrate a significant positive correlation between negative perfectionism and low self-esteem, low life satisfaction, and rumination. Furthermore findings indicate significant positive correlations between positive perfectionism and high self-esteem, proactive coping, and high satisfaction with life. Moreover, as predicted, a positive correlation was found between positive perfectionism and self-awareness using the Kentucky Inventory of Mindfulness Skills. Importantly, this study provides a plausible explanation of how positive perfectionists are able to disengage from non-productive efforts to achieve a particular goal and/or switch tactics using proactive coping skills. This study provide further evidence for a distinction between positive (adaptive) and negative (maladaptive) perfectionism as well as reveal important implications for considering the construct.

Mentor: Lawrence Burns

Henry Hall Atrium 2

Antimicrobial Activity of BIBR 1532 and its Derivatives

BRITTANY BENSON

BIBR 1532 {(E)-2-(3-(naphthalene-2-yl)but-2-enamido)benzoic acid} is a potent, small molecule inhibitor of telomerase, which is the enzyme responsible for the maintenance of telomeres. Telomerase has been found to be active in most human cancers because the upkeep of telomeres is essential to allow for replication of the cell, but increased activity of this enzyme allows for the rapid proliferation necessary for cancer. To test for this compound's ability to inhibit telomerase, various derivatives were synthesized by nucleophilic substitution of an acid chloride with various amines. Testing for antimicrobial activity was also done because similar structures have been known to have antimicrobial activity. Initial antimicrobial testing found some activity for one of these derivatives against a gram-positive bacterium, *Staphylococcus aureus*. Further testing will be done to find the activity of this molecule against methicillin-resistant *Staphylococcus aureus* (MRSA), and more derivatives will be synthesized to test how various changes in this structure affect its ability to inhibit bacteria & telomerase.

Mentors: Robert Smart, Rod Morgan

Henry Hall Atrium 3

Microarray Analysis of CD82 Expression in Prostate Cancer Cell Lines

HRISHIKESH SINGH THAKUR, VANITHA BHOOPALAN

KAI1/CD82 is a tetraspanin protein that functions to suppress prostrate cancer metastasis. It has been shown to regulate integrin induced or HGF-mediated signaling in c-Met preventing migration and invasion and thereby inhibiting the metastasis process in prostrate cancer. There is a direct correlation between the level of CD82 expression and tumor progression i.e., loss CD82 expression has been correlated to poor prognosis in prostate cancer. The main objective of this study is to analyze the difference in gene expression between prostate cancer cells with or without CD82 using Agilent micro array technology. Our hypothesis is that there may be difference in gene expression when CD82 is expressed in tumor cells and it maybe comparable to that of normal prostate cells. Preliminary studies in our lab have indicated that CD82 may alter the distribution of c-Met on the surface and it is possible that it may be redistributing other surface proteins as well. We are currently analyzing the micro array data using a Limma-R program to identify the genes regulated by CD82. This analysis will give us an in-depth view about the types of the genes that are up or down-regulated upon CD82 expression, the specific proteins encoded by these genes, the cellular function of these proteins and if any of these proteins are specifically related to c-Met signaling pathway. In addition, we will come to know more clearly about the signaling pathways downstream to c-Met and if any additional proteins or pathways are involved in this regulatory process.

Mentor: Suganthi Sridhar

Henry Hall Atrium 4

Generation of a Mouse Monoclonal Antibody to Ovalbumin

ASHLEY MERRICK, BRIAN BRITZ, ELIZABETH SHINN, EMILIA PUCCI, RYAN DARO, REBECCA EDWARDS, MIRANDA JOHNSON

Antibodies have been used for many years as both a diagnostic tool and a research tool because they can recognize virtually any molecule or epitope, given the right conditions. Antibodies can be generated by immunizing an animal with the antigen and then collecting serum samples containing the antibody of interest. The disadvantage to this approach is that the antibodies are polyclonal and are only available for the lifetime of the animal that was immunized. Monoclonal antibodies are specific to one epitope and are generated by the fusion of B cells from an immunized mouse to immortal tumor cells, producing a hybridoma. Once a hybridoma is produced, it will continuously secrete the antibody. In this project, hybridomas will be generated from mice immunized with ovalbumin and positive clones will be identified and characterized.

Mentor: Debra Burg

Henry Hall Atrium 5

The Relationship between Perceived Social Support and Capitalization Support

RYAN SHOREY

The present study compared capitalization and perceived support by a) estimating the magnitude of social and personality influences in capitalization support, b) estimating the correlation between capitalization and perceived support, as well as c) examining the similarity of the two constructs nomological network by estimating correlations to positive affect, negative affect, trust, relationship satisfaction, conflict, perceived similarity, agreeableness, and attachment (anxious and avoidant). 106 undergraduates rated their mothers, fathers and closest peer on all constructs. Consistent with previous research, perceived support reflected mostly social influence, with less variance being attributed to recipient personality. In contrast, capitalization support was equally comprised of social and recipient influences. Pearson correlations revealed that, across all support recipients, perceived support and capitalization support were only moderately correlated and that the two constructs had similar correlations with study constructs. In multiple regression analyses, perceived support had significantly unique variance in predicting other constructs in 9/9 regressions, whereas capitalization support had significantly unique variance in 3/9. In conclusion, although perceived and capitalization support are similar constructs, capitalization support appears to capture unique variance beyond perceived support.

Mentor: Brian Lakey

Henry Hall Atrium 6

Beach Volleyball

JAMEKA BROWN

Ripped abs, toned bodies and golden tans are physical attributes of beach volleyball players that would make even the richest Hollywood star jealous. Although professional volleyball players are in great physical condition, many amateur players are not. Over the years beach volleyball has developed into a popular recreational and competitive activity around the world. It is a power-dominated sport that requires an individual to be capable of rapidly transitioning from an offensive play to a defensive play on an unstable surface. Playing on sand diminishes the ground reaction forces that indoor volleyball players receive; therefore triple extension (extension of the ankle, knee, and hip joints) while striking the ball, becomes increasingly difficult. In addition, during the game, utilization of the phospagen glycolytic energy systems induces fatigue, forcing an athlete to perform poorly. Combined with extreme weather conditions and the explosive nature of beach volleyball, many amateur athletes aren't prepared for lengthy matches. The purpose of this research project is to devise a comprehensive periodized strength and conditioning program to improve the fitness level for amateur

volleyball players. Using the macrocyle protocol, multiple training techniques and adequate nutritional intake will be the methods evaluated. Although the information gathered has been extensively researched the project itself is theoretical in nature and may not be generalizable to the entire population. This project serves to inform amateur volleyball athletes of the latest training principles and practices.
Mentor: Shari Bartz

Henry Hall Atrium 7

Pulsed Oscillating Mass Spectrometer

EMILY JONES, 2007 STUDENT SUMMER SCHOLAR

The mass spectrometer is a widely used analytical instrument that identifies chemical substances by their weight. There are many types of mass spectrometers in use today, including quadrupole and time of flight. A new type of mass spectrometer, the pulsed oscillating mass spectrometer (POMS), was developed in 2005. We have built a POMS and are characterizing and improving its performance. POMS instruments appear to be advantageous for their simplicity of operation and their unique compactness compared to other types of mass spectrometers. We will show how the POMS instrument works and what we have done to improve its limitations.
Mentor: George McBane

Henry Hall Atrium 8

Genes Possibly Involved in the Development of the Patagium in Flying Squirrel

MICHAEL SYLVESTER

Not much is known about the development of the southern flying squirrel (*Glaucomys volans)*, especially concerning the genes involved in the growth of the patagium, which is the flap of skin connecting the forelimbs and hind limbs. We believe that the genes dHand, Hoxd12, and Tbx3 have a role in the development of the patagium in the flying squirrel. These genes have been identified in mice and other mammals and are known to be expressed in the lateral plate mesoderm and posterior portion of the forelimbs. We are looking to clone these genes out of the southern flying squirrel genomic DNA. The sequences of these genes from mouse (*Mus musculus*) and norway rat (*Rattus norvegicus*) were compared and there was 97% homology for dHand, 92% for Hoxd12, and 94% for Tbx3 at the nucleotide level. PCR primers were created within the regions of highest homology. This should allow us to clone a portion of these genes from the genomic DNA of flying squirrels. Cloning results will be presented.
Mentor: Bruce Ostrow

Henry Hall Atrium 9

Further Exploration of Sonogashira Coupling in the Synthesis of Modified 2'-Deoxynucleoside Derivatives

BRANDON HAINES

Modified purine nucleosides, and in particular their 2'-deoxyribonucleoside analogs, continue to attract the interest of many synthetic chemists because of the wide ranging biological importance of nucleosides. In continuation of our effort towards the design of efficient synthetic methods for C-C, C-N, and C-O coupling in modified nucleosides, further studies have been done on the application of the Sonogashira coupling method for C-C bond formation in modified 2'-deoxyribonucleoside derivatives. Using simple bromo-aromatics and a variety of terminal alkynes, in optimization experiments, the versatility of Sonogashira coupling was confirmed. Optimum reaction conditions were then successfully applied in the coupling of bromo-2'-deoxynucleosides with terminal alkynes. The effects of CuI, ligands, amines, Pd-species, and solvents on the successful outcome of the coupling reactions were investigated. Results of our studies will be presented
Mentor: Felix Ngassa

Henry Hall Atrium 10

A Quantitative Study of Scientific Fields in the Grand Rapids Press and Their Correlation to the Michigan High School Graduation Requirements.

MICHAEL MURRAY, JOSHUA BREIMAYER, ROSS MISHLER, BRAD HENDERSHOT, AARON RICKENS, MATTHEW PISZ, SHEILA RUMPZ, NICOLE HARRIS, AMANDA STEMPKY, LYNN BUMSTEAD, SYDNEY COOKE, KRISTY BUTLER, ANDREW DEWITT, REBECCA SAUVE, BRAD STEVENS, ADAM SCHMIDTENDORFF, ROBERT SLIDER, GERALD VERWEY, MOLLY HAZEL, JODIE GRAY, CALVIN VANDER BOON, ERIN LEWIS, IAN MATHEWS, SARA BOSTELMAN, ADAM JORGENSEN, DAVID CHECK, JASON HERNANDEZ

Michigan's high school graduation requirements currently mandate that high school students earn three credits in science. Students are expected to obtain one credit in biology, one credit in chemistry or physics, and one additional credit in a field of their choice. Earth Science is listed as an "optional" course. It is hypothesized that the scientific interests expressed in one of Michigan's largest newspapers, the Grand Rapids Press, are disproportionately expressed in the scientific standards mandated for the state's middle and high school students. In the interest of society's future, research was conducted to investigate whether state standards adequately prepare students to be scientifically literate citizens. Grand Rapids Press newspapers from the year 2007 were used in this investigation. Each daily paper was examined quantitatively for scientific articles. A scientific article was defined as any article that addressed state content standards in one of nine scientific fields: Earth Sciences: (Geology, Weather, Climate, Environment, Astronomy), Life Sciences: (Biology, Bio-medical), and Physical Sciences: (Chemistry and Physics). Every scientific article for the year 2007 was tallied into one of those nine fields. Preliminary results indicate that Earth Science articles occur more frequently than their Life Science and Physical Science counterparts. The most common Earth Science topics are: weather, natural disasters, global warming and environment. The findings suggest that the science presented in the newspaper is disproportional to the science education the state requires students to obtain.

Mentor: Steve Mattox

Henry Hall Atrium 11

TAAR Activity with Conformationally Restricted Amines

KATELIN KRUMMREY, 2007 STUDENT SUMMER SCHOLAR

T1AM, a metabolite of the thyroid hormone, has previously been shown to be a potent agonist (activator) of the trace amine associated receptor (TAAR). Activation of TAAR in mice yields rapid physiological effects that include a decrease in body temperature, metabolism, and cardiac drive. Regulating the activity of the TAAR could have a profound impact on the lives of those afflicted with thyroid disease. Several compounds were examined that share structural similarities to that of T1AM, and could therefore elicit similar TAAR activity. This project dealt specifically with the common drug Apomorphine. It was found that R(-)-Apomorphine exhibits dose dependant activation of TAAR (EC50 = 440 nM), however its enantiomer (mirror image) S-(+)-Apomorphine was shown to be an antagonist (inhibitor) for TAAR, with and IC50 of 835 nM. Additionally, several more amines that represent conformationally restricted or stereospecific analogs of T1AM were also examined. Of the commercially available amines tested, 2-Aminoindan was the most potent agonist found.

Mentor: Matthew Hart

Henry Hall Atrium 12

The Effect of Music on Novel Motor Tasks

KATELYN EVANS, MARK BARTA, KRISTY BURCROFF

This study will examine the effect of music on the performance of a novel motor task. Previous research has been inconclusive about the effect of music on motor tasks. Some studies have concluded that music has no effect on performance, while others suggest that only motivational music increases performance. The subjects will perform a mirror-tracing task under two conditions. The first condition is listening to preferred music and the second condition is not listening to any music. This scientific report will include analysis of data pertaining

to the performance on the task and explore how performance increases between each trial for each condition. During mirror tracing, the subjects are required to trace a pattern reflected in the mirror. The time taken to complete the task and the number of mistakes each subject makes will be used to evaluate performance. Statistical analysis will be used to determine significant relationships and/or differences between the results collected from participants in each of the conditions.

Mentors: Bradley Ambrose, Jim Scott

Henry Hall Atrium 13

Progress Toward the Synthesis of a Water Soluble Cavitand

SHANNON MURPHY

The design and synthesis of a tetraanionic, water-soluble cavitand is reported. We plan to incorporate certain functional groups such as $NH3^{+}$ (ammonium) and CO^{2}- (carboxylate). The guest binding properties of this host will be studied via 1H NMR and mass spectrometry. We plan to study the interactions of this cavitand with compounds such as tetraalkyl ammonium salts and adamatanes. The resulting host-guest complexes can be used in relation to the human body in attempt to resemble the behavior of proteins. These studies can offer insight to our knowledge of how proteins behave and function in the body.

Mentors: Shannon Biros

Henry Hall Atrium 14

The Importance of Calcium Serving Size

AMY DELANEY

The importance of calcium and vitamin D in adolescent diets, to help prevent osteoporosis later in life, is well documented. Two significant areas that need to be further researched are: helping young people identify calcium sources for their diet and increasing their knowledge of serving sizes. The purpose of this study was to examine the intake of a variety of calcium rich foods in relation to the standard serving sizes, as reported by a group of young adolescents in a 24 hour dietary recall interview. This information will assist in health education efforts that target choices for healthy eating habits.

Mentor(s): Cynthia Coviak

Henry Hall Atrium 15

Truths and Myths about Cervical Cancer

JULIE ERIKSSON

This poster presentation summarizes an intensive literature review to investigate truths and myths surrounding cervical cancer, that is, the accuracy and inaccuracy of women's perceptions and knowledge. The poster's author is a member of a research team that, via longitudinal study, is investigating factors that influence cervical screening behavior among women, including knowledge, attitudes, and beliefs. Epidemiological data about incidence, prevalence, risk, morbidity and mortality as well as viral cause are readily available to health care providers and consumers who have adequate access to services and information. Nonetheless, lack of access to information, misinformation, incomplete information, and "contextually-interpreted" information is pervasive. For example, beliefs persist that only promiscuous women have HPV or get cervical cancer and that the Pap smear will always identify cervical cancer. These myths and many more will be presented. The multiple myths surrounding cervical cancer provide evidence that more education that is culturally sensitive and at multiple literacy levels needs to be provided to women. Additionally, health care providers need to know about these pervasive and potentially health-destructive myths so that awareness about and sensitivity to the inadequate knowledge and beliefs of some women about cervical cancer can be dealt with effectively.

Mentor: Gayla Jewell Henry Hall Atrium 16

Color Cues in Wayfinding for Aging Individuals

AMY WEBER

An interest in the use of color cues in navigation for aging individuals prompted this review of literature. Color cues are used as a means of visual enhancement to promote orientation among the elderly. As one ages, there is an increased risk of visual disturbance along with an increased risk of cognitive decline. The use of color cuing would be appropriate for a variety of elderly persons with differing cognitive abilities. Multiple studies indicate that using cues with color as an identifier provides the necessary short-term memory aid to help the aging population with navigation. By using color cues in the environment, improvements in both day to day functioning and short term memory recall are evident. The improved short-term recall seen from use of color cues in the environment aid the aging in orientation and thereby maintain or even increase independence.

Mentor(s): Rebecca Davis

Henry Hall Atrium 17

A Mysterious Meandering Mesenteric Artery

DAVID MAJKSZAK, BRIANA LONEY, JACOB MILLER

The descending abdominal aorta characteristically gives rise to two branches, the superior mesenteric artery (SMA) and inferior mesenteric artery (IMA), near the lumbar level of spinal cord. Under normal circumstances the SMA supplies blood to the small intestine, the appendix, cecum, the ascending colon, and the proximal 2/3 of the transverse colon. The remaining portions of the transverse colon, the descending colon, sigmoid colon, and the rectum receive their blood supply from the IMA. Infrequently, the SMA can fuse with the IMA, forming a 'meandering mesenteric artery.' Our research describes the results of a human cadaver dissection with a 'meandering mesenteric artery' and discusses the clinical significance of this anatomical variant on the diagnosis and treatment of the colon; including the significance of this atypical condition during surgery.

Mentors: Justin Adams, Dawn Richiert

Henry Hall Atrium 18

Hydrogen Fermentation by Soil Anaerobes and their Prospective Role in Environmental Cleanup and Alternative Fuel Production

MICHAEL MILLICAN

We are investigating hydrogen production through the fermentation of glucose under anaerobic conditions. Soil anaerobes, such as Clostridium spp., produce hydrogen naturally through the fermentation of glucose to butyrate. In the butyrate pathway, hydrogen is released in the conversion of pyruvate to acetyl-CoA. Pyruvate is converted to acetyl-CoA through the action of the enzyme pyruvate-ferredoxin oxidorectuctase(PFO), in a redox reaction where the PFO removes electrons from the pyruvate to form acetyl-CoA and PFOreduced. PFOreduced then reduces four protons utilizing hydrogenase to release two molecules of hydrogen gas. There is a theoretical yield of 4 mol H2/mol glucose, although the actual yield tends to be less because it does not account for the production of alternative intermediates that are used in other anabolic cellular processes. The goal of this project is two-fold. First, we want to determine basic conditions that produce hydrogen gas and determine other environmental conditions that might optimize hydrogen production. These initial experiments are performed using Clostridium acetobutylicum, which is known to use the butyrate pathway during its growth. Second, we want to isolate and identify organisms from various heat-treated soil samples to determine if other types of pure or mixed bacterial cultures can more efficiently produce hydrogen gas. Research in the field of microbial physiology offers developments in many areas. The production of hydrogen offers the possibly of generating a possible energy source that does not require the input of significant amounts of energy due to the harnessing of natural biochemical pathways within the microbes. In addition, these organisms have diverse metabolic

processes and could potentially be used in the treatment of wastewater and/or the breakdown of other organic waste matter. Environmentally, this would allow for the production of a clean energy source as we clean the environment as well.
Mentor: M. Aaron Baxter

Henry Hall Atrium 19

Effects of Weight Lifting and Breathing Technique on Blood Pressure and Heart Rate

ADAM LEPLEY, 2007 STUDENT SUMMER SCHOLAR

Weight training is a method commonly used to increase strength. The purpose of this investigation is to examine the effect of breathing technique (BT) during weight training on heart rate (HR) and blood pressure (BP). After completing a health history questionnaire, thirty subjects (16 males: 21.25 + 1.21 years, 180.26 + 2.36 cm, 84.31 + 19.32 kg; and 14 females: 21.29 + 2.37 years, 170.08 + 2.15 cm, 137.36 + 62.31 kg) were familiarized and tested for an estimated 1 repetition maximum (1RM) using the Bryzcki equation, on the chest press (CP) and leg press (LP) lifts utilizing each of the two BT, hold breath (HB), and controlled breathing (CB). Lifts were examined using each BT with one set of 10 repetitions on separate days; data were collected during the push phase on average of 3.72 times per set, and again at 1 and 5 minutes post lift. Resting, during lift (peak, average), 1-minute and 5-minute post lift BPs, and HR values were measured using the NIBP100A Non-invasive blood pressure system (Biopac systems, inc., Goleta, CA) for both BT within each lift. Three (HR, diastolic BP, systolic BP), 9 x 2 (BP x lift) RM ANOVAs were utilized to identify significance. HB posted higher, but statistically insignificant values for systolic BP ($p=0.420$), diastolic BP ($p=0.531$), and HR ($p=0.713$) than CB. The HB technique utilized in this investigation produced minimal elevations in HR and BP and appears to be safe when performing the CP and LP lifts at a moderate resistance.
Mentor: Brian Hatzel

Henry Hall Atrium 20

Schemas of Self-labeling and Non-labeling Sexual Harassment Victims

EMILY CUMMINS

The present study examined whether cognitive factors influence a woman's propensity to self-label sexual harassment. Seventy harassed women completed thought-listing tasks assessing the content of their sexual harassment schemas and scripts. Preliminary results indicate there exist few differences between labeling and non-labeling groups in terms of schema and script content; however, data collection is ongoing.
Mentor: Ellen Shupe

Henry Hall Atrium 21

The Biopsychosocial Impact of Emphysema

NICOLE PURDY

I will use the social work biopsychosocial perspective to look at the chronic illness emphysema. Using this perspective will allow me to examine the biological, psychological and social impact of the disease and how it affects quality of life. The biological components I will examine include: loss of lung elasticity, destruction of the lung tissue, the destruction of alveoli and bronchioles, barrel chest and shortness of breath. Psychological variables entail: helplessness, hopelessness, anxiety, depression and stress. The social impact/implications include issues of alienation, dependence, limited mobility and traveling, stress and relationships. Finally, I will review treatments for emphysema such as: quitting smoking, bronchodilating medications, steroids, antibiotics, oxygen, lung reduction surgery, transplant and some more experimental procedures.
Mentor: Joan Borst

Henry Hall Atrium 22

Exploring the Mechanism of a Class D Beta-lactamase Through Site-Saturation Mutagenesis of OXA-1 at the Valine 117 Position

JENNIFER BUCHMAN

OXA-1 is a class D lactamase that confers resistance to penicillins such as ampicillin and oxacillin. Site saturation mutagenesis of OXA-1 at the valine 117 position was completed using the overlap extension method of the polymerase chain reaction. All nineteen mutant PCR products were ligated into expression vector pOXA-1, and transformed into DH10B E. coli cells. The minimum inhibitory concentration of each mutant was established using a range of antibiotics including ampicillin, cefepime, cefotaxime, ceftazidime, and imipenem. Substitution of valine 117 with threonine, isoleucine, leucine, arginine or lysine resulted in lower but significant resistance to ampicillin, while other substitutions resulted in much lower levels of resistance. The Val117Asn variant was purified and shown to have a reduced Kcat but a similar Km compared to the wildtype enzyme.

Mentor: Dave Leonard

Henry Hall Atrium 23

A Statistical Consulting Experience: Trend Analyses of Student Evaluations

JACOB BOEHMER

A GVSU professor wished to know if his teaching methods have improved, remained the same, or decreased over his ten year career at GVSU. My role in this project was to serve as a statistical consultant and provide statistical analyses to determine if ratings on his student evaluations have changed over time. Furthermore, I investigated several other variables, such as class time (both time of day and day of week), semester (both season and year), and teaching style, to see if these variables significantly affected student evaluation ratings. My experience and select analyses will be shared.

Mentors: Steve Mattox, Phyllis Curtiss, Neal Rogness

Henry Hall Atrium 24

Inexpensive Multiplatform Polyaniline Chemical Warfare Agent Sensors

BENJAMIN EGGLESTON

Terrorism and war, in particular chemical warfare, are becoming greater threats in the world we live in today. A large reason for the fear of terrorism and chemical warfare is the apprehension of not knowing when and where the next attack may take place. Contemporary devices for detecting the release of chemical warfare agents are expensive and too slow to be used as wide scale recognition mechanisms. This research is focused on constructing a doped polyaniline sensor system that responds quickly and can be constructed at low cost. Ultimately the device would be targeted for use in a widely deployed arrangement to allow for rapid response and detection of a chemical release event. Electrochemical Impedance Spectroscopy will be used for the interrogation of the sensor platform to allow detection and quantification of specific chemical warfare agents partitioning into and out of the polyaniline matrix. This technique measures the electrochemical properties of physicochemical systems through the application of an AC potential and concurrent monitoring of the resultant AC current. The response AC current is indicative of the physical and electrochemical properties of the doped polyaniline material, properties which change with the uptake of other chemical compounds. This project has explored the response of the sensor platform to chemical warfare agent analogs, such as dimethyl methyl phosphonate (DMMP, a simulant for Sarin) and pinocoyly alcohol (a simulant for Somen).

Mentor: Cory DiCarlo

Henry Hall Atrium 25

A Grade Keeping Application

ADAM PARKER

Grade keeping can be tedious. Software can help; but, some off-the-shelf products do not offer enough flexibility when calculating grades. For example, some grading applications do not allow users to drop a student's lowest quiz grade. I have created a Java application that attempts to solve these problems. Users can enter student grades for various assignments in a spreadsheet format. Supplemental information can be added to each grade such as lateness or completeness. In addition, users can write their own Java class to calculate final grades.

Mentor: Zachary Kurmas

Henry Hall Atrium 26

If You Can Believe it, You Can Achieve It: An Investigation of Imagery Use on Performance

ALEXANDER PERRY, MATTHEW WELLER

This study proposes to investigate the impact of imagery on tactile athletic performance. A review of literature has brought to light significant evidence in favor of the use of imagery on performance in a variety of settings. For the pretest, a sample of Grand Valley students will be asked to perform a novel task, recording the rate of success. The sample will then be randomly assigned to one of two groups: a visualization group and a control group. The test group will visualize successful completion of the task twice over the course of the next 48 hours. Then, a post-test will be administered to both groups. The control group will perform the post-test without being instructed to visualize. The mean difference will be statistically investigated in order to determine significance of the results.

Mentors: Bradley Ambrose, Jim Scott

Henry Hall Atrium 27

Bone Health: Evaluating the Reliability of the Calcium Intake Inventory

MEGAN FELDMEIER

Osteoporosis is a debilitating disease characterized by low bone mass, deterioration of bone tissue, fragility, and susceptibility to fractures. An estimated 10 million Americans, or 55% of people over 50 years of age have osteoporosis. By age 20, 98% of skeletal mass is formed. The strongest defense against osteoporosis is forming strong bones during childhood and adolescence. Adequate calcium intake and physical activity are important strategies to promote bone health. The theoretical framework used to guide this research was Nola Pender s Health Promotion Model. The goal of the overall project is to determine what variables influence bone health promoting behaviors including calcium intake. Before the goal can be met, a valid and reliable survey of calcium intake must be developed. For this project, a self administered survey of calcium intake was created and administered to middle school students enrolled in a YMCA after-school program. Two weeks later the students completed the same survey. The sample included students who were between the ages of 12-14 with a variety of ethnic backgrounds. Test-retest data will be analyzed to determine the stability of the measure.

Mentor: Jean Martin

Henry Hall Atrium 28

Cloning and Recombination of a Tetracysteine Tagged ipaD into the Virulence Plasmid of Shigella Flexneri

DAVID MARTINSON

Shigella flexneri is the cause of bacillary dysentery. Upon ingestion, the organism targets the cells of the colonic epithelium. The disease is mediated by the formation of a type III secretion system (TTSS) that is encoded on a large virulence plasmid. This secretion system allows for the transit of key effectors from the cytoplasm of the bacterium directly into the cytoplasm of the targeted host cell. These secreted effectors target the host

cell's actin cytoskeleton and directs the uptake of the bacterium into the cell. IpaD is an important protein that localizes to the tip of the TTSS. This protein is responsible for controlling when secretion occurs in response to the local environment and in directing the insertion of other key bacterial effectors into the targeted cell's membrane. Utilizing a tetracysteine tag, it has been shown that IpaD is also secreted directly into the target cell cytoplasm where it appears to target the cell membrane between cells and other intracellular membrane networks. This evidence would suggest that IpaD may also have a role in cell to cell spread once an infection has occurred. Currently, the ipaD gene containing the tetracysteine tag resides on a multicopy plasmid. Past experience has shown that multicopy expression of many of the genes involved in virulence do not display physiologic localization and function at high expression levels. Therefore, it is necessary to move the tagged ipaD gene back into the single copy virulence plasmid. Genetic manipulation of the Shigella virulence plasmid is difficult due to environmental instability of the plasmid within the laboratory and to the low expression of endogenous recombinases. The focus of this project is to optimize the process of creating specific mutations within the virulence plasmid of Shigella flexneri as we replace wild type ipaD with our tetracysteine tagged ipaD. In collaboration with the Bill Picking lab at the University of Kansas, creation of this mutation in wild type Shigella would allow for a more detailed study of the role that IpaD plays in Shigella invasion and spread, and how the type III secretion system modulates these effects.

Mentor: M. Aaron Baxter

Henry Hall Atrium 29

Are We Greater Than the Sum of Our Parts? The Bilateral Deficit Phenomenon in Vertical Squat Jumping

RACHEL WRIGHT, LINDSEY VERSOLA

The bilateral deficit is the difference between the observed force produced by limbs acting bilaterally versus the sum of limbs acting unilaterally. Most previous research has been based on the hypothesis that the bilateral deficit would increase with movement velocity due to a shorter time period for the nerve impulse to reach the muscles in both limbs; whereas, slower velocities reduce the bilateral deficit. This study will test this hypothesis by measuring and contrasting the power produced by summed unilateral limbs (in this case, legs) versus bilateral limbs. Twenty college students aged 18-22, both male and female, will volunteer to jump on a force detection mat on each leg alone and on both legs.

Mentors: Bradley Ambrose, Jim Scott

Henry Hall Atrium 30

How to Prepare for Your First Ironman Triathlon

MATT THOME, COREY MCALEENAN

The purpose of this research is to provide strength and conditioning programs for elite triathletes who are taking on the challenge of their first Ironman competition. Multi-sport training can be physically demanding and also a very complicated task to plan. Specific workouts which take into consideration course knowledge, race day strategy, nutrition, fatigue, proper form, and motivation are critical to successful preparation. Because the athlete will be preparing for a 2.4 mile swim, a 112 mile bike, and a 26.2 mile run, there will be a great amount of focus on developing aerobic endurance. However, the importance of rest will also be emphasized to prevent physical and mental burnout. As training progresses, workouts will become more specific in order to simulate particular aspects of the race. Resistance training will focus on basic strength related to the kinesthetic movement patterns of swimming, biking, and running. This will minimize the risk of injury. Plyometric workouts will be incorporated closer to the competitive season to enable the triathlete to power up tough hills. Although this research is theoretical, it is based on sound biomechanical and physiological principles.

Mentor: Shari Bartz

Henry Hall Atrium 31

Identification of Novel Transcription Initiation and Polyadenylation Sites in the Hdc Gene

DAN BOOZER, 2007 STUDENT SUMMER SCHOLAR

Histamine is a biogenic amine that is used as a neurotransmitter by a variety of cell types in Drosophila melanogaster. The function of histamine in the peripheral tissues as a neurotransmitter has been well documented, while the function of histamine in centrally located neurons is less clear. Histidine decarboxylase (HDC) is the enzyme that synthesizes histamine, using histidine as the substrate. Mutants in the Hdc gene, that have no detectable levels of histamine, have been previously identified (Burg et al., 1993). Further analysis of Hdc expression using altered Hdc transgenes in this mutant background, indicated that elimination of a genomic fragment 5' to the coding region, disrupts expression of Hdc specifically in the centrally located neurons, but not photoreceptors (Burg and Pak, 1995). This result suggested that either the region 5' to the Hdc transcription unit functioned as a transcriptional enhancer element or a transcriptional promoter element for Hdc. To elucidate the manner by which this cell-specific regulation occurs, 5' and 3' RACE was performed on the Hdc transcript. Sequence analysis of cDNA ends obtained through 5' and 3' RACE indicates alternative 5' and 3' UTRs for the Hdc transcription unit. One unique alternative 5' UTR maps to the region earlier identified to be required for central brain Hdc expression, while a second 5' UTR extends the currently identified 5' UTR another 70 bp. RT-PCR was conducted, using the new cDNA sequence, to identify alternative Hdc transcripts. This analysis has revealed 2 additional splicing sites in the Hdc transcription unit. These alternative mRNA's do not change the coding region for HDC, but could be involved in the regulation of tissue-specific expression. Analysis of the relative levels of these two Hdc transcripts by Q-PCR will provide further insights into Hdc regulation.

Mentor: Martin Burg

Henry Hall Atrium 32

College Recruitment: A Comparison of Geographic Origins and Majors for University Student Populations and their Football Players (an exploratory study)

BENJAMIN SANBORN

The purpose of this study was to examine the geography of recruitment for NCAA university football players and undergraduate student populations and their declared majors. It was expected that the recruitment pattern for each school would be clustered around that school as predicted by the principle of least effort (Zipf 1949) and the Von Thunen model. Data were collected from three universities known for their athletic programs: Michigan State University, University of Florida (both Division I-A), and Grand Valley State University (Division II). All three schools have won national championships in football and have high expectations each season, which makes heavy recruitment of talented players a must. These schools also provided extensive access to both fall 2006 football roster information and university enrollment reports (study based on fall 2006 data). A geographic information system was used to examine the spatial extent of recruitment for all three schools. Results indicate that there is a presence of distance decay similar to the description by 19th century economist Johann Heinrich Von Thunen. Grand Valley State had the most localized recruitment, while Florida and Michigan State had a much broader range. Major declarations of players followed the same general curve of that for the general undergraduate population.

Mentor: Roy Cole

Henry Hall Atrium 33

Strap On Your Helmet and Wipe Off Your Smile

DANIELLE HOPWOOD

Research shows that smiling varies according to context, and that men and women differ in their tendency to smile (e.g. males smile less than females in photographs). Such variability is not surprising given the smile's apparent function in signaling submissiveness or contentment. Nevertheless, an evolutionary perspective predicts that the effect of context on smiling will vary according to the kind of individual and the environment. Here

we present what is apparently the first test of this interactive hypothesis by gathering data on headshots from university athletic websites. Researchers examined the faces of over 5500 male intercollegiate athletes participating in sports requiring direct physical contact (i.e. football, basketball) or not (i.e. golf, running). These faces were coded for a host of variables, including smiling and the presence of athletic attire (e.g. team uniform). As predicted, there was a main effect of kind sport, with athletes participating in sports requiring direct physical contact smiling substantially less. There was also a main effect of the presence of athletic attire that is, athletes wearing uniforms smiled less. As predicted, there was a significant interaction between these factors, as athletic attire was only associated with decreased smiling in football and basketball players. These relationships were not substantially altered when a variety of potential confounds were entered into the models (e.g. image size, school, athletic division, or school location). We conclude that different sports attract different kinds of people and that cues associated with competition only inhibit prosociality in men attracted to aggressive sports.
Mentor: Robert Deaner

Henry Hall Atrium 34

A Statistical Consulting Experience: Analyzing Changing Attitudes of Organized Workers in the U. S. Automotive Industry

JEFF YOUNG

In an era of free trade and globalization, American labor unions face an uncertain future. The aftermath of the North American Free Trade Agreement (NAFTA) has resulted in an exodus of manufacturing jobs. General Motors union members in Grand Rapids were surveyed in 2004 and 2007 regarding feelings and thoughts concerning their union affiliation. My role as a statistical consultant was to assist Dr. Phyllis Curtiss in analyzing these data to explore changes in levels of commitment to and involvement with the union over this three year period. The relationships between various demographics and changes in member attitudes were also considered. During my presentation I will talk about my experiences and share select findings.
Mentor(s): Neal Rogness, Brian Phillips, Phyllis Curtiss

Henry Hall Atrium 35

Growth Rate of Microcystis aeruginosa in Saginaw Bay and Lake Erie

MICHAEL REDISKE

Microcystis aeruginosa has become the dominant organism in the phytoplankton of Saginaw Bay and Lake Erie. This species produces microcystin, a potent toxin that has been measured in the ambient water of both systems at levels that exceed World Health Organization guidelines. Toxin production has been linked to many factors including growth rate. The growth rate and frequency of dividing cells (FDC) of M. aeruginosa in Saginaw Bay and Lake Erie were determined during the summer of 2006 using field measurements and laboratory studies. M. aeruginosa exhibited a strong diel pattern of cell division. The FDC peaked in the early afternoon and reached its minimum before sunrise. FDC values observed ranged from 5.5% 13.8%. Four different equations were used to determine growth rates which ranged from 0.0432 day-1 to 0.22 day-1, with a mean growth rate of 0.10 day-1. The slow growth rates suggest that M. aeruginosa would not be able to compete for nutrient resources with faster growing species of phytoplankton.
Mentor: Dave Leonard

Henry Hall Atrium 36

Computational Analysis of a Protein-protein Interaction Important in Actin Regulation: DID meets DAD

ELIZABETH SCHENKEL

Regulation of actin polymerization is important for cell division, differentiation, and growth. Problems with this regulatory system can lead to cancer. Formins are proteins found within eukaryotic cells, responsible for both the formation of fibrous actin and regulation of actin polymerization. Formin has two domains, the Diaphanous

Auto-regulatory Domain (DAD) and the Diaphanous-related Inhibitory Domain (DID), which associate to inhibit actin polymerization. Each DAD has a basic tail region, typically containing the positively-charged residue sequence RRKR. If this region is removed or mutated, then DAD can no longer bind to DID. The basic tail of DAD does not show up in X-ray structures of DAD bound to DID. To study the binding between DID and DAD, we used computer modeling to identify low energy conformers of DAD bound to DID. A preferred path for the basic tail was found, and residues on DID that interact with the DAD tail were identified. The electric field around DAD complemented the electric field around DID, presumably directing the docking of DAD to DID. We explore the strong electrostatic forces that stabilize DID-DAD binding.

Mentor: Mary Karpen

Henry Hall Atrium 37

Computational Evaluation of Small Molecules Designed to Inhibit Estrogen Production.

DANIEL MEYERS

The American Cancer Society reported that an estimated 178,480 new cases of invasive breast cancer were expected to occur among women in the United States in 2007. With an estimated 40,910 breast cancer deaths (40,460 women, 450 men) expected last year, breast cancer currently ranks second among cancer deaths in women in the United States. Roughly seventy to seventy-five percent of the reported cases are considered estrogen positive, meaning cancer growth is increased in the presence of estrogen; estrogen levels, aromatase activity, and CYP19 gene expression are elevated. Stopping the biosynthesis of estrogen by targeting hLRH-1, which regulates the CYP19 gene, with a peptide-mimicking synthetic molecule is of current interest and is hypothesized by researchers to slow the development of breast cancer and increase survival rates. Herein is reported several peptide-mimicking scaffolds that have been designed to block LRH-1 mediated CYP19 gene transcription by mimicking a conserved LXXLL motif. Chimera and AutoDock4.0 have been used to computationally examine the binding abilities of the proposed synthetic molecules.

Mentor: Matthew Hart

Henry Hall Atrium 38

Training the Novice Tri-Athlete Age 25 to 40

ADAM SCHMIDTENDORFF, JOSH LEASK

Triathlons have been gaining in popularity. USA Triathlon, an organization that acts as the sanctioning authority for more than 2,000 diverse events nationwide, claims to currently have over 90,000 members in its organization. This sport has been gaining steam because it provides its athletes with a full body cardiovascular workout and incorporates many skills that the general population already possesses; swimming, running and biking. Since tri-athletes must train for three different disciplines, they tend to have a more balanced whole-body muscular development than pure cyclists or runners, whose training emphasizes only a portion of their physique. Another appealing characteristic of this sport is its low impact nature. Individuals who have been plagued by injury or joint problems are still able to train in one event while resting in another. The purpose of this research is to provide a periodized regimen to train a novice tri-athlete in preparation to complete a sprint triathlon (consist of a 500 meter swim, 10 mile bike and 3 mile run). The project will examine the early, middle, and end training facets that go into preparing for a triathlon, as well as the organizational and nutritional aspects of being a competitive tri-athlete. Again this research will focus on the novice athlete who has basic the physical abilities and endurance levels required for each event.

Mentor: Shari Bartz

Henry Hall Atrium 39

Exploring the Limitations of POMS Mass Spectrometry

JOSEPH LOVISKA

The Pulsed Oscillating Mass Spectrometer (POMS) is an experimental tool for finding the masses of ions. The ions oscillate in an electrostatic trap, producing signal peaks on each round trip; each ion's mass is determined from the temporal spacing between its peaks. The POMS instrument works in the same general way that the more widely used time of flight mass spectrometer works, with only a fraction of the space and cost. The main drawback of the instrument is poor resolution due to ion spread. To fix this problem we looked into the main mechanism for ion spread and proved, through a series of simulations and tests, that the spread is due to ions being created at different places in the trap. We also present examples of data from several different molecules to demonstrate the range of applicability of the instrument.

Mentor: George McBane

Henry Hall Atrium 40

Restoring Urban Riparian Habitat: Do Manipulations Affect the Behavior and Abundance of Birds?

SARAH BRIDWELL, 2007 STUDENT SUMMER SCHOLAR

Urban ecosystems harbor native biodiversity and provide ecological services, but are degraded by human activities. A variety of manipulative treatments may be applied to degraded habitats to aid their restoration to more productive states. Our study site, a small inland lake in Michigan, underwent extensive gravel mining until 2002, but is now the subject of two experiments in ecological restoration addressing soil and seed bank quality of the riparian zone. Perches and rodent-exclusion fences were installed in 2005 to assess their effects on vegetation, but these structures might also affect birds. We assessed these effects by observing birds in 30-minute bouts, recording the species, behavior and location of all birds observed in experimental areas (plots contain installed structures) and control areas (plots with manure and sucrose/mulch amendments that should not affect birds). We also compared bird abundance and behaviors within the four types of experimental plots (perch only, rodent-exclusion fence only, perch and fence, control) to assess small-scale effects of experimental treatments. During summer and fall, 2007, we observed 45 species in the lake's watershed, about half of which used the observation areas for some activities (e.g., foraging). Seven of these species centered their activities in the study area, including three that nested there. Bird activity was higher in experimental vs. control areas, especially in near-shore plots, but abundance and species diversity did not differ significantly. When birds occupied the 1 m x 1 m plots (rather than observation areas including surrounding habitat), plots containing perches were used significantly more than plots lacking perches; rodent-exclusion fences did not affect bird behavior or abundance. Experimental treatments influenced birds primarily by providing perches used for preening, calling, and male singing.

Mentor: Jodee Hunt

Henry Hall Atrium 41

Adaptive Management Plan for Baby's Breath on the Northern Lake Michigan Shore

JUSTIN SCHNEIDER

Located along the northwest shoreline of Michigan's Lower Peninsula are unique dune ecosystems. These ecosystems were shaped by glaciers that once covered the area and have further changed over time through the action of glacial melt water, wave, and wind erosion. These dune ecosystems support characteristic vegetation and wildlife resources. The ecology of these dunes is currently being threatened by the invasive exotic plant species, baby's breath (*Gypsophila paniculata*, referred to as GYPA). GYPA is a highly-invasive exotic species that can replace native vegetation through direct competition and reduce habitat for native plant and animal species by stabilizing dunes that would otherwise have been in motion. The immediate management goals are to test different control methods in order to derive a management plan to control GYPA. In this study I am

going to look at the different removal techniques and explain why one is better than the other. The different control methods that I will look at are herbicide and manual removal. The developed management plans are going to serve as a guide for long-term management of GYPA. Changes to the plan should occur as more effective treatment practices become available (i.e., a selective biological control).
Mentor: Carol Griffin

Henry Hall Atrium 42

Anticipating Terrorism in Detroit

RICHARD COLE

Anticipating Terrorism in Detroit Richard Cole Following the attacks on the World Trade Center, Oklahoma City Federal Building, the Twin Towers and the Pentagon, it has become apparent local government needs to prepare for future attacks on their cities. Each city and town has facilities and operations that are susceptible to attack. The critical infrastructure includes telecommunication centers, electrical power systems, banking and finance, water supply systems, emergency services, as well as, oil and gas production, storage and distribution. Each of these areas are identified within the city of Detroit. The software being used includes ArcGIS 9.2 and Erdas Imagine 9.1. The downloaded orthophotos of Detroit and the transportation network of Wayne County were provided by the Michigan Geographic Data Library. Evacuation and emergency response routes will be included, and also containment and safety zones. All of this information will be entered and analyzed using geographic information systems (GIS) and remote sensing technology.
Mentor: Wanxiao Sun

Henry Hall Atrium 43

What Does Your Pyramidalis Muscle Do for You?

DENITA WEEKS, MCNAIR SCHOLAR

Epipubic bones are found in all mammalian taxa except for placental mammals. Their function in monotremes and maruspials is poorly understood, but it has been suggested that the bones and accompanying muscles serve to support the pouch or young attached to the belly during swaying locomotion seen in these mammals. It has also been suggested that one of the supporting muscles, the pyramidalis muscle, is only found in mammals that have the epipubic bones. However, the pyramidalis muscle has been found in placental mammals, including humans, without serving any particular function. This suggests that ancestral mammals may have had both epipubic bones and pyramidalis mucles, and placental mammals lost the epipubic bones but retained the pyramidalis muscle. In this study, a variety of mammals were investigated to observe the presence of the pyramidalis muscle and the findings were considered in relation to its presence in humans.
Mentor: Tim Strickler

Henry Hall Atrium 44

The Effect of Prolonged Incubation with Dihydrotestosterone on Coronary Arteries

ERICA BECHTEL

The purpose of the study was to determine if prolonged incubation of coronary arteries with dihydrotestosterone (DHT) alters vascular responses to potassium chloride (KCl), a vasoconstrictor, and 6-(2-hydroxy-1--methyl-2-nitrosohydrazino)-N-methyl-1-hexanamine (NOC-9), a vasodilator. Porcine coronary arteries were dissected, mounted in tissue baths, connected to force transducers, and incubated with 10-6 M DHT or vehicle for four hours. Following incubation, the arteries were exposed to increasing concentrations of KCl (5-20 mM) and NOC-9 (10-8 10-5 M). Responses were recorded as changes in tension.
Mentor: Francis Sylvester

Henry Hall Atrium 45

Educating the General Public about the LGBT Community

TRACI JOSEPH, CHAD VANDER HENST

Our group's investigative process involved researching the 2004 Marriage Amendment, the attitudes evident when this initiative was put on the ballot, and who was involved. We also produced a survey that was given in the Traverse City area. We wanted to know the views and opinions of the general public regarding the issue of same sex marriage. One goal of our survey was to determine if the views in 2007 correlated with the views in 2004 when the Marriage Amendment was on the ballot. The results were mixed, civil unions were favored by 49% of our sample, but 56.4% of the respondents did not favor same sex marriage. We concluded that opposition to same sex marriage has thrived due to lack of education regarding the gay and lesbian community. We have created a plan for community education on LGBT issues.

Mentor: Jacquelyn Abeyta,

Henry Hall Atrium 46

Nutrient Effects on Transcript Levels of a Novel Soybean Gene

KRISTA GEISTER

Investigating the function and transcriptional response of a novel soybean gene is certainly relevant, given that the soybean is one of the most important crop plants. The gene was isolated as an insert from a cDNA library, which was generated from methyl jasmonate-treated tissues. Sequence analysis did not yield any information about the cDNA s function in vivo. To test relative levels of the novel transcript, experiments were designed based on findings from vegetative storage proteins (VSPs), which have been shown to be responsive to methyl jasmonate (MeJA) or jasmonic acid (JA) alone and in combination with sugars. After JA and sugar treatments, relative transcript level was determined using RT-PCR. Insert-specific primers generated a product of the expected size (648 bp), as well as an unexpected 850 bp long product, which is most likely the result of alternative splicing. Transcript levels as visualized for the 648 bp product did not correlate to the VSP expression pattern, however, transcript levels as detected by the 850 bp product did. VSP transcript levels increase as nitrogen availability increases, and decreases in response to higher concentrations of phosphate. Soybeans will be treated with a range of nitrogen and phosphate concentrations, with RT-PCR performed as before. One might expect these treatments to affect transcript levels of the novel gene in much the same way as they affect VSP transcript levels. These findings may offer new information about expression of the novel gene in response to nitrogen and phosphate.

Mentor: Margaret Dietrich

Henry Hall Atrium 47

Comparative Studies of 1,3,5-cyclohexanetriol and Inositol Hydrogenation on Metal Catalysts

NATHAN CRAFT

The hydrogenolysis of cis,cis-1,3,5-cyclohexanetriol and myo-inositol is addressed. These compounds serve as models for sugars as potential biomass feedstocks for major commodity chemicals such as ethylene glycol, propylene glycol and glycerol. Various high temperature, H2 pressure, and catalytic conditions are investigated for effectiveness. 5% Ru/C is proposed as the most effective catalyst for hydrogenolysis at H2 pressures of 550psi and temperatures of 150°C. A mechanism for the hydrogenolysis of cis,cis-1,3,5-cyclohexanetriol to cyclohexanol is proposed in addition to a mechanism for the isomerization to cis,trans-1,3,5-cyclohexanetriol.

Mentor: Dalila Kovacs

Henry Hall Atrium 48

Comparing Prenatal and Laboring Care of Women: A Look at the United States, Russia, and Zimbabwe

RACHEL JOHNSON

The purpose of my research was to learn about different aspects of reproductive health care of women by comparing prenatal care and labor and delivery care of three countries. This was accomplished by investigating differences in the access, quality, and methods of delivery of care in a 1st world country -the United States, a lesser developed country - Russia, and a 3rd world country - Zimbabwe. The focus of my research was to compare and contrast prenatal and labor and delivery care in all three countries, highlighting similarities and differences as well as strengths and weaknesses. My investigation consisted of an analysis of research articles from databases like CINAHL, personal interviews with those who have practiced in said countries, and other professional literature.

Mentor: Gayla Jewell

Henry Hall Atrium 49

Selective Functionalization of 3,3',5,5'-tetrakis(trifluoromethyl)biphenyl

SARAH ANZELL

Experiments are described in the attempted regioselective deprotonation and functionalization of the previously reported 3,3',5,5'-tetrakis(trifluoromethyl)biphenyl. Analytical data (NMR, GC-MS) will be presented showing the partial preference of ipso reactivity over meta reactivity in deprotonations, under a variety of experimental conditions.

Mentor: John Bender

Henry Hall Atrium 50

Improving MODIS Data Using Knowledge Based Expert System

BRENT THELEN

The MODIS PFT (plant function type) is a 1 km resolution NASA product that provides the general trends of vegetative cover on the global scale. A Knowledge Based Expert System is a problem solving and decision making system based on knowledge of a set of logical rules. This project utilizes a knowledge based expert system and Knowledge Engineer to improve the accuracy of the MODIS product. See5 is used to generate the rules that are fed into Knowledge Engineer in ERDAS Imagine. Data being used includes time series data Leaf Area Index (LAI) and Enhanced Vegetation Index (EVI), National Land Cover data, and digital elevation model data. The area of focus for this project is Michigan.

Mentor: Wanxiao Sun

Henry Hall Atrium 51

Genetic Factors Involved in the Development of the Plagiopatagium in the Southern Flying Squirrel

NATASHA SCHILLER

We are interested in the development of the plagiopatagium of the southern flying squirrel, *Glaucomys volans*. The plagiopatagium is a membranous wing-like structure that forms between the fifth digit of the forelimb and the first digit of the hindlimb along the side of the body. The development of the plagiopatagium of flying squirrels is not understood. Homeobox (Hox) genes and Sonic Hedgehog (SHH) are involved in regulation of mouse limb development. We hypothesize that two Hox genes, HoxA13 and HoxD13, as well as SHH also might play a role in the development of the plagiopatagium. Our objective is to clone these genes from G. volans using PCR. This will allow us to retrieve an accurate and exact sequence of each gene to be used in future probing of squirrel tissues. PCR primers were designed based on known mRNA sequences for each gene. Alignment of mRNA and amino acid sequences indicated regions of high conservation across species such as mouse, rat, human, opossum, and 13-lined ground squirrel. The primer sequences designed for HoxA13 came

from an area that showed high identity (91, 98%) between mouse and human in both nucleotide and amino acid sequence. The primer sequences designed for HoxD13 came from an area that showed high identity (88, 94%) between mouse, human, and 13-lined ground squirrel in both nucleotide and amino acid sequence. Primer sequences designed for SHH came from an area that showed high identity (78, 100%) between mouse and human at both the nucleotide and amino acid level. Gene cloning results will be presented.
Mentor:Bruce Ostrow

Henry Hall Atrium 52
Cosmetic Surgery Attitudes: Values and Mortality Salience
SAMANTHA SCHENK, KELLY VALDIVIA

We examined the effect of mortality salience on attitudes about cosmetic surgery. Findings indicate that participants who were low on a measure of intrinsic aspirations (i.e., less likely to seek affiliation, self-acceptance, and community) were more accepting of cosmetic surgery when their mortality was made salient.
Mentor: Donna Henderson-King

Henry Hall Atrium 53
Molecular Regulation of the Diaphanous-related Formins
KATE VELTMAN, 2007 SUMMER SCHOLAR

Diaphanous-related formins (DRFs) are a conserved family of proteins found in a wide variety of species, including humans, mice, yeast and slime mold. They are known to play an essential role in cell mobility, division and morphology. Because these processes are so important to cell integrity, it is imperative to understand the mechanism by which these proteins are regulated in cells. It has been shown that DRFs normally exist in a "closed" inactive state, facilitated by the binding of two regions of the protein, the Diaphanous Autoregulatory Domain (DAD) and Diaphanous Inhibitory Domain (DID). The binding of an important cellular signaling protein, Rho GTPase, serves to "open" and activate the DRF protein. However, recent studies have shown that, while necessary to the regulation of DRFs, Rho GTPase binding is not sufficient to fully activate the protein. Our laboratory has hypothesized that phosphorylation, a widespread method of cellular signaling, may be required to fully activate the protein. In the search for potential DRF phosphorylation sites, undergraduate students in the laboratory identified 8 possible amino acid residues that have a high probability of being phosphorylated. Using site-directed mutagenesis, we have generated mutations that would mimic both "on" and "off" phosphorylation states at these specific sites. In addition, we have discovered that the DRF protein is phosphorylated by the specific kinase, p21-activated kinase (PAK). Through the use of in vitro kinase assays, our results show that PAK phosphorylation occurs at the DRF amino acid serine-150. We have also used cellular microinjection to monitor the expression of the mutant DRF proteins in a human cervical cancer cell line to fully visualize the effect of the activated and inactive proteins. This is the first time that it has been definitively shown that any DRF is phosphorylated, however, further studies are needed to address whether the phosphorylation of serine-150 by PAK plays an integral role in DRF regulation.
Mentor: Brad Wallar

Henry Hall Atrium 54
Stability of Reticulocytes versus Temperature and Time
KIMBERLY CLARK, LISA HARDY

This study was designed to investigate the effects of temperature and time on reticulocyte stability in human blood because of the increasing problem of delayed sample analysis due to trends towards larger, more centralized laboratories. The study involves 25 participants, three tubes of blood per subject, tested at four degrees Celsius, room temperature, and at human body temperature. The blood is tested at one (initial), four, eight,

twelve, and twenty-four hours. The data will be statistically analyzed using the Student s t-test to determine the effects of time and temperature on reticulocyte stability. Our null hypothesis is that both temperature and time will have a clinically significant effect on reticulocyte counts and percentages.
Mentor: Linda Goossen

Henry Hall Atrium 55

The Harmful Effects of Household Cleaners

JULIA VOGELSANG

With all the health concerns in our world today, it is no wonder we overlook daily environmental hazards. Common household cleaners contain dangerous chemicals and toxins that can put our health at risk. This project will detail common household cleaners and the hazardous effects associated with them. There are many alternatives to the harsh cleaners of which the general public may be unaware. These alternatives are becoming less expensive and easy to find. Natural, safe cleaners are available in health foods stores as well as local grocery stores. Books and articles with recipes to make natural cleaners are available to the public. I will be investigating the effects of natural cleaners in comparison to cleaners made with harsh chemicals to find out which alternatives will help toward a safer, more natural, environment.
Mentor: Gayla Jewell

Henry Hall Atrium 56

Analyzing Land Cover Change in the State of Michigan from 1992 to 2001

IAN FOX

Looking at land use patterns for the state of Michigan can give insight into how land cover and land use has changed over time. Data utilized in the project comes from National Land Cover Data (NLCD) datasets from 1992 and 2001, and specifically the data for the state of Michigan was used. These datasets were downloaded from Multi-Resolution Land Characteristics Consortium (MRLC) website, along with subsequent metadata files. The remotely sensed images were put into an image analysis program, in this case Idrisi. After making sure images have the same classification schemes, a post classification change detection algorithm was used to single out areas of land use change. This change analysis can be used to help determine future patterns of land use and change, and also gauge the scope of urban sprawl. One can also use this analysis to see how this urban sprawl affects surrounding vegetation, the amount of farmland in use. Other major changes in land use patterns can also be looked at by using this analysis.
Mentor: Wanxiao Sun

Henry Hall Atrium 57

Wayfinding Performance and Attention in Middle Aged and Older Adults

LYNDSIE ALLEN

Selection of relevant information from the environment is vital for proper wayfinding. Evidence exists that attentional difficulties decrease one's ability to focus on relevant information that is intended to aid in finding one's way within the environment. Recent studies have suggested that the difficulties encountered in route-finding are related to deficits in visual perception. Because of these insufficiencies, individuals are less able to disregard distractions and identify proper cues when finding their way. The current study is examining the potential relationship between attentional ability and wayfinding performance in adults aged 55 and over. Wayfinding performance was examined in a virtual reality setting in which individuals had to find their way to a hidden platform using several types of cues. Attentional ability was measured using digit span tests and trail making tests. Attentional ability was hypothesized to be positively related to wayfinding performance. Data from this study may aid in understanding how individuals who have attentional problems, such as those with dementia, might benefit from the purposeful use of cues to help in wayfinding.
Mentor: Rebecca Davis

Henry Hall Atrium 58

Do Aspects of the Self Predict Cosmetic Surgery Attitudes?

AMANDA MITCHELL, RACHEL VESEY

Rates of cosmetic surgery have been increasing rapidly within the last decade. The current study focuses on two aspects of the self that may be related to attitudes toward cosmetic surgery. Specifically, we will examine whether individuals' level of public self-consciousness and the degree to which they emphasize physical attractiveness are related to cosmetic surgery attitudes. We expect to find that public self-consciousness and importance of attractiveness are positive predictors of acceptance of cosmetic surgery. Regression analyses will be used to test our hypotheses. All analyses will be conducted separately by sex.

Mentor: Donna Henderson-King

Henry Hall Atrium 59

Analyzing Land Cover Change in the State of Michigan from 1992 to 2001

AARON CUMINGS

Analyzing Land Cover Change in the State of Michigan from 1992 to 2001 Aaron Cumings and Ian Fox Looking at land use patterns for the state of Michigan can give insight into how land cover and land use has changed over time. Data utilized in the project comes from National Land Cover Data (NLCD) datasets from 1992 and 2001, and specifically the data for the state of Michigan was used. These datasets were downloaded from Multi-Resolution Land Characteristics Consortium (MRLC) website, along with subsequent metadata files. The remotely sensed images were put into an image analysis program, in this case Idrisi. After making sure images have the same classification schemes, post classification change detection algorithm was used to single out areas of land use change. This change analysis can be used to help determine future patterns of land use and change, and also gauge the scope of urban sprawl. How this urban sprawl affects surrounding vegetation, the amount of farmland in use. Other major changes in land use patterns can also be looked at by using this analysis.

Mentor: Wanxiao Sun

Henry Hall Atrium 60

Reducing Traffic Congestion on Detroit Highways Using Predictive Modeling

ANDREW VAN GARDEREN, ALLISON WEHR

The Detroit Metropolitan Intelligent Transportation Systems has sensors placed along highways that collect various data on traffic patterns. Focusing on data collected specifically from the I-75 corridor, we are attempting to predict traffic flow patterns to prevent congestion before it occurs. The project is ongoing and is still in the beginning stages. Initial data manipulation and exploratory analyses have been done. This presentation focuses on the statistical aspects previously mentioned.

Mentor: David Zeitler

Henry Hall Atrium 61

Eccentric Training and Muscle Gain for Natural Bodybuilding

JASON BINKOWSKI BINKOWSKI, JEFF SINICKI

Natural bodybuilding is a sport of perfectionism. Competitors are judges on muscularity, symmetry and conditioning. The competition itself requires competitors to hold specific poses through many isometric contractions. In the off season, the main goal is to gain significant amounts of lean muscle mass. The purpose of this presentation is to provide a periodization model with the strict application of eccentric training included into a typical bodybuilding routine, for a natural bodybuilder striving to achieve maximum muscle growth. The main focus of this program will be on increasing muscle mass. An important part of any muscle building program is the implementation of a scientifically based nutrition program. In addition, the inclusion of research

based eccentric training should hypothetically decrease the time course of hypertrophy. The information provided by this presentation will help inform a natural bodybuilder, as well as the amateur weight lifter, on ways to gain muscle and strength more efficiently.
Mentor: Shari Bartz

Henry Hall Atrium 63
Profiles of the Godless: Characteristics of a Non-Religious Group
MELISSA MCDONALD, JENNIFER LORD, BEN TOLMAN

The present study attempted to identify the characteristics of a West Michigan secular/ non-religious organization (Center for Inquiry-Michigan). There is a dearth of research on the non-religious in America due to the relatively small numbers of atheists and agnostics. Therefore, many of the relationships between measures of personality, social relationships, and community integration are unknown for this population. The current study used an online survey made available to members of CFI-M on their e-mail list. Three hundred and seventy-seven complete records were received. Measures included demographic information, philosophical and religious beliefs, social and familial relationships, life satisfaction, personality, and organizational involvement. Member subtypes were identified with distinct profiles and organizational needs. Relationships were found between the members' low levels of religiosity and aspects of their social functioning.
Mentor: Luke Galen

Henry Hall Atrium 64
Faculty Course Scheduling Tool
CORY GROSS

Steady increases in the number of students and courses at Grand Valley have contributed to growing complexity involved with scheduling professors to teach courses. The purpose of the GVision (Grand Valley Interactive Scheduling Interface On the Net) project is to help alleviate some of the burden placed on department directors involved in the scheduling process. The website is designed to allow faculty to indicate their preferences of teaching specific courses by using a day or week calendar layout. A director can then piece together a schedule based on information collected from the faculty members.
Mentor: Zachary Kurmas

Henry Hall Atrium 65
A Statistical Consulting Experience: Evaluating the Characteristics of Transumers at the Muskegon Summer Celebration
PATRICK DONAHUE

Pat Driscoll, of the Muskegon Summer Celebration, wanted to understand demographic information for attendees of the event. The information obtained would give him ideas about ways to better market the event in the future. He mainly wanted to focus on the characteristics for the attendees who were considered transumers. My role as a statistical consultant was to analyze relationships between demographic variables and transumer status.
Mentor: Neal Rogness

Henry Hall Atrium 66

The Real Guitar Hero

STEPHEN SALERNO

One stumbling block for many guitar players is recognizing the location of specific scaler patterns to play over a given chord progression. I have created a computer program that will aid in recognizing scale locations for a given key, chord progression, and scale type. This program helps identify key places on the guitar neck that these scales intersect, with emphasis on learning these locations for lead playing. Going beyond static guitar charts, this program aids a user in learning the relationship between a scale and other scales in the same key.

Mentor: Hans Dulimarta

Henry Hall Atrium 67

Mapping Plant Functional Types for the Great Lakes Region

GREG LOWMAN, ENZO CRESCENTINI

Plant functional type (PFT) is a critical variable required in carbon, ecosystem and climate models. Accurate mapping of PFTs over large areas can contribute to improved predictive capabilities of environmental modeling at global and regional scales. Using remote sensing techniques to extract PFTs over large areas is a relatively recent field of research. To date, only a very few methods for mapping PFTs exist and the PFT data sets generated with existing methods often contain large errors and uncertainties. A new multisource evidential reasoning method has been developed by Sun et al. This new method has been tested over four U.S. states (i.e., Illinois, Indiana, Iowa, and North Dakota) where crop land dominates. Preliminary results suggest that multisource data fusion is a promising approach to improved mapping of PFTs. The overall objective of this proposed research is to apply, expand, and validate the new methodology in the Great Lakes region and to produce a regional PFT data set that can be utilized by the environment research community and government agencies in the study area. The data sets to be used include 1) the high-level products from Moderate Resolution Imaging Spectroradiometer (MODIS) Land Team such as seven spectral albedos and enhanced vegetation index (EVI), 2) improved MODIS leaf area index (LAI) from a NASA funded data assimilation project, and 3) ancillary climate data.

Mentor: Wanxiao Sun

Henry Hall Atrium 68

Lean Manufacturing: A Case Study of Johnson Technology's Journey to the Next Level of Production

EVERETT SMEDLEY

Lean manufacturing and six-sigma initiatives have the potential to provide extensive benefits to implementing organizations. In the past, companies have used either lean manufacturing or six-sigma as a way to cut costs, eliminate waste, reduce defects, improve quality and increase customer satisfaction. However, companies can achieve greater advantages by combining the strengths of both methodologies. As such, more recently, companies have started to merge these two complementary practices, resulting in the introduction of the "lean six-sigma" concept. In this paper, by means of a detailed case analysis, we demonstrate how a major aircraft manufacturing company, located in West Michigan, successfully incorporated the lean six-sigma concept into its operations. We discuss the factors that facilitated the success of lean six-sigma and provide suggestions for managers who are considering implementing similar improvement strategies.

Henry Hall Atrium 69

The Effects of a Fatigue Countermeasures Program on Daytime Sleepiness and Sleep Quality in Hospital Nurses

ERIN HUGHES

The purpose of this study is to examine the effect of a fatigue countermeasures program for hospital staff nurses (FCMPN). The FCMPN, modeled after programs used in aeronautics, aviation, and industry, combines sleep hygiene education with strategic use of naps and caffeine to improve sleep duration and decrease fatigue. This presentation will examine the effect of the FCMPN on selected sleep/wake variables including sleep quality and daytime sleepiness among 30 full-time hospital staff nurses. Pre-test data will be compared with data collected 6-weeks following the FCMPN intervention.

Mentor(s): Neal Rogness, Linda Scott

Henry Hall Atrium 70

The Effects of Androgens on Coronary Arteries

DAVID MAJKSZAK, OMKAR HIREKHAN

Coronary arteries are responsible for supplying the muscle of the heart with blood. Just like other arteries of the body, coronary arteries contain specific receptors that recognize different hormones, including androgens. Our research deals with the effects that these receptors have on mediating the response of coronary arteries to androgens.

Mentor: Francis Sylvester

Henry Hall Atrium 71

Time Flies: Improving the Speed of the Elite 100-Meter Hurdler through Resistance Training

JENNIFER TULPA, JAMES GALE

Current strength and conditioning programs are highly effective for track and field athletes who participate in explosive events, such as the 100-meter hurdle sprint. The purpose of this program was to provide a periodization model for an elite, Olympic-caliber hurdler who sought to improve performance and increase strength. Because there are so many ability levels in the track and field world, it is difficult to find a program that is designed for the elite athlete. Therefore, this program was designed to benefit the elite 100-meter hurdler. By applying the periodization cycles method, the program examined the physical preparation of a competitive routine, as well as the nutritional needs of an elite athlete. The biomechanics of sprinting and hurdling were also observed. The information presented is theoretical and therefore poses a limitation to the effectiveness of the program. However, the benefit of the program was the use of scientific validation to help the athlete achieve greater strength, improved biomechanics, and a healthier diet.

Mentor: Shari Bartz

Henry Hall Atrium 72

The Relationship between Physical Activity and Mood

CHRISTINE SAKSA, CARRIE HAUSE, AMANDA HILTZ

The relationship between exercise and an improved mood has been clearly established in past research. This study is designed to evaluate the relationship between an individual's overall mood and the type (i.e. aerobic, weight-lifting, team sports, exercise classes, etc.), duration and frequency of exercise habits. A descriptive research design will be used in order to test the hypothesis that high exercise frequency improves mood. Students from Grand Valley State University will complete a survey pertaining to their exercise habits in the current semester. This will be followed by the administration of the Profile of Mood States (POMS). Students' exercise habits will be categorized and then compared to their overall mood based on the results of the surveys.

Mentors: Jim Scott, Bradley Ambrose

Henry Hall Atrium 74

Dynamics of the Dual Billiard Map

DANIEL GORSKI

This work was done at the Grand Valley State University 2007 REU by Daniel Gorski and Hanna Komlos under the supervision of Professor Filiz Dogru, Ph.D. We study the dual billiard map in the Euclidean and hyperbolic planes. In particular, we concentrate on regular polygonal tables which tile the plane.

Mentor: Filiz Dogru

Henry Hall Atrium 75

Telomerase Inhibitor BIBR1532 and its Derivatives as Novel Antimicrobials

ARTI WALKER , 2007 STUDENT SUMMER SCHOLAR

Increasing resistance to antibiotics by certain bacterial species has made it imperative that novel compounds be tested and used to help alleviate the rise of resistance to penicillin-based antibiotics. Improper use of antimicrobial compounds has led to the rise of resistant species of bacteria such as methicillin resistant *Staphylococcus aureus* (MRSA), vancomycin resistant enterococci (VRE), and extreme drug resistant tuberculosis (XDR). The main focus of our research is to test the known telomerase inhibitor, BIBR1532 {(E)-2-(3-(naphthalene-2-yl)but-2enamido)benzoic acid}, for potential antimicrobial properties. Presently, no known testing of BIBR1532 against microorganisms has been performed or published. Our approach in examining the antimicrobial properties of BIBR1532 was to dissolve purified crystals in sterile 20% triethanolanime (TEA) for a final concentration of 10mg/ml. Disk Diffusion tests, along with tests for the minimum inhibitory concentration (MIC) when appropriate, were preformed on 15 bacterial and five fungal species. BIBR1532 produced a zone of inhibition against six Gram positive and two acid-fast species. No zones of inhibition were produced against any Gram negative bacteria or fungi. The MIC range for all inhibited organisms is 0.078-0.63 mg/ml. *S. aureus* was inhibited by the compound, and as a result, a MRSA strain was then tested. Test results show an MIC for MRSA of 0.078-0.156 mg/ml. Additionally, chemically synthesized derivatives of BIBR1532 have also been tested, and a brominated version as well as precursors of the derivatives show inhibition against certain Gram positive species. These results demonstrate that BIBR1532 is a novel, non-penicillin based antibiotic that could be used to treat MRSA and other Gram positive infections.

Mentor: Rod Morgan

Henry Hall Atrium 76

Rook Polynomials

ADAM ATKINS

In chess, the rook moves any distance across the board, horizontally or vertically. Rook polynomials are used to count the number of ways non-attacking rooks can be placed on "chess boards" of various shapes. In this presentation, we examine the properties of rook polynomials and explore one possible generalization of these polynomials to "boards" of three or more dimensions.

Mentor: Feryal Alayont

Henry Hall Atrium 77

Neuroprotection of Porcine Retinal Ganglion Cells By Modulation of alpha7-Nicotinic Acetylcholine Receptors

MEAGAN STEWART, 2007 STUDENT SUMMER SCHOLAR

Retinal ganglion cells (RGCs) are responsible for transmitting visual information from photoreceptors in the retina to visual centers in the brain. Previous research on RGCs has revealed their vulnerability to glutamate-induced excitotoxicity, resulting in apoptosis. However, activation of nicotinic acetylcholine receptors (nAChRs) located on RGCs has been shown to protect them from an apoptotic fate. In this study, we attempted to

further exploit the protective effects of a nAChR agonist selective for the alpha7 subtype of nicotine receptor by applying a drug modulator in combination with the agonist to isolated RGCs. These cells were first exposed to treatments of various concentrations of agonist with or without modulator and later challenged with glutamate for 3 days. It was found that the selective agonist performed as expected, protecting the retinal ganglion cells from a glutamate-induced death. The selective modulator enhanced the protective action of the selective agonist in a dose-dependent manner with maximal effects exceeding survival seen under control conditions. Further research will need to be conducted to deduce the intracellular mechanisms of this agonist-induced protection and the enhancement observed by the modulator.

Mentor: David Linn

Henry Hall Atrium 78

Prevention of ACL Injury in the Female Athlete as a Component of Strength and Conditioning Program

JESSICA RHODES, STEVE SMITH

A vast amount of research has been conducted delving into the cause of season ending anterior cruciate ligament (ACL) injuries. In women's collegiate basketball games, 64% of injuries to the ACL result from a non-contact mechanism. It has been suggested that the female athlete is more prone to ACL injuries because of several factors including the effects of estrogen on the laxity of this ligament, the excess valgus stress on the knee due to the misalignment of the kinetic chain, and poor mechanics when jumping. It would seem that improving neuromuscular control and jumping mechanics would lead to a decrease in the risk of ACL injuries. The purpose of this presentation is to develop a periodized strength and conditioning program following an ACL reconstruction and return to normal activity for the collegiate women's basketball player. Through a review of studies performed on the frequency and mechanism of ACL injuries, this research will focus on the integration of ACL injury prevention into the strength and conditioning program for women's basketball players.

Mentor: Shari Bartz

Henry Hall Atrium 79

Marathon Training for the Beginner

MICHAEL BIGNEY, JED HUMMEL

In the last few years marathon mania has spread across the United States. In 2007, the ING New York City marathon drew more than 90,000 applicants. Many marathons are enjoying similar growth due to an increasing popularity of the distance. However, many of these people are first time marathoners with little to no running background and are not prepared to cover 26.2 miles in a single effort. The purpose of this presentation is to provide effective and safe training principles for the growing population of college to middle aged people with the goal of completing a marathon. This presentation is based on sound physiological and biomechanical analysis, a thorough review of literature examining current marathon training programs, and a solid understanding of the sport of distance running.

Mentor: Shari Bartz

Henry Hall Atrium 80

Synthesis and Structural Analysis of a Novel Series of Non-beta-lactam Inhibitors of AmpC Beta-lactamase

JENNA TOMLINSON

Beta-lactams are the most widely prescribed class of antibiotics. However, their continued utility is threatened by the expression of beta-lactamase enzymes, which hydrolyze the defining lactam ring of these antibiotics, rendering them useless. Current clinical inhibitors for these enzymes also contain a lactam ring, allowing resistance to develop rapidly. Inhibitors that do not resemble beta-lactams would require bacteria to develop novel resistance mechanisms. Previous research identified a novel, non-beta-lactam inhibitor for the class C beta-lactamase AmpC (3-[(4-chloroanilino)sulfonyl]thiophene-2-carboxylic acid; Ki 26 uM). In an effort to improve

the binding affinity of this inhibitor, a series of sulfonylthiophene carboxylic acid derivatives were synthesized and tested for inhibition of AmpC. Several of these inhibitors were co-crystallized with AmpC, and the structures of the complexes were determined using X-ray crystallography.
Mentor: Rachel Powers

Henry Hall Atrium 81
Leadership in the Banking Industry
SAMANTHA KLYNSTRA

The banking industry is an extremely competitive industry in our economy with an increasing need for strong and effective management. One of the key components involved in being a successful manager is the ability to be a great leader. A great leader is defined differently depending on the field in which the leader resides. The purpose of this project is to tell what makes a great leader in the field of banking. This will be done through extensive interviews with various bank employees as well as case related research. The results will show what techniques and methods help to make a successful leader within the banking industry.
Mentor: Jitendra Mishra

Henry Hall Atrium 82
The Effects of Fatigue on Clinical Decisions Made by Critical Care Nurses
JONATHAN NYKAMP

The adverse effects of nurse fatigue on the decision making process are numerous. Nurse fatigue contributes to decreased productivity and alertness which can lead to an increase in health care mistakes. These mistakes can lead to poor outcomes for the patients. The problem of nurse fatigue is ever growing with the nursing role becoming more complex and with nurses working longer and more frequent shifts. Therefore, it is important to explore the prevalence of nurse fatigue and its effect on clinical decision making. This presentation will examine perceptions of acute and chronic fatigue and their effect on confidence in and satisfaction with clinical decisions made by a sample of full-time critical care nurses.
Mentor: Linda Scott

Henry Hall Atrium 83
Functionalization of a Solvent Free Martian Bioelectrocatalytic System
RENEE BOULEY

Mutant enzymes that could function in a Martian Environment would provide space expeditions with a way of creating necessary materials on site and thus reducing transport loads and fuel costs. This project explores the effects of simulated Martian conditions on a model redox protein, horse heart cytochrome c (cyt-c), using electrochemical techniques. The information gained from methods such as Cyclic Voltammetry (CV) and Electrochemical Impedance Spectroscopy (EIS) will help us gain insight on just what changes the enzyme undergoes. Beginning with a conductive polymer, polyaniline, cyt-c will be incorporated into the polymer matrix, thus creating a solid-state solvent free enzyme system. This polyaniline/cyt-c matrix is then examined through CV and EIS at room temperature to establish a baseline understanding of this fairly unique system. After establishing a baseline, the study will conclude with exploration of the system's functioning under simulated Martian conditions such as predominately CO2 atmosphere, very low temperatures (-65 Â°C), and very low pressure (thousands of times less than Earth's atmospheric pressure). This study systematically evaluates each Martian condition individually in order to understand the means to compensate for the non-terrestrial environment with the model protein. Further optimization will be explored in a future project utilizing directed evolution of Earth's native extreme cold climate enzymes.
Mentor: Cory DiCarlo

Henry Hall Atrium 85

The Link Between Physical Fitness and Academic Performance

SARA SHEEHAN, LACI VERDUSCO

The purpose of this study is to determine whether there is a relationship between academic success and physical fitness in undergraduate college students. Previous research indicates that increased physical activity leads to higher academic performance. Most of this prior research has focused primarily on high school age students or younger. This study will be a cross-sectional view of physical fitness based on the VO2 max testing and indicators of academic success among undergraduate students. The participants in this study will be drawn from a general education class at Grand Valley State University. This class was chosen because it is a requirement or encouraged for a wide variety of majors and will lead to a more diverse sample. The study will focus on all levels of undergraduate students, ranging from freshmen to senior year students. Academic success will be determined through the subjects' self-reported GPA, exam scores, previous standardized test scores (i.e., ACT and SAT scores), and study habits. Physical fitness will be judged by VO2 max (based on sub-maximal cycling tests) and information about exercise habits and health history will be obtained for use as control variables. The expected result of this study is a positive relationship between academic success and physical fitness.

Mentors: Bradley Ambrose, Jim Scott

Henry Hall Atrium 86

A Comparison of CK-MB to Troponin Levels in Normal, Slightly Elevated, and Critically High Patient Populations

LINDSAY WALKER, EVANGELINA CARMONA

Sixty blood samples demonstrating normal, slightly elevated, or critically high troponin levels were also analyzed for CK-MB concentration. While CK-MB can indicate skeletal muscle damage as well as heart muscle, an elevated troponin is a specific indicator of heart muscle damage. By ordering a troponin assay on suspected acute myocardial patients instead of a CK-MB, more patients will be successfully diagnosed with and acute myocardial infarction. The results of this study indicate that with the development and availability of the troponin assay, a CK-MB is no longer necessary for the diagnosis of acute myocardial infarction.

Mentor: Linda Goossen

Henry Hall Atrium 87

Evidence of Intragenic Recombination in the Rotavirus Enterotoxin Gene

LINDSAY RICHMOND

Nucleotide substitution and genomic reassortment are proposed to be the most important mechanisms of rotavirus evolution in nature. Intragenic recombination, a common evolutionary mechanism in some viruses (e.g. HIV), has only been documented once in rotavirus, and this was in one of the surface glycoprotein genes (VP7). In an attempt to investigate the occurrence of recombination in the enterotoxin gene (NSP4), we analyzed over 300 NSP4 sequences in GenBank using similarity plotting. Here we present evidence of intersublineage recombination in the NSP4 gene.

Mentor: Doug Graham

Henry Hall Atrium 88

Barriers To Accessing Health Care For Homeless Women and Their Children

JILLIAN ENGLAND

This study will look at how being homeless within transitional housing will affect a person's access to medical care. The investigator will interview and survey a sample of approximately 20 participants. The results of this study will benefit future social workers by identifying significant barriers to access, and thus educating social workers on how to better advocate for their clients.

Mentor: Cray Mulder

Henry Hall Atrium 89

Vibrational Spectroscopy of Carbonmonoxymyoglobin

JAMES MARR

By using ultrafast spectroscopy techniques to examine the frequency of the carbon monoxide bound in the heme pocket of myoglobin, one can calculate timescales of the fluctuation in frequency over time. This technique reveals variations of the molecular environment as time changes. Problems arise, however, when interpreting this data. The fluctuations of frequency in time, obtained from the experiments, cannot be directly linked to specific molecular dynamics. Using computer models of the molecular dynamics and quantum mechanical calculations, the frequency can be found for the carbon monoxide bond. The next problem encountered is that carbonmonoxymyoglobin is an extremely large molecule (roughly 2500 atoms) and it would take far too long to calculate frequencies for the entire system. However, it is unlikely all of these atoms will affect the frequency. So the system was cropped to the key components that have the most influence on the frequency calculation. These frequencies could then be correlated to certain, easily obtainable structural features. Once a strong correlation was established and refined, the function was used to generate thousands of frequencies. These frequencies were used to calculate a lineshape, which was compared to experimental data. The width of the lineshape was calculated to be 9.59 cm-1, which is close to the experimental value of 14 cm-1.

Mentor: Christopher Lawrence

Henry Hall Atrium 90

Economic Sustainability and Revitalization: A Review and Analysis of Downtown Port Huron

KATIE WHITE

This project is aimed at offering the City of Port Huron an analysis of the current businesses in the downtown district of Port Huron, Michigan. Geographical data such as the transportation framework, digital orthophoto quadrangles, current businesses, and vacant buildings in downtown Port Huron were examined, overlaid, and digitized using GIS software. The use of Consumer Spending Data provided by ESRI, current zoning maps, and scholarly articles related to the revitalization and development of downtown areas aided the analysis of what businesses could increase the economic development and sustainability of downtown Port Huron. The analysis examines ways to motivate both visitors and residents to shop locally in the area, in addition to finding types of businesses that will increase the overall growth of the downtown area.

Mentor: Wanxiao Sun

Henry Hall Atrium 91

Relationship with Grandmothers from the Adolescent's Perspective

JENNIFER RODRIGUEZ, KIM COOPER

In this study we aim to explore several aspects of the grandmother-grandchild relationship, such as contact, support, conflict and intimacy from the perspective of adolescents. As reported by many research studies, grandparents play an important role in their grandchildren's lives. They may serve as a source of emotional and financial support, provide guidance and help teens in making important decisions in their life. As the children grow (and the grandparents get older), they also provide support to their grandparents. Residential proximity and frequency of contact are relevant aspects of intergenerational relations. We are also interested in the question of whether parents (middle generation) serve as mediators of the relationship between grandchildren and grandparents. The study is part of the cross-cultural Value of Children and Intergenerational Relations Project. Mothers and one adolescent child between 14 and 18 years old (N = 280 dyads) living in the Grand Rapids area participated. Preliminary results showed that around 60% of the teens have contact with their grandmothers at least once a week. Proximity strengthened the relationship between grandmothers and grandchildren, but was also correlated to increased conflict between the two generations. It was also found

that when the adolescents mothers reported a good relationship with their own mothers, the grandmother-grandchild relationship was perceived as more positive. The results are discussed from a life-span developmental perspective focusing on intergenerational relationships.
Mentor: Mihaela Friedlmeier

Henry Hall Atrium 92
Design and Synthesis of Peptide Substrates for Focal Adhesion Kinase (FAK)
KATHERINE STAHRR

Focal Adhesion Kinase (FAK) is a protein tyrosine kinase that has been implicated in various types of cancer, specifically prostate and breast cancer. Through an ongoing characterization of FAK, it has been found that this enzyme enacts the signaling events of the cell, which then determines how the cell regulates its shape, proliferation, survival, and gene expression. Due to these affects on the cell, FAK is considered a prospective target for anticancer drug development studies. It is our goal to develop a hexapeptide sequence that can be used as a small substrate for FAK and aid in the discovery and development of inhibitory cancer therapeutic drugs. Currently synthesized peptides and their corresponding preliminary enzyme assay data will be presented.
Mentor: Laurie Witucki

Henry Hall Atrium 93
Stream Flow Velocity Variabilty Over Time at a Riffle, Run and Pool in Sand Creek, Allendale MI
ANDREW SISSON

In this study I will measure stream flow velocity variability over time at three different geomorphic settings, a riffle, a run, and a pool at Sand Creek near GVSU. I expect to observe variability of velocity within each setting and between settings. I will compare the temporal variability between each geomorphic setting and discuss the effects it may have on substrate and macro invertebrate populations.
Mentor: Peter Wampler

Henry Hall Atrium 94
Make The Horse A Different Color: Avoiding Cliche Poetry Through Unique Character Comparisons
KATIE BOOMS

This presentation will be a blend of creative writing pedagogy and examples of my own poetry created through specific exercises. Drawing examples from Shakespeare's sonnets and several other published poems that many people will find familiar, I will provide encouragement and advice for beginning poets as well as those who may be afraid to get back up on the horse. Appropriate for the largely-scientific environment, this is a technical approach to the art of poetry, with a focus largely on crafting dynamic metaphors.
Mentor: Patricia Clark

Henry Hall Atrium 95
A Comparison of Serum versus Plasma in Quantitative hCG Testing
TRANG BUI, AMANDA SCHOENER

The human chorionic gonadotropin (hCG) is one of the most common hormones assayed for the diagnosis of ectopic pregnancy, gestational trophoblastic disease, and for Down syndrome screening tests. At this time, a west Michigan hospital lab runs hCG assays only on serum samples; all other chemistry testing is done on plasma samples. Our focus is to study the precision and accuracy of plasma specimens used for the quantitative measurement of hCG levels. We are performing a comparison study of 45 human serum and plasma samples using the Beckman Coulter Access analyzer to quantitatively measure and compare the results of

hCG assays between plasma and serum specimens. If plasma specimens can provide us with the same consistent results as serum, then two tubes of blood will not have to be drawn on patients who are having both hCG and other chemistry tests performed on their blood.. This will reduce costs incurred for testing as well as the amount of unnecessary blood being drawn from the patient.
Mentor: Linda Goossen

Henry Hall Atrium 96
Characterization of Survival Pathways in Immortalized Primary Prostate Epithelial Cells
ERIC GRAF

Metastatic prostate cancer kills approximately 33,000 American men each year. A greater understanding of the individual events of tumor formation is needed for development of novel therapies. The purpose of this ongoing project is to evaluate immortalized primary prostate epithelial cells to see how the cell line can serve as a potential prostate cancer research model. I compared E6/E7/hTERT immortalized primary prostate epithelial cell lines to two previously characterized cell types: normal primary prostate epithelial cells (PEC) and a cancerous prostate cell line (PC-3). Results show the immortalized cells are dependent on both EGFR activation and PI-3K activity for survival. In addition to differences in the specific signaling pathways required for survival, there are also differences in which survival pathways are being used by the different cell types. The primary cells survive predominately through autophagy and the tumor cells survive by suppressing apoptosis. However, the immortalized cells survive through suppressing apoptosis as well as through non-apopototic pathways that are independent of autophagy. Cell signaling assays and survival assays were accomplished through immunoblotting, FACS analysis, fluorescent microscopy, and colormetric assays. This work is being supported by funds from the Van Andel Institute and the American Cancer Society (C.K.M.).
Mentor: Cindy Miranti

Henry Hall Atrium 97
The Effects of Microinjections of Nitric Oxide Donor SNAP on Memory in Goldfish
EVAN GOODMAN, JOSH KOVALCHEK

Long-term potentiation (LTP), an increase in the effectiveness of synaptic transmission, is a physiological correlate of learning and memory. Nitric oxide (NO), a soluble gas used as a functional messenger in the brain, is believed to be implicated in LTP. Past studies have shown that S-nitroso-N-acetylpenicillamine (SNAP), a NO donor, enhanced the production of LTP. This study examined the effect of SNAP on memory in goldfish using an avoidance learning task. SNAP was administered bilaterally to the telencephalon immediately following training. Fish were trained in shuttleboxes connected to a Smart Control which monitored their movements. A light was placed at each end of the shuttlebox which was divided into two equal sides by an opaque barrier. After illumination, a trial began and fish were given 20 seconds to cross before the administration of mild electrical shocks. Crossing the barrier turned off the light and ended the trial. Naive fish crossed the barrier after receiving the shocks. Following training, fish crossed the barrier before the shocks and displayed a learnt avoidance response. It is expected that the administration of SNAP post training would enhance memory of avoidance responses.
Mentors: Xandra Xu

Henry Hall Atrium 98
Strength and Conditioning for the Elite 100M Breaststroke Swimmer
EARCY CHRISTMON, EVERTON DAVIDSON

Michael Phelps quest for six gold medals in the 2004 Summer Olympic Games helped popularize swimming as a sport in the United States. The last time this sport was so popular was when swimming's first American hero, Johnny Weissmuller, was in the 1924 and 1928 Olympic Games. With this in mind, the purpose of this

presentation is to devise a strength and conditioning program for the elite 100M Breaststroke athlete utilizing a one year macrocycle. A wide range of free weight exercises are utilized in an effort to improve the power the swimmer produces with each stroke. Resistance swimming is also used to achieve this goal, along with assisted training for the athletes to increase their stroke rate. Monitoring blood-lactate levels during intense training and testing is also employed as an indicator of the athlete's fitness level. While this strength and conditioning program is theoretical in nature it is based on information gathered from a plethora of research studies regarding the sport. This presentation is designed to encourage swim coaches to think outside of the box in regard to training the 100M Breaststroke athlete.

Mentor: Shari Bartz

Henry Hall Atrium 99

Biotinylated Peptide Synthesis & Substrate Specificity Determination Using Enzyme-Linked ImmunoSorbent Assays

EVAN LUND

Protein tyrosine kinases (PTK) are a class of kinase enzymes that phosphorylate proteins on their tyrosine residues. The significance of protein tyrosine kinases today is that they are linked to cancer, inflammatory diseases, and diabetes. Focal Adhesion Kinase (FAK) and Src tyrosine kinases are both non-receptor tyrosine kinases that are associated with a number of different cellular signaling pathways including growth, propagation, adhesion, differentiation, and integrin signaling. With the creation of two biotinylated peptides and the use of Enzyme-Linked ImmunoSorbent Assays, the main goal of our project is to try and find efficient substrates for these kinases that could eventually be manipulated into inhibitors. These inhibitors could aid in the development of anti-cancer drugs.

Mentor(s): Laurie Witucki

Henry Hall Atrium 100

Dynamical Systems

CLIFFORD TAYLOR

Dynamical systems is the subject concerned with systems that change with time. These systems play an important role in modeling real world phenomena, such as population growth, chemical kinetics, and fluid dynamics. This presentation will survey the different types of dynamical systems of one and two dimensions along with examples of systems.

Mentor: Feryal Alayont

Henry Hall Atrium 101

Free Radical Damage on Coronary Arteries

EMILY STIR

This study will examine the effects of free radicals on the microscopic appearance of blood vessels. The anterior interventricular branch of the left coronary artery (LAD) from pig hearts will be examined histologically before and after treatment in a free radical-containing solution. Irregularities in the appearance of the tunica intima and the tunica media are of specific interest. If such irregularities are found, this may suggest a potential cause of cardiovascular disease, such as arteriosclerosis.

Mentor: Francis Sylvester

Henry Hall Atrium 102

Dispelling Rape Myths: The Impact of Expert Witness Testimony in an Acquaintance Rape Trial

SARAH LUETHY

Previous research on acquaintance rape trials has found that jurors are often influenced by rape myths/misconceptions about rape victims when rendering a verdict. This fact may partly explain why so many of these crimes go unreported or are not prosecuted. It is possible that educating jurors on rape myths may decrease this bias and result in a more just experience for rape survivors in the court system. In this study, jurors listened to an acquaintance rape trial that either included expert witness testimony on Rape Myths (RM) or had no expert testimony. It is predicted that RM testimony will decrease the influence of juror bias and result in a higher number of guilty verdicts.

Mentor: Andrea Rotzien

Henry Hall Atrium 103

Charter Schools in the United States

JENNIFER FILLINGER

Achieving autonomy, closing achievement gaps, and creating choices for students are goals portrayed by the over 4,000 charter schools functioning in forty States. Since 1993, charter schools have been an alternative option of public schooling. Charter schools are independently established and operated according to state legislation; however, schools are state funded without being subjected to the bureaucratic regulations of public schools. Following establishment, charter school curriculum, academic evaluation guidelines, and admission guidelines are determined by the school's Mentor and these vary amongst schools. This paper will highlight repercussions charter schools have experienced, as analyzed in previous research, due to the inconsistent legislation guidelines between states. I will also analyze Ohio legislation on charter schools as a case study to asses the specific legislation guidelines that influence charter school goals within this state. While charter school goals are to achieve autonomy, accountability, and provide choice, research suggests instead charter schools are influential in school segregation, lack of academic regulation for success and inconsistency of curriculum or teacher accountability.

Mentor: Lisa Hickman

Henry Hall Atrium 104

Testing The Chemical Fingerprint Of Amphibolites From The Central Blue Ridge Region Of The Appalachian Mountains, North Carolina

ANDREW DEWITT

Major and trace element geochemical data for amphibolites, rocks that originated as ocean crust, have proven useful for fingerprinting the tectonic terranes in the southern Appalachian Blue Ridge. Previous work indicates that Central Blue Ridge mafic and ultramafic rocks from the Buck Creek and Carroll Knob complexes in southwestern North Carolina are distinct from those to the north, in the Webster-Addie-Willets, NC region, in terms of field relations, mineralogy, and major and trace element geochemistry. New amphibolite samples were collected to determine whether this apparent distinction persists and to attempt to locate the boundary between these domains. Most of the amphibolites collected from a broad region in the Central Blue Ridge, have similar major and trace-element geochemistry and mineral assemblages to the rocks previously studied at Webster-Addie-Willets. The distribution suggests that the domain boundary may lie just north of Buck Creek. Patterns of Rare Earth Element (REE) concentrations are important for linking rocks to tectonic settings. REE compositions for most of our samples are weakly to moderately Light REE-enriched with chondrite-normalized concentrations of 10 - 100; similar in pattern and concentration to mafic rocks from the Webster-Addie region. These patterns point to formation in a subduction zone setting, whereas most samples from the Buck Creek and Carroll Knob complexes show distinctly lower REE concentrations and are generally Light REE-depleted, more typical of Mid-Ocean ridge settings.

Mentor: Ginny Peterson

Henry Hall Atrium 105

The Impact of Trauma Expert Testimony on Juror Verdict in an Acquaintance Rape Trial

BRITTNEY AUSTIN, AUDRA HOLST

According to the National Victim Crime Survey there were 272,350 victims of rape or attempted rape in 2006. Additional data indicate that 59% of rapes go unreported and in 73% of cases the perpetrator was known to the victim. The effects of acquaintance rape can be mired in the guilt and self-doubt many women feel after the experience. In addition, acquaintance rape cases can be difficult to prosecute due to a lack of physical evidence. In this study, jurors listened to an acquaintance rape trial that either included expert witness testimony on Post Traumatic Stress Disorder (PTSD), expert witness testimony on Rape Trauma Syndrome (RTS), or had no expert testimony. It is predicted that jurors who heard testimony on PTSD or RTS will be more sympathetic to the alleged victim, but not more likely to render a guilty verdict.

Mentor: Andrea Rotzien

Henry Hall Atrium 106

A Literature Review of At-Risk Populations and Cervical Cancer Morbidity and Mortality

CAROLE DONAZZOLO

Cervical cancer is a preventable disease. In the United States, the benefits of early detection have not been shared by all segments of the population. Racial and socioeconomic disparities exist in cervical cancer incidence, morbidity and mortality rates. This poster presents a descriptive and comparative analysis of the literature about why certain populations experience higher cervical cancer morbidity and mortality. Studies indicate that socioeconomic status is inversely associated with cervical cancer incidence. The National Health Interview Survey reports that income and education are better predictors of screening uptake than race and ethnicity. Some reasons identified for the disparity among all women include language and cultural barriers, modesty and prohibitions against a pelvic exam by a male practitioner, poor follow up protocols for abnormal pap smears, lack of culturally sensitive screening processes and treatment environments, and lack of understanding about the importance of cervical screening as part of good overall health. Sociological factors that negatively impact cervical cancer morbidity and mortality rates must be clarified before effective policies, practice guidelines, and behavior change can be implemented. To date, most studies examining socioeconomic status and race/ethnicity have only compared African American with Caucasian women. With the increasing diversity of the U.S. population, broadening studies to include more diverse sociological factors will further our understanding of differences in cervical cancer screening, diagnosis, treatment and survival.

Mentor: Gayla Jewell

Henry Hall Atrium 107

Effects of Color Salience on Developmental Differences in Preferences for Using Color Information

HILARY SWANEY

Previous work has shown that when two identical objects can be disambiguated based on either color or location-based information, adults use location-based information and young children rely on color-based information. This difference may be the result of high color salience from cognitive priming in young children, due to their recent focus on color-word learning. If such is the case, one would predict that as children master color terms, there should be an increase in the use of other types of disambiguating information. Furthermore, increasing the salience of color information should also increase the use of color information in both older children and adults. Subjects were asked to give directions to a doll for how to find a mouse hidden in or under one member of a pair of nearly identical objects in a dollhouse. Target and foil objects could be disambiguated on the basis of location information (i.e. the hat by the couch or the hat by the TV) or color information. In the control condition objects in each pair differed in terms the color of a single feature (i.e. the hat with the blue ribbon vs. the hat with the yellow ribbon). In the color salient condition objects were entirley different

colors (ie. the blue hat vs. the yellow hat). Results show that children up to 11 years of age still prefered color information over location information, regardless of color salience. Adults prefered to use location information, but used more color information in the color salient condition than in the control setting. These results suggest that 1) the salience of color information plays a role in direction-givers' use of color information, and 2) cognitive priming due to recent focus on color-word learning is not the sole source of children's preference for location information.

Mentor: Penney Nichols-Whitehead

Henry Hall Atrium 108

The Art of Pitching

JUSTIN BOWERS, QUAN PITTMAN

The art of pitching entails more attributes than the average spectator may realize. Although upper body and arm strength are key contributors to the pitching process, many more muscle groups and fluid motion techniques are required to compete at a high level. The addition of lower body strength and stability, as well as a solid core are significant factors in acquiring the necessary tools to become a successful pitcher. Proper and thorough research in strength and conditioning, as well as periodization implementation will be the basis for developing a program that best fits the needs of high school athletes who aspire to be successful pitchers. Short bursts of energy are required via the phosphagen and fast glycolytic systems to perform a baseball pitch. Proper condition and strength training at different times of the year (periodization) are essential in providing the athlete with endurance and strength through the duration of the season. Shoulder and elbow injuries, can also be prevented through proper stretching and specific exercises relating to those areas. Accuracy and speed increase can also be enhanced through proper strength training techniques. The foundation of this program is based on sound research and a solid knowledge of the sport of baseball to create a periodized strength and conditioning program for young pitchers who seek to become elite pitchers in a high school setting.

Mentor: Shari Bartz

Kirkhof Center Lobby 1

The Impact of Disordered Eating Patterns, Multidimensional Self-Esteem, and Emotional Regulation on Self-Injurious Behaviors in College Women

STEPHANIE SECORD, CHLOE SKIDMORE

Initially associated only with severe psychopathology, self-injurious behavior (SIB) is becoming an increasingly widespread phenomenon. For this reason, research is needed to examine populations who engage in SIB, but do not necessarily fit into a pre-determined clinical category. The present study will further the understanding of SIB within the non-clinical population. Self-report questionnaire data will be collected from approximately 250 female participants and analyzed using quantitative and qualitative methods. The researchers hypothesize that poor emotional processing and regulation, poor impulse control, and recent life stress will result in higher levels of SIB. They further hypothesize that participants engaging in SIB will report higher levels of shame, poor use of exercise, and lower levels of global self-esteem.

Mentor(s): Andrea Rotzien

Kirkhof Center Lobby 10

The Evolution to Become a Varsity Prep Boys Basketball Player

ELLIOTT JONES, DANELL WILKERSON

The transition from junior varsity to varsity sports is an influential time. Earning a varsity position on a boys high school basketball team is a competitive process that renders infinite opportunities for a slight few. Unfortunately, many young men participating in try-outs have yet to be exposed to the advantages of a strength and conditioning program to assist in preparing them for the competition. The purpose of this research is

to increase the competitive advantage of a male high school sophomore, with high school varsity basketball aspirations, through a thoroughly researched strength and conditioning program. A sophomore was chosen because traditionally, a high school athlete competes at a varsity level during their junior- and senior-year. The program targets youth basketball players in transition to varsity level competition. This strength and conditioning program is designed to create a more physical and psychologically confident athlete and is designed to improve skill, technique, and potential as a prep basketball player. This presentation will focus on key areas associated with the sport of basketball: aerobic and anaerobic conditioning, plyometrics, and resistance training for adolescence. The benefits of the program are improved technique, and form using age-appropriate exercises that correlate to the muscles and movements for basketball.

Mentor: Shari Bartz

Kirkhof Center Lobby 11

Identification of the Met Phosphorylation Site Regulated by the Prostate Metastasis Tumor Suppressor Protein CD82

PENNY BERGER, VANITHA BHOOPALAN

The tetraspanin protein CD82 /KAI1 has been identified as a metastasis tumor suppressor in prostate cells. Tetraspanins are generally involved in normal cell motility, morphology, signaling and differentiation. Previous research has found that CD82 influences the expression and activation of a growth factor receptor tyrosine kinase known as c-Met. The activation of c-Met is accomplished by its ligand the hepatocyte growth factor/scatter factor (HGF/SF). Once c-Met is activated it influences not only normal cell processes but also processes such as malignant aggressiveness as seen in tumor growth, invasion and metastasis. In prostate tumors there is increased c-Met expression and activation. The exact pathway by which CD82 regulates c-Met is not yet known. CD82 may regulate c-Met by altering the distribution of c-Met in the cell surface and/or suppress integrin- or HGF-mediated activation of the receptor tyrosine kinase c-Met. Suppression of c-Met phosphorylation by CD82 has been shown by re-expressing CD82 in prostate metastatic cancer cell lines. Our studies are focused on one possible mechanism in which CD82 affects c-Met i.e., phosphorylation and activation of the receptor. The binding of the HGF/SF to c-Met encourages receptor dimerization and phosphorylation within the juxtamembrane, catalytic core and the cytoplasmic tail domains of the receptor. This process then regulates receptor internalization and substrate docking. c-Met has four tyrosine phosphorylation sites that include p-Tyr 1003, p-Tyr 1234/1235, p-Tyr 1349 and p-Tyr 1365. The p-Tyr 1003 located at the juxtamembrane position, is a negative regulatory site. The activation of p-Tyr 1234/1235 is important in c-Met receptor activation and is a catalytic site. The p-Tyr 1349, located at the cytoplasmic tail domain is a primary docking site for several kinases that interact with c-Met. Lastly, p-Tyr 1365, located also at the cytoplasmic domain when activated, can inhibit cell morphogenesis and differentiation of cells and tissues. Knowing how each phosphorylation site of c-Met affects downstream signaling event, our lab is focused in identifying which phosphorylation site is regulated by CD82. This will provide further insight into how CD82 regulates c-Met and prevents prostate tumor metastasis.

Mentor: Suganthi Sridhar

Kirkhof Center Lobby 12

Isolation of FGF Genes from *Glaucomys volans*

NICOLE GAUCHE

The patagium is the membrane of skin found between the forelimb and hind limb in gliding mammals such as sugar gliders, bats and flying squirrels. There is little known about the genes that regulate patagium development. Fibroblast growth factors (FGFs) make up a large family of polypeptide growth factors that are responsible for embryonic development and regulating cell proliferation, migration, and differentiation. We hypothesize that fibroblast growth factors, specifically FGF2, FGF4, and FGF8, which are expressed in the forelimbs and hind limbs of mammals, are involved in the patagium formation. To test our hypothesis we targeted

and cloned those FGFs from the Southern Flying Squirrel (*Glaucomys volans*). In order to clone the fibroblast growth factors, a computer analysis was performed to gather information about the genes structures and regions of homology between species. In mammals, FGFs are highly conserved at both the nucleotide and amino acid levels. When aligned at the nucleotide level, Mouse FGF2 mRNA showed 94% homology between rat mRNA in the coding region. FGF4 showed 92% homology and FGF8 showed 100% conservation between mouse and rat mRNA. A high level of conservation was also observed in the amino acid sequences. Mouse FGF2 protein showed 98% conservation when paired with rat protein. FGF4 demonstrated 92% conservation and FGF8 showed 100% conservation between mouse and protein sequences. PCR primers were designed to amplify regions of homology using mouse mRNA as a template. PCR products will represent FGF2, FGF4, and FGF8 clones.

Mentor(s): Bruce Ostrow

Kirkhof Center Lobby 13

Plant Community Changes in Northern Alaska in Response to Warming

JEREMY MAY

Climate change affects many areas of the world, however its effects are felt most and earliest in high latitudes. This project addresses the response of plant communities in Alaska to warming using passive warming chambers. Community change was measured using a point frame. The response to warming included increases in the presence of bryophytes, graminoids, and deciduous shrubs. *Carex aquatilis* was one particular species that showed increases in prevalence of 9%, an increase that is dramatic because it is already a dominant species on the landscape. Lichens tended to show a decrease under warmed conditions. This project showed evidence of warming on the landscape of the tundra in Alaska.

Mentor: Robert Hollister

Kirkhof Center Lobby 14

Flowering Success of Transplanted Species in a Longleaf Pine Savannah Restoration Experiment at the Savannah River Site, South Carolina

DAVID CHAMBERS

Identifying the underlying mechanisms that limit a species membership during community assembly is an integral part of developing successful approaches to ecological restoration. As part of a long-term and landscape-scale restoration of longleaf pine savannah understory communities at the 80,125 ha Savannah River Site (SRS) in South Carolina, we are examining the potential effectiveness of restored "founder communities" in inoculating the broader landscape via dispersal. However, an important initial step in evaluating dispersal success is to determine the flowering success of planted species. Here we report the flowering success of 30 transplanted native understory species across six sites at SRS from June 2007.

Mentor: Todd Aschenbach

Kirkhof Center Lobby 15

Evaluation of Add-on Testing and Stability Studies for Serum Samples

STEPHANIE HILLMAN , MONICA LEEP, MONICA GILLIS

Storage is an issue in many clinical laboratories; therefore, the goal of this study was to determine how many patient samples received add-on orders while in storage and also to determine the stability of patient samples while in storage. Data was complied to determine the number of add-on tests requested by collecting faxes from outpatient facilities. Stability studies were focused on Comprehensive Metabolic Profiles and Lipid Panels, two commonly ordered panels in the clinical chemistry laboratory. Serum samples, contained in BD SST Gel Separator Tubes, were examined at Day 0, Day 4, and Day 7 for any statistically significant changes. If 7-day patient sample storage can be justified by a large number of add-on orders received or by very little change

in specimen stability, then clinical laboratories should continue to store samples for five to seven working days. However, if specimens are not stable for five to seven working days or if add-on orders are insignificant, then laboratories may want to consider decreasing the amount of time samples are stored.
Mentor: Linda Goossen

Kirkhof Center Lobby 16

Changes in Plasma Potassium Levels

DANIEL CALLEN

The purpose of this study is to determine how long a blood specimen can remain uncentrifuged and still give accurate potassium results. This study will determine whether outpatient specimens that are now being rejected by the lab because they were not centrifuged are actually acceptable specimens. The study will be done using five blood samples from each of 25 subjects and comparing potassium levels in the samples over eight hours. One sample from each subject will be tested immediately after collection, one at two hours two hours, one at four hours, one at six hours and one at eight hours after collection. The results will be compared using a t-test to determine if there are statistically significant differences in the potassium results over the time intervals. If this study shows no statistically significant changes in the potassium levels, current protocols can be modified.
Mentor: Linda Goossen

Kirkhof Center Lobby 2

Affordable Simulated Martian Environment Chamber (SMEK)

DEREK LOUTZENHISER

Human exploration of non-terrestrial environments is one of the next steps in human exploration of our universe. Progress in research areas to further this goal requires the ability to experiment easily in similar conditions to those found at non-terrestrial extreme locations. The recent success of the Mars Rover has created increased interest in experiments specifically concerning the Martian environment. Many harsh conditions exist on Mars that differ greatly from those encountered on Earth. Simulation of these conditions has previously been accomplished at several laboratories, but at levels of cost which make experimentation difficult for the majority of undergraduate research institutions. With this project a low cost alternative Simulated Martian Environmental Chamber (SMEK) has been constructed and tested for functionality for a number of applications. The resulting chamber has been proven to reliably simulate Martian temperature conditions (<-85 Â°F), atmospheric composition (predominately gaseous carbon dioxide), and atmospheric pressure (orders of magnitude lower than Earth atmospheric pressure). With this alternative system, experimentation is possible for a minimal initial investment and an extremely minimal consumables budget. Future experimentation will explore electrochemical measurement in Martian conditions.
Mentor: Cory DiCarlo

Kirkhof Center Lobby 3

An Analysis of Selected Musical Concepts Present in Significant Band Repertoire

SARA BLACK, CATHERINE MCCULLOCH, 2007 STUDENT SUMMER SCHOLARS

Professional music educators have long stressed the study of specific, quality repertoire as the most important goal of public school music. Numerous opinion-based articles from the last 20 years, however, have advocated that students must receive a comprehensive musical education which should include the study of musical concepts. In 1994, the Music Educators National Conference (MENC), as part of the Consortium on National Arts Education Association, completed "The National Standards for Arts Education" which solidified the central role of the study of musical concepts in a well-rounded music education. Through the study of musical concepts, students gain a deep understanding of the foundations not only of the music they are currently studying, but also the principles and properties inherent to all music. The problem faced by most

music educators is that lists of quality repertoire exist but the specific musical concepts that can be taught in each work are not identified. Many public school educators lack a broad knowledge of music repertoire and therefore select music solely according to published repertoire lists of "good music" with little or no thought as to what musical concepts can be taught. This project sought to bridge the gap between the study of repertoire and the study of musical concepts by identifying which of 12 musical concepts can be taught in over 400 pieces of standard band literature. Quantitative analysis of the results along with implications for music education are discussed.

Mentor: Kevin Tutt

Kirkhof Center Lobby 4

A Strength and Conditioning Program for Male College Basketball Players

NICOLE DAGGY

There are thousands of young men on college basketball teams across the country who engage in weight-training programs year-round. The purpose of this research is to provide a yearlong periodized strength and conditioning program that will aid them in performing at a high level in a sport that calls for an increased emphasis on size, strength, and speed. Our research will examine how male college basketball players can use a strength and conditioning program to add lead muscle, increase strength and athleticism, and train with specific goals for differenent phases of the year. While we will not be actually testing our strength and conditioning program on anyone, we hope to provide an up to date research-based regimen that can be effectively used by college basketball teams.

Mentor: Shari Bartz

Kirkhof Center Lobby 5

Effect of Cold Culture Blood Plate on Recovery of Urine Organisms

OLIVIA KORRECK, AMY KENNEDY

The purpose of this research is to determine if there is a difference in growth results between plating urinary pathogens on room temp (24 C) blood agar, the normal protocol, versus cold (1-6 C) agar. Using 30 specimens, we will plate the same unidentified culture specimen onto both a blood plate that has been brought to room temperature and a blood plate directly out of the refrigerator. All plates will then be incubated at 35 degrees Celsius for 24 hours. We will determine the effects of temperature on bacterial growth by counting the colonies on both sets of agar plates. We will also identify the organisms that grow, in order to determine if any microorganisms are more affected by the change of temperature than others. Our findings may enable labs to quickly plate urines using agar straight from the refrigerator instead of taking the plates out ahead of time and allowing them to warm up to room temperature.

Mentor: Linda Goossen

Kirkhof Center Lobby 6

LanguageWiki - A Content Management System for Learning Language Components, with a Focus on Increasing Wiki Information Reliability

IRA WOODRING

Wikis, content management systems that allow any user to add and edit information, have proven to be incredibly popular Web 2.0 interfaces. Worries about wiki reliability however, continue to keep wikis from broader acceptance, particularly in academic settings. LanguageWiki, a content management system for learners of new languages, seeks to address these issues by providing a way for users to rate information added by other users. In addition, users themselves will then be scored based upon the ratings of the information they provided.

Mentor: Zachary Kurmas

Kirkhof Center Lobby 7

Submerged Sinkhole Ecosystems of Lake Huron

ERIC STRICKLER

Nutrient rich, oxygen poor ground water flows from many submerged karst sinkholes in the NW Lake Huron region. Transit of water through this limestone aquifer significantly changes its biogeochemical composition over time as it makes its way to sinkholes where it is discharged into the surrounding environment. Altered water composition affects surrounding ecosystem processes within localized areas, and potentially plays a role in regional ecosystem functions. High concentration of sulfate and organic acids in pore water of sinkhole sediments points towards the occurrence of chemosynthesis/anoxygenic photosynthesis in these systems. If these processes are occurring in deep sinkholes it could provide the extra carbon that is lacking in these systems due to the absence/lack of photosynthesis. These systems would then be exporting organic carbon into the deep water pelagic ecosystems surrounding sinkholes. New microbial communities and altered carbon dynamics are stimulating curious ecosystems and species distributions, which are in the process of being revealed.

Mentor: Bopi Biddanda

Kirkhof Center Lobby 8

Identification of new boronic acids as inhibitors against AmpC Beta-lactamase

RACHEL KUBIAK, 2007 STUDENT SUMMER SCHOLAR

Antibiotic resistance has emerged as the leading public health crisis of the 21st century. The most prevalent resistance mechanism to commonly prescribed beta-lactam antibiotics like penicillin is the beta-lactamase. These enzymes break apart the lactam ring that is crucial for the antibiotic to be effective. One way to overcome this resistance is to block the activity of this enzyme. Boronic acids are a class of molecules known to inhibit the activity of the class C beta-lactamase AmpC. Inhibition is achieved through specific interactions between the boronic acid and amino acids in the active site of AmpC, thus preventing the destruction of the beta-lactam. In this study, we chose several boronic acids that differed in size and chemical functionality to investigate specific molecular interactions in the active site of AmpC. Each boronic acid was tested experimentally for inhibition of AmpC in kinetic assays to determine IC50 and KI values, which indicate how effective a molecule is at blocking AmpC activity. Inhibitors of interest were co-crystallized with AmpC and the structures of these complexes were visualized using x-ray crystallography. Data obtained from these complexes provides information on binding site interactions in the active site and may be useful for future drug discovery against AmpC.

Mentor: Rachel Powers

Kirkhof Center Lobby 9

Hypothetical Pre-Basic Combat Training

ELIZA WEINERT, JESSICA DEKKER

Pre-Basic Combat Training prepares recruits for the physical elements of their commitment into the service. Physical, mental, and emotional toughness is necessary to perform the roles demanded throughout their tour of duty. Each of the armed services has its own training program and requirements that are specialized to the nature of its role to serve the country. The purpose of this project is to create a periodized training program that helps prepare individuals, age 17 through 25, of both genders, to enter the army initial-entry training camp. This program will include a weekly outline of the physical components required by the Army s standards. There are some limitations in the study such as the inability to recreate the real environment and the emotional and mental components that the true boot camp would provide. In addition, throughout the theoretical training camp it is anticipated that the Army will be able to observe an increase in the fitness levels of the new recruits. The program is also implemented to allow the armed services to focus more on combat techniques and other specific areas rather than fitness status.

Mentor: Shari Bartz

Padnos Hall Atrium 1

A Method Comparison Study to Assess Whether Tourniquet Application for Capillary Blood Collection Could Induce Spurrious Changes in the Measured Hematocrit or Serum Potassium Levels.

JASON RUDD

Blood for diagnostic testing is routinely collected from patients in a medical setting. Collected specimens are utilized for a wide spectrum of analyses. The method of choice for blood sample collection is venipucture, either from the antecubital region of the arm or from the back of the hand. For patients who are only having clinical chemistry or hematology techniques performed, it is also possible to collect a sample using capillary collection. Capillary collection, however, is generally reserved for cases in which venipuncture has been unsuccessful because it is slower, more likely to clot, and more likely to give an inadequate or unacceptable sample. Despite this, capillary collection is the method preferred by patients compared to venipuncture (P

Mentor: Linda Goossen

Padnos Hall Atrium 2

Overall Performance of Cassiope tetragona in a Climate Changing Environment

AMANDA SNYDER

The effects of climate change are being examined on Cassiope tetragona, a dominant evergreen shrub of the arctic. In conjunction with the International Tundra Experiment (ITEX), a warming experiment was established at Barrow and Atqasuk, Alaska. Data taken during the growing season (June to August of 2007) include phenological changes, flower counts, annual growth increments, and plant cover. There was no difference in the annual growth increments between the control and experimental plots at each site or between the two sites. There was also no difference in the number of flowers between the control plots at Atqasuk and Barrow. At Barrow, the number of flowers was higher in the experimental plots than the control plots, while at Atqasuk there were fewer flowers in the experimental plots than the control plots. These results suggest that with changing climate conditions, C. tetragona varies in the amount of effort put into reproduction, while keeping growth constant.

Mentor: Robert Hollister

Padnos Hall Atrium 3

Assessment of Phagocytic Activity in Mouse Peritoneal Macrophages

RYAN DARO, ASHLEY MERRICK, ELIZABETH SHINN, REBECCA EDWARDS,
MIRANDA JOHNSON, BRIAN BRITZ, EMILIA PUCCI

Macrophages are a key component of the innate immune system. By positioning themselves throughout the tissues, peritoneal cavity and lungs, the macrophages provide immune surveillance through phagocytosis & the initiation of the appropriate response when the body is invaded by pathogens. Phagocytosis is the ingestion of bacteria or other particulate matter and subsequent denaturation and digestion in the phagolysosome. In this project, mouse macrophages were isolated from the mouse peritoneal cavity and cultured in vitro. Their phagocytic activity was then assessed by providing them with bacteria that were labeled with a pH-sensitive fluorescent dye. This dye causes the bacteria to exhibit a red florescence in the reduced pH of the phagolysosome.

Mentor: Debra Burg

Padnos Hall Atrium 4

Protein Purification and Identification of GAP-43 Isoforms via Two Dimensional Isoelectric Focusing

BRIAN BRITZ, RON KRESS

This project seeks to continue the specific identification of various isoforms of presynaptic specific neuronal protein, GAP-43 (growth associated protein 43), through employing the use of the Bio-Rad PROTEAN IEF (isoelectric focusing) Cell. Previous studies were conducted to determine how the Bio-Rad PROTEAN IEF Cell worked and whether or not it was going to be useful in our current study of GAP-43 isoforms. Before the assimilation of the IEF cell into our current study, the first dimension of a two dimensional SDS-PAGE (sodium dodecyl sulfate polyacrylamide) gel was run in capillary tubes that are one millimeter in diameter. This previous method involved first getting the capillary tube to take up the SDS-PAGE gel media, which does not always occur with reproducibility each time. Once the media was in the capillary tube, a pH gradient would then have to be established through the use of ampholytes in the capillary tube media, which required isoelectric focusing of the ampholytes to establish the pH gradient. The pH gradient then had to be maintained in the gel before running the isoelectric focusing of the protein sample in the first dimension. This process was very time consuming, inefficient, and unreliable. Previous research from our group showed that using the new Bio-Rad PROTEAN IEF Cell significantly decreased the amount of time for preparing and running the first dimensional isoelectric focusing of a protein sample. Due to the conclusions drawn, protein samples are now run on pre-established pH gradient IPG gel strips. Furthermore, the previous study showed use of the IPG strips greatly enhances reproducibility compared to the previous method. In our current study, we are employing the use of an anti-phosphoserine antibody to visualize GAP-43 spots separated by two-dimensional gel electrophoresis using the Bio-Rad PROTEAN IEF Cell. We anticipate the most acidic spots will show a positive reaction in a very clean and convincing manner.

Mentor: John Capodilupo

Padnos Hall Atrium 5

Protection of Adult Pig Reintal Ganglion Cells: Early Effects & Specific Antagonist Blockade

LISA ANDERSON, DEMETRIA JONES, JORDAN ELDERSVELD

Glaucoma is a disease that is characterized by increased intraocular pressure and loss of visual acuity. Studies have shown that the loss of vision is caused by increased pressure on the optic nerve. Glutamate is a neurotransmitter that is associated with glaucoma. Studies have shown that increased intraocular pressure causes glutamate levels to rise. Once glutamate levels reach toxic levels, retinal ganglion cells (RGCs) undergo apoptosis and die. Activating alpha7 nicotinic acetylcholine receptors (nAChRs) can protect RGCs from cell death when glutamate levels are elevated. In addition to using specific compounds to activate alpha7 nAChRs on retinal ganglion cells, modulatory compounds were also used. Retinal tissue, obtained from pig eyes, were placed in fresh enriched media. The retinal tissue was physically and enzymatically fragmented via papain and trituration (physical dissociation of cells). Four plates, prepared in advance, were coated with goat anti-rabbit IgG antibody, which helps to eliminate retinal cells with low affinity for Thy 1.1 antibody. Twelve smaller plates, prepared in advance, were coated with goat anti-mouse IgM antibody. Thy 1.1 antibody was then added to the twelve smaller plates, which binds to the previously bound IgM antibody. Thy 1.1 antibody has a high affinity for RGCs. Through this 'panning' process, RGCs were isolated and exposed to various experimental conditions. Some cultured RGCs were tested for 48 hours to obtain data on how quickly the neuroprotective effect was activated. Additional experiments were conducted at the 'normal', longer exposure times to examine the effects of antagonists selective for the alpha7 nAChR against the neuroprotective effect.

Mentor: David Linn

Padnos Hall Atrium 6

Hacklander Ware: A Great Lakes Ceramic Mystery

NATHANIEL HANSEN

This poster describes the results of petrographic analysis comparing Hacklander Ware and other Woodland ceramics from two sites in western Michigan and presents models for interpreting the origins of Hacklander Ware. Since the mid-1970s, Michigan archaeologists have recognized Hacklander Ware as unique in the upper Great Lakes, with decorative and technological attributes differentiating it from ceramics thought to be indigenous to the area and linking it to ceramics found in Middle to Late Point Peninsula contexts from southern Ontario and New York.

Mentor: Janet Brashler

Padnos Hall Atrium 7

Target Inquiry: Impacts of a Research Experience for Teachers

RYAN WISSNER

Many teachers learned science in an environment of lecture and verification laboratory experiments. As such, teachers are often uncomfortable with implementing inquiry in the classroom. One way to help teachers feel more comfortable with inquiry instruction is to provide them with an authentic science inquiry experience. Although a research experience for high school teachers (RET) is not a new idea, the Target Inquiry (TI) program uses a slightly different approach to its RET. In particular, the TI RET incorporates a course to help prepare teacher for conducting research before the RET as well as a course to help teachers make connections between RET and the classroom. Data from teacher interviews, journal articles, evaluations, and classroom observations as well as mentor evaluations were collected in order to determine how the RET impacted: (i) teachers beliefs about the inquiry process; (ii) teachers chemistry knowledge; and (iii) teachers classroom practices. This poster will present these findings as well as implications for developing successful RET programs.

Mentor: Deborah Herrington

Padnos Hall Atrium 8

Serum Vs Plasma in PSA Testing

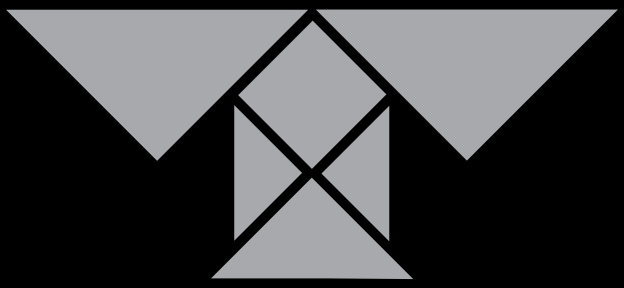
MARIA BRUNETTE, ASHLY RHADIGAN

The purpose of this study is to determine if there is a difference in the results of a Prostate Specific Antigen (PSA) assay between plasma and serum samples. The hospital in which we are performing this study uses lithium heparin tubes (plasma) to run all chemistry tests other than PSA and lithium levels, for which they use serum separator tubes. Lithium levels need to be run on serum rather than lithium heparin for obvious reasons, but we would like to know if PSA must be run on lithium heparin tubes or if serum specimens will produce the same results. The study includes both serum and plasma blood specimens previously drawn from 30 male patients for PSA and other chemistry testing. Specimens with a large range of PSA levels will be selected so our samples will include at least ten blood samples with high PSA levels and ten with low PSA levels. We will use specimens from men of any age, race, and health status. The tubes we use will be de-identified by hospital personal prior to us running these tests. If the PSA assay is the same in serum as in plasma, in many cases this would eliminate the need to draw a serum separator tube in addition to a heparinized tube, thus reducing lab costs and time.

Mentor: Linda Goossen

ORAL PRESENTATION ABSTRACTS*

8:00 A.M. - 3:40 P.M.



"Faculty-mentored student research provides opportunity for learning linked to discovery through inquiry-based initiatives that challenge students to explore problems, work collaboratively, ask questions, and seek answers. These experiences prepare students to be informed, engaged citizens and successful professionals in their increasingly complex and diverse communities."

- DEAN CYNTHIA MCCURREN -

*All submitted abstracts have been approved by the faculty mentor.

8:00 A.M.

Kirkhof Center 104

Indulgence Coffee: Tech Selection in a Small Firm

DAN BOLHUIS, ANAS MUHAMMAD, JAMES SNIDER, DANIEL WARARI, JIN LEE, ALISSA RICHARDS

Indulgence Coffee Shop has been a landmark in Ada for the past four years. Traditional business operations methods have been sufficient for the management until now. Growth in popularity as well as workspace required a change. This presentation details the process of a technology audit and its results as determined by a group of management students.

Mentor: Nancy Levenburg

Padnos Hall 107

Evidence-Based Medicine Among Members of the Michigan Academy of Physician Assistants

MELISSA "BLAIR" COFER, DANIELLE SIMPSON

Evidence-based medicine is the use of current research in daily clinical practice. Using evidence-based medicine allows clinicians to integrate their clinical expertise with the best available clinical evidence taken from research. This research project will be a descriptive quantitative research study targeting members of the Michigan Academy of Physician Assistants (MAPA). The purpose of this study is to examine physician assistants' attitudes towards research and the use of evidence-based medicine. Each practicing physician assistant that is a MAPA member will be asked to voluntarily participate in the study. The questionnaire consists of three sections designed to gather demographic data, attitudes towards research, personal research involvement and scholarly pursuits. The results of the survey will be discussed.

Mentor: Sango Otieno, Wallace Boeve, Frank Ward, Jr.

Padnos Hall 108

Synthesis of Thiophene Based AmpC B-Lactamase Probes

UMA MISHRA

Uma J. Mishra*, Jenna M. Tomlinson, Rachel L. Kubiak, Chris J. Davis, Robert P. Smart, William Schroeder, and Rachel A. Powers Department of Chemistry and Cell and Molecular Biology Program Grand Valley State University B-lactams are the most widely prescribed class of antibiotics. However, their continued utility is threatened by the expression of B-lactamase enzymes, which hydrolyze the defining lactam ring of these antibiotics, rendering them useless. Current clinical inhibitors for these enzymes also contain a lactam ring, allowing resistance to develop rapidly. Inhibitors that do not resemble B-lactams would require bacteria to develop novel resistance mechanisms. Previous research identified a novel, non-B-lactam inhibitor for the class C B-lactamase AmpC (3-[(4-chloroanilino)sulfonyl]thiophene-2-carboxylic acid; KI 26 mM). In an effort to improve the binding affinity of this inhibitor, a series of sulfonylthiophene carboxylic acid derivatives with varying carbon chain spacer lengths were synthesized and tested for inhibition of AmpC.

Mentor: Rachel Powers, Robert Smart

Padnos Hall 209

Bridging the Gap: A Statistical Consulting Experience in Allendale

REBEKA TABBEY

Candy Kraker, Allendale Township Clerk, wanted to better understand Grand Valley students' opinions about Allendale Township. A survey was created to learn about the students' wants and needs for services and businesses and to determine if the students felt they are a part of the Allendale community. As a statistical

consultant, I was to analyze the survey responses and determine if the students' opinions were related to factors such as means of transportation and where they live relative to the college campus. I will talk about my experience as a statistical consultant and share specific findings from the analysis.
Mentor: Candy Kraker, Phyllis Curtiss, Neal Rogness

Padnos Hall 262

Stream Quality and the Impacts of Land Use

JESSICA SANDBORN

Libhart Creek is a small creek that runs through portions of Orange Township, Michigan, that have various types of management practices. This study will be performed to compare stream quality in two locations along the creek. First, an area of pasture in which livestock are allowed to access the stream, and second, an area that has been managed as grassland for many years. Samples will be collected slightly downstream from each site and will include the collection of benthic organisms, and the measurement of temperature, dissolved oxygen, stream width, depth, and discharge. Stream bed quality and composition will also be noted. It is expected that the creek in the area of the grassland will have a better stream quality than that of the pasture. Libhart Creek serves as a water source for many people as it empties into the Grand River and water quality needs to be protected.
Mentor: Erik Nordman

8:20 A.M.

Padnos Hall 107

Translating Cultures: Bridging the Ancient and Modern through Transadaptation and Performance

HANNAH GAFF, 2007 STUDENT SUMMER SCHOLAR

A central challenge in modern productions of ancient Greek tragedy is that contemporary audiences do not possess the cultural competence that was integral to the original context of Greek drama. Ancient Greek theatre is packed full of cultural references that we just don't "get" today. In addition, the majority of existing translations disregard the original theatrical context of these classical plays. Attempts to stage these reader-oriented translations are often poorly received. This project (The Furies Project) addresses these challenges with the creation of a physical "language" that supersedes the traditional text and more directly translates cultural similarities and differences. Drawing from physical approaches to performance proposed by theatrical practitioners who reinvented the actor-audience interchange (including Jerzy Grotowski, Vsevold Meyerhold, and Antonin Artaud), and the idea of transadaptation, this project generates a style of theatre that overcomes cultural dissonance between contemporary audiences and the original context of ancient Greek tragedy. The Furies Project culminated with the performance of an adaptation of Aeschylus' Oresteia (created during the comprehensive workshop phase of the project), on December 7, 8, and 9 at Grand Valley's Louis Armstrong Theatre. The performance received a Certificate of Merit from the American College Theater Festival/Kennedy Center for the directorial staging of the Furies chorus. A paper detailing The Furies Project was presented at the American Society for Theatre Research (ASTR) meeting in November of 2007. This paper will be published in The Mercurian, a journal specializing in theatrical translation, later this year.
Mentor: Ian Borden

Padnos Hall 168

Instructor Rank and General Education Foundation and Culture Courses: A Statistical Consulting Experience

KATHERINE REHORST

Dr. Carol Griffin, Professor of Biology and head of the General Education Program at Grand Valley State University, is interested in examining whether or not the primary rankings of professors teaching culture and foundation courses have changed over the past four years. This interest arises in response to a growing

student population and, consequentially, the hiring of new professors. Continuing this analysis of the General Education Program from previous years, it is the point of this portion of analysis to determine if there have been any shifts in the use of instructor ranks for the foundation and culture courses. If differences are depicted Dr. Griffin hopes to extend this analysis to encompass the impact these changes may have on the University. This presentation will examine my role as the statistical consultant for this project, as well as present some relevant findings and conclusions discovered throughout the process.
Mentor: Phyllis Curtiss, Carol Griffin, Neal Rogness

Padnos Hall 209

Manna from Heaven Through the Eyes of Different Religious Traditions
KATELYN HART

The purpose of this study is to explore the mystery of manna. Different religions have different explanations regarding the miracle of manna and what it was. We will be exploring post-Biblical Jewish religious explanations, Christian implications for the Eucharist, and Islamic concepts from the Qu'ran. All three of these religions have their own ideas for trying to explain manna, but there are also similarities between them all. As the religious explanations are explored, we will try to come to our own conclusion of what manna was and what it symbolized to God's people.
Mentor: Sheldon Kopperl

Padnos Hall 262

Local Organic Food Perceptions
SARAH LEEP

Locally grown and organic foods are gaining popularity across the nation. This study will look at which aspect people in Ottawa County place more value on, winter eating habits, and potential improvements/solutions. A survey of people and farms in Ottawa County will be conducted. I expect the results to show that people prefer local to organic, and buy from the grocery store during the winter. This would mean that for most of the year non-local food is consumed by people who value local food. Greenhouse growing or classes to learn about canning and freezing would be possible solutions to this dilemma.
Mentor: Erik Nordman

8:40 A.M.

Padnos Hall 211

From Swash Zone to Dune Crest: A Grain Size Analysis along the Lake Michigan Shore in Muskegon, Michigan
NICOLE HARRIS

Four samples of sand were collected from the base of a dune, and four from the crest of a dune along the Lake Michigan shore in Muskegon, Michigan. Using sieves, a grain size analysis was run for each sample, and mean, median, mode, skewness, standard deviation, and kurtosis were determined. I hypothesize that more fine particles will be found at the crest of the dune, possibly due to the sorting processes involved in particle transportation. The mineralogy, sphericity, roundness, and surface texture were determined microscopically. The sand samples contain largely quartz and feldspar, with lesser amounts of magnetite and other heavy, mafic minerals. The results of the analysis of the dune sand will be compared to four samples of sand from the swash zone, and four from a berm located landward of the swash zone. These samples were collected from the same location in Muskegon and analyzed by Emily Brehm.
Mentor: Patricia Videtich

Padnos Hall 262

Select Coniferous Trees Effect on Soil pH

DAVID BLY

Coniferous trees have long been known to affect soil to the point where many plants will not flourish in the vicinity of them. Although there are many factors that affect how plants grow, one factor that is often overlooked is attaining the right soil pH for optimal growth. The objective of this project is to determine which of a group of trees affects the soil pH the greatest. The soil beneath each type of tree will be compared with the soil adjacent to that tree. Then the soil beneath the trees will be compared with each of the other species of trees. This will determine which type of tree has the greatest effect on the soil beneath it. The hypothesized conclusion is that the soil under the red pine (*Pinus resinosa*) will have the greatest difference from the soil around it and have the greatest acidity. The results of this study should have an effect on which trees are planted in yards and gardens, due to the effects the trees have on the soil.

Mentor: Erik Nordman

9:00 A.M.

Kirkhof Center 104

Jewish Dietary Laws: A Healthy Way of Life or Religious Conviction?

KATHERINE LAZET

A look into the Jewish kosher laws, using both a historical and modern perspective. The question is asked whether the laws were ordained by God as a purely religious experience, one to set apart the Israelites as his Chosen People, or whether the kosher laws provided health benefits as well. Through library research, interviews, and some culture study, the possibility that the dietary laws helped in preventing communicable disease, as well as providing a more humane method of slaughter, will be examined.

Mentor: Sheldon Kopperl

Padnos Hall 108

The Gastrointestinal Microflora of Male and Female Isopods

DE'VONA GLOVER, MCNAIR SCHOLAR

The microflora (microbes) of the gastrointestinal tract has been found to play an important role in the health of animals. However, the dynamics of the transmission and colonization of the microflora between mates and between parents and offspring are still largely unknown. For example, in aphids, a required endosymbionant is transmitted from male to female and from parent to offspring. Isopods are potentially a useful model for studying such transmission. As a first step in determining their usefulness, DNA from the gut and hepatopancreas samples was analyzed to determine the variety of microbes using DGGE techniques. This technique generates a unique band for each different microbe in the sample. In addition to determining the number of microbial species, selected bands were isolated and sequenced to identify the microbial species.

Mentor: Patrick Thorpe

Padnos Hall 209

"Not in Our Neighborhood": Understanding the Power Dynamics and Popular Discourse of Community Policing in Grand Rapids, Michigan

HEIDI REYNOLDS-STENSON

Community policing is an umbrella term for a general philosophy and includes a variety of different programs that aim to create a closer relationship between police officers and community members. Since the 1970s, community policing rhetoric has increasingly dominated law enforcement scholarship and police departments' stated goals and strategies. I researched community policing efforts in Grand Rapids by attending meetings

of neighborhood associations and other organizations and through interviewing neighborhood association workers, residents, community police officers and community activists. I found that community policing efforts in Grand Rapids have not necessarily created a greater alliance between police and some segments of the community. In fact, it seems that these efforts have deepened divisions between the police and some residents by further alienating those residents who already had a contentious relationship with police. I found that the local popular discourse of community policing is steeped in constructions of race and class and frequently relies on quality of life rhetoric that reinforces and reproduces race and class-based divisions between neighbors and legitimizes expansion of police control and discretion.

Mentor: Joel Stillerman

Padnos Hall 211

Grain Size Analysis of Sand from a Lake Michigan Beach: North Muskegon, Michigan

EMILY BREHM

Four samples of beach sand were collected from Muskegon State Park in the swash zone and four samples were collected ten meters landward of the swash zone. At each of the two locations, the four samples were taken in a traverse parallel to the shore with one meter between each sample. The beach sand was sieved and then the size fractions examined under a microscope. By looking at the grains under a microscope, mineralogy, sphericity, roundness, and surface texture can be determined and the two locations compared. After sieving, histograms will be made along with frequency and cumulative curves. From the graphs mode, mean, median, skewness, sorting, and kurtosis will be calculated and compared to see if there are any differences or similarities between the two locations. Results from these two locations will be compared to eight samples collected from the base and crest of the dune at the same beach location. This set of data was collected and analyzed by Nicole Harris. All of the samples will then be compared to see if there are any differences or similarities between the swash zone, ten meters landward of the swash zone, the dune base, and the crest of the dune.

Mentor: Patricia Videtich

Padnos Hall 261

Change in Body Mass Index in Obese and Non-Obese Patients Following Total Hip Replacement Surgery

PATTY OLESZKIEWICZ, JOLA LANIER, TRACY MOLLAN

This study used a retrospective chart review design to gather information on patients who had a total hip arthroplasty. Statistical analysis on the change in BMI between pre-operative and post-operative values was done on the entire sample Further analysis, included stratification of the sample based on gender, hip pathology (osteoarthritis, avsacular necrosis, congenital hip dysplasia, and rheumatoid arthritis), and BMI classification (i.e. optimal, obese, morbidly obese). A total of 147 charts were reviewed which included 46% males and 54% females with a range of 29-95 years of age. In the statistical analysis of the entire sample, there was no significant change in BMI when pre-operative BMI was compared to the one-year post-operative BMI and the two-year post-operative BMI. In addition there was no significant BMI change when stratified for gender and obesity level. Although there was no significant change in BMI, the trend was an increase in BMI at both post-operative time points.

Mentor: Theresa Bacon-Baguley

Padnos Hall 262

Adaptive Management Plan for *Oncorhynchus mykiss* Spawning Habitat in the Rogue River Suburban Area

MICAH MEENDERING

As urban sprawl continues to change the landscape of our natural streams and rivers, the degradation of these water bodies affect the wildlife at many levels. Steelhead, *Oncorhynchus mykiss*, are an anadromous species that require specific conditions for reproductive success. This non-native fish species is one of the most popu-

lar game fish in the United States and is crucial to Michigan's economy. By monitoring water quality such as temperature, pH, dissolved oxygen, water levels, and sedimentation, this study will help to develop a management plan for the Rogue River suburban area. Other factors such as gravel size and cover will be evaluated at several popular spawning sites to determine any changes that must be managed under this plan. These studies concluded that sedimentation and erosion are the largest contributors to the loss of spawning habitat in the Rogue River suburban area. The removal of riparian vegetation along the stream bank decreases the banks stability and erosion occurs. This loss of riparian vegetation also minimizes the available cover for adults during spawning and the fry once hatched.

Mentor: Erik Nordman

9:20 A.M.

Kirkhof Center 104

It's What You Say, Not How You Say It: Politeness Strategies in Arabic

DIANA KLEIN

Arabic politeness strategies are not the same as those used in English. Whereas English-speaking cultures emphasize conciseness, Arabic is more concerned with politeness and traditional conventions of language. This presentation will focus on responsive phrases in contemporary Arabic.

Mentor: Kathryn Remlinger

Padnos Hall 107

INRAD, Inc. Technology Audit

MATTHEW HARNESS, JESSE FRIFELDT, BETH RUSCH, JOSH MOE, PAUL NYSSE

INRAD, Inc. is a high quality biomedical supplies firm located in Kentwood, Michigan. The company expressed to us that their current order processing and materials planning systems are inefficient and not integrated. Our team worked with INRAD to evaluate current office technology used in the firm and to research possible improvements to the order management and materials planning processes. When research for the technology audit was completed, our team made recommendations to eliminate certain programs and learn how to utilize other programs to the fullest potential.

Mentor: Nancy Levenburg

Padnos Hall 207

The Implications of Relocation for Former Campau Commons Residents

RYAN AMES

This research examined whether former residents of the Campau Commons public housing site in Grand Rapids are better off now that they have been relocated throughout the surrounding area, after the demolishing and redevelopment of the housing site. This study used three broadly defined measures with which to analyze the research question: 1) responses from a household survey are used to address the relocated resident's perceptions of Campau Commons and their new neighborhood, 2) an examination of annual earned income changes from the time of the move and again a year later, and 3) a comparison of the demographic characteristics of the Campau Commons location with the characteristics of former residents' current location. The results indicate that two-thirds of the respondents claim they prefer living where they are now and cited positive reasons (e.g., nice neighborhood, feel safe). The annual income increased (an average of $3,797). The current households are located in many different areas in the metropolis, and the vast majority of areas have less poverty, lower crime rates, and less concentration of minorities as compared to the site where Campau Commons was located. The evidence from the research confirms that the relocation of the residents can be deemed a success.

Mentor: Joel Stillerman

Padnos Hall 209

Analysis of Sculpin Movement in a 1st Order Tributary Using PIT Telemetry

JASON DEBOER

We evaluated a 1st order tributary to the Big Manistee River. Following perched culvert replacement (summer 2005), a shift in Mottled Sculpin (*Cottus bairdi*) distribution (upstream versus downstream) was observed. Pre-restoration, 31% of sculpin were captured upstream of the culvert. Post-restoration, 58% were captured upstream of the new bridge. Ninety-five Sculpin were captured from 8 100m reaches (10 each from 5 downstream reaches, and ~15 each from three upstream reaches). Fish were measured, weighed, implanted with a PIT tag and released. Forty-eight of 88 (7 dropped tags) individuals (54.5%) were recaptured at least once. Results indicate individual fish moved as much as 660m. Post-restoration, several habitat variables were compared between downstream and upstream reaches, including surficial sediment composition and water depth and velocity. Significant difference was detected for key habitat variables. Surber samples were taken in the spring (3 at each of 3 up- and 3 downstream transects), 2 years pre- and 2 years post-restoration. Pre-restoration, average macroinvertebrate abundance per m2 was 149 upstream, and 286 downstream (434 total). Post restoration, the values were 254 upstream, and 189 downstream (443 total). From a management perspective, our results indicate removing undersized, perched culverts can have multiple positive impacts on fish communities.

Mentor: Eric Snyder

Padnos Hall 211

Grain Size Analysis of the Parabolic Dune System at Rosy Mound Natural Area, Ottawa County, Michigan

JOY GRYZENIA

A typical parabolic dune system is located in the Rosy Mound Natural Area (RMNA) on the shoreline of Lake Michigan in Ottawa County, Michigan. This system consists of a beach, foredune, blowout, and wooded backforest dune. Suspension and saltation commonly transport grains varying distances, depending on the size of the grains and their specific gravity. Silt grains tend to be transported greater distances by suspension, whereas sand grains are commonly transported shorter distances by saltation. To determine if a relationship between characteristics of grains and their distance from the shoreline can be observed, in January 2008, eight samples were collected in RMNA. The samples were collected in a traverse starting at the beach and ending at the trough of the parabolic dune. Results of a thorough grain size analysis (mean, median, mode, skewness, standard deviation, and kurtosis) and microscopic observation of sphericity, roundness, and surface texture will be used to quantitatively determine which parameters are related to distance from the shoreline.

Mentor: Patricia Videtich

Padnos Hall 261

Totally Manual: Getting J. Milito & Associates, Inc. Online

RACHEL WEAVER, CHRISTOPHER BROMLEY, ANTHONY KEY, DAVID MURPHY, MELISSA WOODWYK

After threats of losing her biggest client, Kettering University, Juddee Milito and her telephone fundraising service realize the need to get communications online. The call station that Milito currently operates is completely manual and all records are sent to their respective organizations just twice every week. While Milito wants to preserve her position as a friendly, personal telephone fundraiser, she needs a way to keep up with the fast pace of some of her large clients. With nothing left to do but adapt, we helped Milito give clients what they want while maintaining the image that fueled her initial success.

Mentor: Nancy Levenburg

Padnos Hall 262

A Survey of Ottawa County Residents on the Views and Perceptions of Wolves in the Lower Peninsula of Michigan

JASON GUERRIN

On January 29, 2007, the Interior Department announced the delisting of northern rocky mountain wolves from the endangered species list in the western Great Lakes area. Through the grey wolf recovery and management plan, the wolf populations are approximately 4,000 in portions of Wisconsin, Michigan and Minnesota. Wolves once occupied all 83 counties in Michigan, but because of predator control programs and the public perception of wolves, they were completely eradicated from the Lower Peninsula in 1910, and by 1960 they had nearly vanished from the Upper Peninsula. After failed attempts to bring wolves back to the U.P., it was not until 1990 when the majority of Michigan residents were ready for the gray wolf to return. Survey results indicated that 64 percent of Upper Peninsula respondents and 57 percent of Lower Peninsula respondents supported the wolf recovery program. Public support is vital to the long term survival of the grey wolf. I will conduct a survey, with the help of a statistical consultant, on the residents of Ottawa County to see what the views and perceptions on wolves in the Lower Peninsula are now. The public today composes their perceptions from werewolf mythology, fairy tales, and views that wolves are incompatible with civilization. My hypothesis is that the public of Ottawa County wants nothing to do with wolves in the L.P.

Mentor: Erik Nordman

9:40 A.M.

Kirkhof Center 142

Butterball Farms: Production Visibility

JOE O'ROURKE, DAVID FLYNN, ORLANDO BONIFACIO, JOSE RIVAS, RYAN VIPOND

Technology has become a necessity for traceability and trackability within any production environment. Butterball Farms, Inc. is a local small business that is in the process of developing barcoding capabilities in order to increase quality control of its products and raw material throughout its production process. Our team aided Butterball Farms, Inc. in understanding and researching the barcoding technology in order for the company to increase its service and productivity. The research we conducted has helped the company to identify potential issues of the implementation process and understand how to best utilize its newly acquired technologies.

Nancy Levenburg

Padnos Hall 107

Sotos Syndrome Awareness

LEAH TARRANT

Sotos syndrome is a rare genetic condition characterized by excessive physical growth during the first two to three years of postnatal development. Individuals affected by Sotos syndrome may also have decreased muscle tone and intellectual impairment such as delayed cognitive and social development. Most cases develop sporadically due to a mutation of the NSD-1 (Nuclear SET Domain 1) gene. This presentation offers an overview of Sotos syndrome based on information and experiences provided by families with children diagnosed with this rare genetic condition and current research regarding the disease and the genetics behind it. The data was used to create an informational pamphlet that will be available on the day of the presentation in order to increase awareness in the Grand Rapids area.

Patricia Matthews

Padnos Hall 108

Trends of CAM Reporting in an Orthopaedic Setting

BETHANY MILLS, LISA DAVENPORT, CARRIE ISKRA

The intention of this study was to examine the reporting trends of complementary and alternative medicine (CAM) use among orthopaedic patients with osteoarthritis, and to raise awareness of the extensive use of CAM within this population. A cross-sectional study was conducted that involved 50 patients recruited from River Valley Orthopaedics in Grand Rapids, Michigan. Recruited patients were aged 40-75 and had been suffering from osteoarthritis for a minimum of 3 months. Socioeconomic data, arthritic history, and specific CAM used by each patient were obtained using an anonymous medical questionnaire survey. Results indicate that the prevalence of CAM use in an orthopaedic population is no different than what is being reported on a standard medical history form. The average orthopaedic patient using CAM to treat his/her osteoarthritis is a 61-75 year old individual with a college degree, making over $50,000 dollars a year.

Mentors: Charles DuBose, Wallace Boeve

Padnos Hall 168

A Statistical Consulting Experience: Course Size for GVSU Theme Classes

ASHLEY DEBOER

The General Education Department has noticed that GVSU has doubled enrollment in the last ten years. Dr. Carol Griffin, the Director of General Education, is conducting a study to see how course size has changed for various types of classes. My role as a statistical consultant was to focus on theme classes at GVSU and to analyze how the course sizes have changed over the past four years for each theme class. I will describe my experience as a consultant as well as discuss some of the findings from the study.

Mentor: Carol Griffin, Phyllis Curtiss, Neal Rogness

Padnos Hall 207

Insulating Properties of Changing Tundra Vegetation

ROBERT SLIDER

An increase in global temperature is expected to dramatically effect arctic ecosystems. Warming may also release large stores of carbon from tundra soils into the atmosphere in the form of greenhouse gasses. Studies from the International Tundra Experiment (ITEX) have shown changes in plant communities under simulated warming conditions, including a general increase in plant cover. This study examined the role of plants in the transfer of heat between air and soil. ITEX Open Top Chambers (OTC's) were used to simulate warming conditions in wet and dry plant communities near Barrow and Atqasuk, Alaska. Plots were established in which vegetation was either removed down to bare ground or increased, using the plant material from removal. These treatments were compared to OTC and control plots established in 1998. Temperature was recorded for the duration of the growing season (June-August) at heights of 13cm, 0cm, and -10cm from ground level. In all four sites, the greatest difference in temperature between canopy height (13cm) and soil (-10cm) was seen in plots with added vegetation. It was also noted that at each site the air to soil difference in OTC's with nine years of warming was within 10% of the OTC's with added vegetation, both of which were at least 20% cooler than OTC's with bare ground. These results indicate that vegetation acts as a significant insulator in the tundra ecosystem, and suggests that soil temperatures may be buffered from warming air temperatures by an increase in plant cover.

Mentor: Robert Hollister

Padnos Hall 211

The Origin of Sediment in Turkey Run State Park, Parke County, Indiana

NOAH SLUITER

Pleistocene glacial outwash and end moraine sediments make up the majority of the overburden within Turkey Run State Park, Indiana. In the park the underlying Carboniferous Mansfield Sandstone is a part of a larger feature, the Illinois Basin. Glaciers covered this portion of Indiana intermittently. Over the course of eight million years as the last glacier melted, the rocks in the basin were deeply eroded by the paleo-floods of the Wabash River and its tributaries including Sugar Creek, which traverses the park. Further erosion of the Mansfield continues under current conditions resulting in the breakdown of cement in the sandstones, as well as mudstones, coal, and conglomerates. Small tributaries at the base of the gulches transport weathered sediments from the rock formations and the overlying glacial drift into Sugar Creek. Sediment samples have been collected along the two tributaries at 30m intervals. I hypothesize that these sediments will contain grains from the various rock types and overlying glacial sediments. Grain size statistics will be determined from sieved sediments and the grain size fractions will be examined under a microscope for mineralogy and shape analysis. Thin sections of various rock types collected along the tributaries will be examined under a microscope for grain size, composition, and shape analysis. The results will determine the relative contributions of the different rock types to the sediment in Sugar Creek on the park grounds.

Mentor: Patricia Videtich

Padnos Hall 261

Disparities in Survival of Gastrointestinal Cancers: A Retrospective Study

KRISTIN COLE, CHRISTINA BISCHOFF

The black population is known to have a decreased five year survival rate compared to that of whites in regard to colon, esophageal, pancreatic and gastric cancers. This study will determine whether the disparity is due to socioeconomic status rather than race when there is a surveillance test available. It is hypothesized that after controlling for socioeconomic status the disparity in presentation and the five year survival rate will not be significant. A database consisting of Medicare and Medicaid claim files was merged with patients from the Michigan Tumor Registry having colon, esophageal, pancreatic and gastric cancer diagnosed between 1996 and 2000. As a method to assess for socioeconomic status, the patient's annual income and those patients dually eligible for Medicare and Medicaid were evaluated. A total of 18,260 patients were utilized out of a total database population of 125,900. Patients of both the black and white race over age 65 with a diagnosis of colon, esophageal, pancreatic and gastric cancer were included. Those patients incorrectly linked to one of the four gastrointestinal cancers or diagnosed on autopsy were excluded.

Mentor: Charles DuBose

Padnos Hall 262

Is it Really Worth it?

TIMOTHY KOLMODIN

One of the latest buzz words around is renewable energy meaning natural sources of energy that are naturally replenished. Wind energy is a type of renewable energy that is becoming increasingly popular. Though somewhat controversial, wind energy has proven to be an effective source of energy. Wind turbines are not cheap though and many wonder about the economic offsets we may face by investing in these. This study focuses on information collected from two local wind turbine owners in order to determine if it is economically beneficial for individuals to have their own wind turbines. I hypothesize that the initial cost will be great for these turbines, but the benefits acquired will far outweigh any cost.

Mentor: Erik Nordman

10:00 A.M.

Kirkhof Center 104

Civic Engagement

DAVID REDDING, 2007 STUDENT SUMMER SCHOLAR

What fosters civic engagement? It depends on how you define civic engagement and civics in particular. Through my research on this project I have expanded my definition of civics to include all social interactions within a community. Under this definition it can be argued that everyone engages civically on a daily basis, whether it be driving on the road or surfing the internet. Based on participant observation of two state-Mentored civic education seminars, an extensive review of current civic education research, analysis of civic education texts, and interviews with local civic educators, I have concluded that much of what is taught in civics today focuses primarily on the particular branch of civics involving government (i.e. law and politics). I believe that if the content of civic education is expanded to include daily civic interactions, students will become more aware of how they engage in these actions and will be able to improve the quality of their civic participation. This will hopefully generate more positive feelings toward quality civic interaction, which can foster civic engagement.

Mentor: Kevin den Dulk

Kirkhof Center 142

Assessment of the Incidence of Deep Venous Thrombosis and/or Pulmonary Embolism Following Total Hip Arthroplasty Atilizing a Newly-Established Total Hip Arthroplasty Registry

KIMBERLY DYKSTRA, JENNIFER STOLL, KRISTIN COX

Joint replacement surgery is becoming an increasingly common procedure that is constantly evolving. The development of a total joint registry with subsequent analysis of gathered information will allow the Grand Rapids medical community to assess outcomes and implement changes to improve the future of joint replacement. This retrospective clinical study will utilize a newly developed total joint registry established by Spectrum Health to determine the incidence of deep venous thrombosis (DVT) and pulmonary embolism (PE) in subjects who have had a total hip replacement, otherwise known as total hip arthroplasty (THA). In addition, this project will investigate the incidence of DVT and/or PE in relationship to the various anticoagulation therapies used in the prevention of DVT and/or PE. Survey data was collected a sample of patients who received THA between 2001 and 2005. It is estimated that nearly 4000 hip replacement procedures were performed between 2001 and 2005. With a minimum predictive response rate of approximately 25% and a more realistic response rate of 35%, it is likely that between 1000 and 1400 surveys will be returned. Since both the response and explanatory variables are categorical, two-way crosstab analysis (Chi-square test of independence) will be utilized to analyze the relationships between each of the response and explanatory variables.

Mentor: Theresa Bacon-Baguley

Padnos Hall 107

Mack Family Dentistry Public Relations Campaign

LAUREN MACK

Mack Family Dentistry is a small, family-owned general dentistry office in Livonia, Michigan, that would like to increase its patient base. This strategic public relations plan analyzes the office's current situation and presents relevant primary and secondary research. The plan sets specific objectives, explains supporting strategies, and presents a public relations campaign which includes various public relations tactics. The plan also provides methods to evaluate the effectiveness of the stated objectives once the public relations campaign has been completed.

Mentor: Michelle Burke

Padnos Hall 168

A Management Plan to Establish a Self-Sustaining Ring-Necked Pheasant Population in Ottawa County, Michigan.

ESON FLEMING

A private landowner in Ottawa County, Michigan, wants to create a self-sustaining pheasant population to hunt. Since there are no pheasants on the property, the goal of the research is to have a plan resulting in a self-sustaining population. The first step I will take to establishing the pheasant population is to create suitable pheasant habitat. Suitable habitat will include a food and water source, shelter, and adequate nesting sites. Current habitat will be mapped using GIS. Next I will determine the number of pheasants to be released, the age of the pheasants, and what sex ratio is most effective. I will determine a harvest rate that would not adversely affect the population. Once habitat, pheasant populations, and harvest rates are established the result will be a pheasant population that will allow the landowner to harvest a set number of pheasants each year.

Mentor: Carol Griffin

Padnos Hall 207

Analyzing Labor in Michigan Literature

DAVID LEGAULT, 2007 STUDENT SUMMER SCHOLAR

Little research has been focused on finding a direct connection between work-related literature and Michigan writers. The project looked to accomplish this through several steps. First, a definition of work related literature was established through books written on the subject of American work literature. Secondly, a comprehensive literary analysis of notable contemporary Michigan authors was undertaken in the hopes of finding a correlation between certain themes and the geographic region from which the writers came. After closely reading Michigan fiction, nonfiction, and poetry, the next step involved direct questioning of writers in hopes of gaining further insight into their writing process. This was accomplished through interviews and a look at writers' correspondences with Michigan author Jim Harrison. After this analysis was completed, the project identified several themes vital to Michigan writing. These included: using vocation as a means of defining characters; the use of industrial imagery or pollution as a means of showing the bleakness of society; and the camaraderie between workers as a means of survival. Although every book analyzed was not necessarily about work or even Michigan, these themes undoubtedly appeared in each novel or collection of shorter work. After this was established, the project looked to apply these key ideas to my own writing, resulting so far in a published interview, a book review publication, as well as two creative nonfiction essays about industry and Michigan: an exploration of my personal connection to the Mackinac Bridge, and a look at Michigan's booming pet death industry.

Mentor: Ander Monson

Padnos Hall 209

"PARRHESIA" in the Thought of John Chrysostom

DEVIN WHITE, 2007 STUDENT SUMMER SCHOLAR

St. John Chrysostom (347-407 CE) was one of the greatest orators and bishops of the early Christian church. One hallmark of his ministry as patriarch of Constantinople was his open confrontation with the imperial throne, specifically with the empress Eudoxia. Because of his opposition to the empress, Chrysostom was deposed from his patriarchate and ultimately died in exile. Chrysostom's opposition to the imperial family stemmed not from mere bullheadedness, but rather from his belief that Christian bishops had an obligation to "speak truth to power". One key philosophical concept, parrhêsia, a term which appears more than 500 times in Chrysostom's corpus, elucidates this responsibility. Michel Foucault has described parrhêsia in its classical Athenian context as "the right to express what one believes to be true to one's peers". When Chrysostom spoke of parrhêsia nearly a millennium later, he meant (among other things) "the boldness a bishop should

have when engaging political authority''. The purpose of this talk then is to examine Chrysostom's notion of a bishop's parrhêsia with particular reference to his address De Sancto Babyla Contra Julianum et Gentiles, in which Chrysostom presents the bishop and martyr St. Babylas as a paradigmatic figure.
Mentor: Charles Pazdernik

Padnos Hall 211
Assessment of High Fidelity Simulation in Health Professionals Education
JORDAN STEVENSON, , ELIZABETH LEFFINGWELL

The study assessed the efficacy of high fidelity simulation in the education of health care professionals. Medical residents and physician assistant students completed a post-simulation survey after participating in a high fidelity simulation experience at the Grand Valley State University Cook-Devos Center for Health Sciences. Questions in the survey were designed to evaluate participants' perceptions, as well as the positive and negative attributes of the simulation experience.
Mentor: Theresa Bacon-Baguley

Padnos Hall 261
A Statistical Consulting Experience:
A Look into How Instructor Rank Has Changed Over the Years in Theme Courses
CHERI LOZON

With increasing student enrollments and decreasing state funds, Dr. Carol Griffin, Director of Grand Valley's General Education program, wants to determine how much, if any, instructor rank (tenure-track versus non-tenure-track) has changed in the theme courses over the fall semesters from 2003 to 2007. My role in this project was to serve as a statistical consultant and to perform appropriate data analyses. This presentation will highlight my role and include select findings from my analyses.
Mentors: Phyllis Curtiss, Neal Rogness, Carol Griffin

Padnos Hall 262
Comparing Sites of the Rogue River Watershed
that Are Affected by Pollution (Be it Point-Source or non Point-Source)
SCOTT MAYBORE

For my capstone project I am going to compare water quality at a few different sites on the Rogue River. For my discussion, I will determine, in general, how the surrounding land affected my results. My sites will consist of areas in Rockford and sites further downstream of Rockford. Although the whole Rogue River Watershed is fairly urbanized, I believe the closer I am to the city of Rockford, the higher pollution rates will be. This will be evident in the type of invertebrates I collect and the differences in pH levels.
Mentor: Erik Nordman

10:20 A.M.

Kirkhof Center 104
The FARC: Patterns of revolutionary war and insurgency in Colombia
LAURA GEIKEN

The guerrilla organization, the Revolutionary Armed Forces of Colombia- better known as the FARC, has played a key role in Colombia's recent brutal history, especially in rural settings. This study analyzes the reasons behind the FARC's rural base of support and questions why this guerrilla organization has been unable to build a strong base of support in urban areas. This investigation will include an analysis of the physical geography of Colombia, the role of the right-wing paramilitants, fundraising for non-state combatants, and the

effect of the guerrilla movement on the general population of Colombia. The importance of coca cultivation and effects of Plan Colombia on the guerrilla's fundraising and rural support base will also be addressed. The research for this study is based on various academic journals and articles, as well as a historical analysis of the FARC's physical movements within Colombia.

Mentor: Jim Penn

Kirkhof Center 142

An Analysis of Two Non-Traditional Instructional Methods on Student Learning

KRISTOFER PACHLA

This physics education research study looks at the differences between two non-traditional teaching techniques, (a) the use of guided inquiry and (b) the use of a type of graphical organizer, on the learning of students in a conceptual physics course (PHY 200, Physics for the Life Sciences) at Grand Valley State University during the Winter 2008 semester. Traditional lecture was not chosen because extensive research has shown that increased learning (significantly better test scores) occurs with cooperative learning as compared to traditional lecture (Anderson et. al, Yamarik). The specific graphical organizer, known as a Concept Definition (C/D) Map, is a visual organization tool that allows students to create a definition of a concept based on principles, applications, and similar and dissimilar concepts. Students in six PHY 200 discussion groups, each with about 25 students, participated in pre- and post-test tasks in order to gauge the learning gains occurring with one or the other of the two different teaching methods. Control groups participated in a guided inquiry activity while experimental groups created C/D Maps for the topic at hand. Each group then finished in-class activities with a class discussion, facilitated by the researcher, in which the students discussed and came to an agreement on the important aspects of the target concept. Pre- and post-test comparisons were made for students in each of the two groups in order to measure and characterize the learning gains in each group, and the results from the control groups and the experimental groups were also compared to one another.

Mentor: Bradley Ambrose

Padnos Hall 107

Sex, Herpes and Guillain-Barre Syndrome

AUSTIN KUIPERS

Guillain Barre(GB) Syndrome is a rare autoimmune disease that affects approximately 1 in 100,000 in the general population. A disease of the peripheral nervous system, it attacks the tissue insulating the nerves causing a variety of symptoms including rapid and progressive muscle weakness, paralysis, and loss of sensation. Cessation of disease symptoms occurs in 80% of participants within days to weeks; however, in 20% of patients chronic symptoms persist. Anecdotal accounts associate the onset of the GB with recently preceding infections, including Herpes virus, a virus that is especially prevalent in the sexually active college scene. The elderly are also of particular interest as they experience increased incidence of GB. This presentation offers a short overview of the disease and different treatment options available for those affected.

Mentor: Patricia Matthews

Padnos Hall 108

Animals Rights: The Controversy for Activists, Scientists, and the Everyday American

ALANA KINCAID

The role animals play in American society is ever changing. Therefore, the opinions people have of animals and legislation concerning their rights are in a constant state of flux. After exploring some of the principle causes of the varying roles of animals, how extensively animals are protected by law, and recent legislative battles concerning the rights of activists and people who are targeted by activist protestors, the complexity of the animal rights issue is increasingly apparent. At first glance, the topic of animal rights may appear only to affect

a small number of people, such as activists, scientists, and veterinarians, but this is a dramatic misconception. The controversy of animal rights has a tremendous impact on the actions, economy, and welfare of every person in American society. Although some may try to avoid it, the everyday American is not immune to the controversial topic of the rights of animals.

Mentor: Terry Trier

Padnos Hall 168

A Statistical Consulting Experience with the Muskegon Summer Celebration

CHRIS WINKEL

Each summer, people gather at the week-long Muskegon Summer Celebration where individuals can enjoy many venues and concerts. Over 1200 people were surveyed at last year's events throughout the various venues. Neal Rogness, a member of the event's survey committee has requested that the data be analyzed to investigate how people surveyed rate the events, if they have previously attended any events, descriptive trends, demographics, and other possible relationships within and across venues. My presentation will highlight my experience as a statistical consultant and I will share select findings.

Mentors: Neal Rogness, Phyllis Curtiss

Padnos Hall 207

The Melding of Cheese and Church

KATIE KUJALA

Rocamadour is a Catholic shrine town in France that, throughout the years, has witnessed the melding of pilgrimage to its chapel of the Black Virgin with very secular tourist activities. Over recent years, the Church has tried to channel the attention that the site gets for tourism reasons by promoting this pilgrimage. Le Fête du Fromage or Cheese Festival, held at the end of May, is a case that exemplifies the increasing interaction between the Church and tourism.

Mentor: Deana Weibel

Padnos Hall 209

CAM Education: The Confidence and Counseling Skills of Grand Valley State University Physician Assistant Students

TIMOTHY PEBBLES, TESSA ZIELKE, MIKE GROTENRATH

Complementary alternative medicine (CAM) is a diverse group of medical and health care systems, practices, and products. According to a survey by the NCCAM in 2002, 36% of adults in the U.S. who are 18 years and older have used a form of CAM. Due to the increased use of CAM by Americans, health care professionals in the United States need to understand the principles of CAM in order to provide safe and effective care to their patients. Although there is an increase in the number of medical schools that include CAM therapies in their curriculum there still remains a lack of consistency and universal guidelines as to what and how much CAM should be taught. As a result of this, current practitioners do not have the level of knowledge to incorporate possible CAM interactions with western medicine. The purpose of this study is to assess the confidence levels and counseling skills of the Grand Valley State University PA students in regards to their CAM education. Ultimately, this research may help augment the curriculum at GVSU. The results of a survey of PA students will be presented.

Mentors: Wallace Boeve, Andrew Booth, Diann Reischman

Padnos Hall 211

Contact between Pleistocene and Meandering Stream Sediments in Aman Park, Ottawa County, Michigan

MICHELLE DAM

Sediment samples collected during the installation of a shallow monitoring well in Aman Park, Ottawa County, Michigan may be used to define the contact between the underlying Pleistocene deposits and the overlying sediments deposited by Sand Creek, a meandering stream. The underlying Pleistocene deposits in the Sand Creek Watershed consist mostly of end moraines composed of fine-textured till and glacial outwash composed of sand and gravel. The well is four meters deep and is approximately 16 meters from Sand Creek. The sediments from the well are mostly sand-sized with some gravel and silt. Sieving of the sediment samples from eight depths in the well allows sorting, skewness, kurtosis, and grain size distributions at the various depths to be calculated and compared. Estimates of the gross mineralogy, grain shape, and surface textures of the grain size fractions will further characterize the samples. Once the characteristics of the sediments from the well are quantified, an attempt will be made to distinguish between the glacial and meandering stream sediments.

Mentors: Peter Riemersma, Patricia Videtich

Padnos Hall 261

Exploring Student Understanding of Equations Through the Conservation of Energy

TIM MAJOR

Physics students often think "solving problems" means choosing formulas and plugging in given values to get an answer. Many students who are able to use this technique to get correct answers often demonstrate a lack of understanding of the concepts involved when interviewed. Some studies have already been done on student understanding of mathematics in a physical context, involving both students' ability to understand and manipulate formulas, as well as how they relate their math knowledge to physics problems. The context of the investigation is a topic in which there is no universal formula, but rather a law that facilitates the creation of an equation based on a physical concept: the Law of Conservation of Energy. When applying this law to solve problems, students cannot simply "plug and chug", but must construct an equation based on the specific situation described. The research for this project was primarily performed through individual student interviews, which were videotaped for in-depth analysis. By studying the process through which students construct equations from physical concepts such as the Conservation of Energy, some misleading ideas about interpretation, utilization, and the purpose of equations in physics that are common in introductory physics students are elucidated.

Mentor: Bradley Ambrose

Padnos Hall 262

Population Growth Model for Fruitport Township, Michigan

JON VANDER MOLEN

Over the past 40 years, the population of Fruitport Township, Michigan, has experienced a constant increase. This growth has brought an increase in the number of homes and industries to the area. A Population Allocation Model (PAM) is a GIS program that takes past land use data and current land use date and models and projects where urban growth is likely to occur over the next 40 years. PAM will be used to model and compare the urban growth in Fruitport Township for three different scenarios. The first scenario will be the population density that is presently in the township based on the calculations that PAM makes, the second scenario will be to double the population density, and the third scenario will cut the population density in half. The hypothesis is that there is enough land in Fruitport Township to sustain the current population density. With the completion of this project, stakeholders and decision makers of Fruitport Township will have an idea as to how and where the population of the township will grow.

Mentor: Erik Nordman

10:40 A.M.

Kirkhof Center 104

19th Century Tenements Today in New York City

JESSIE EMELANDER

Despite considerable research done on the history of tenement housing in New York City, little connection has been made between the tenement housing of the 19th century and the poor housing in New York City today. This research paper will give a detailed description of the 19th century tenement, its residents, and the conditions that forced the poor to choose these tenements for their homes. I will then draw parallels to the 21st century's poor conditions in New York City. Using historical articles and a primary account by Jacob Riis in How the Other Half Lives, this paper will create a background of information to support the issue. My research will show that the government reforms made during this time, specifically the Tenement Housing Act of 1901, allowed for lasting effects on immigrant living conditions that persist to this day.

Mentor: Lisa Hickman

Kirkhof Center 142

Analysis of Psychological Adjustment to Aging of Older Homosexual Males in Regard to Developmental Measures: A Statistical Consulting Experience

MARTHA ROZSI

I served as a statistical consultant to Dr. Scott Berlin, a social work professor studying gay/bisexual men aged 50 and above. In this study, he was using a number of measures to examine stage of development per Erik Erikson's theory, self-esteem, loneliness, depression and life satisfaction. My task was to determine if the psychological constructs of loneliness, depression, and life satisfaction were correlated to Erikson's measure. I will talk about my consulting experience and share some select findings from my analyses.

Mentor: Scott Berlin, Neal Rogness

Padnos Hall 107

Exploration of Sonoluminescence

GERRAD FOSTER

Sonoluminescence (SL) is the conversion of acoustic energy into light. This phenomenon occurs when an oscillating bubble, which is suspended in a liquid medium, is forced to collapse non-inertially. The exact process which causes the light to be emitted is unknown, but current uses and experiments have shown the amount of energy within the bubble to be sizeable. This process has been a useful vehicle for chemical reactions that require a high influx of energy, and predictions estimate energies on the order of those necessary for nuclear fusion. In the present experiment, air bubbles will be suspended at velocity nodes (pressure anti-nodes) by acoustic standing waves in a water-filled acrylic chamber. The bubbles will then be driven to SL, and measurements of a bubble's radius will be performed. A spectral analysis of the emitted light may also be useful for determining the type of gas present in the bubble.

Mentor: Karen Gipson

Padnos Hall 108

The Features and Reputation of the Cockney Dialect

EMILY SLATER

This study focuses on the Cockney dialect of London from a linguistic and socio-historical standpoint. It identifies the dialect's unique pronunciation patterns and the use of Cockney rhyming slang, and looks at where and when the dialect first began to appear, and who speaks it today. It also shows examples of the dialect

found in pop culture today to emphasize the social stigmas attached to it, and explores popular views of the dialect through library research and interviews performed by the researcher. The references used vary from an encyclopedia on the English language as a whole, to articles written by Cockney speakers and linguists that feature a bias against Cockney. Other data includes voice samples found online and interviews with various British-English speakers of varying dialects. The voice samples provide examples of pronunciation patterns and linguistic features of the Cockney dialect. The interviews were conducted over the telephone and through emails, as the interviewees were located in the United Kingdom. The study shows that the Cockney dialect as faced much scrutiny by those that considered it impure, opinions that lasted for centuries. Though the dialect is not as stigmatized today as it was at one time, it is still a stereotyped dialect, used often for comic relief and bit characters, and this presentation traces the origins of this bias as well as patterns of change in the history of the dialect itself.

Mentor: Kathryn Remlinger

Padnos Hall 168

Seasonal Zooplankton Biomass Variation in Nearshore and Offshore Lake Michigan Sites

DANIEL RUBERG

A study was conducted to determine the seasonal biomass variation of zooplankton that occurs between nearshore (15 and 45 m deep) and offshore (110 m deep) sites in Lake Michigan. Samples were collected monthly during March-December 2007 in the vicinity of Muskegon, Michigan. Biomass of zooplankton varied seasonally among the nearshore and offshore sites during 2007. Variations in biomass between three major groups of zooplankton (*Cladocera, Cyclopoida,* and *Calanoida*) were observed. The influence of water temperature, fish predation, and primary production on zooplankton seasonal biomass was explored.

Mentor: Carol Griffin

Padnos Hall 207

Diets of Round Gobies in Lake and Wetland Habitats

BETSY SHAFER

Great Lakes ecosystems are increasingly being threatened by exotic species that alter food web patterns and compete for habitat resources. One example is the round goby (Neogobius melanostomus), introduced to the Great Lakes in 1990. Round gobies naturally forage on zebra mussels (Dresseina polymorpha) that thrive on rocky substrates that are usually absent in wetlands. Small-mesh fyke netting was used to sample fish in lake and wetland habitats. Because of differences in substrata and prey availability between habitat types, we hypothesized that diets of round gobies in lake habitats would have more zebra mussels than wetland habitats. Preliminary results show diets were not markedly different between adjacent habitats and the most common prey items eaten by round gobies were Cironomidae, Ostracoda, and Cladocera. Zebra mussels were rarely eaten, but the size of round gobies sampled were small.

Mentor: Carl Ruetz

Padnos Hall 211

Study of Meteorite Impact Crater, Kentland, Indiana: Insoluble Mineral Analysis of Breccia Dikes

HEATHER BRUSNAHAN

The Kentland impact crater is ~90 million years old, has a diameter of 13 kilometers, and is located in Paleozoic strata of northwestern Indiana. Due to deep erosion, high-pressure shock-metamorphic features have not been observed there. However, shatter cones, breccia dikes, and planar fractures, which are all typical of deep, low-pressure parts of meteorite impact craters, are present. The Newton County limestone quarry in the center of the eroded crater exposes a nearly complete, tilted, carbonate-dominated Ordovician stratigraphic succession. Two key marker beds there are the Saint Peter Sandstone, and a pyrite bone bed that underlies

a major flooding surface (unconformity). These layers are cross-cut by polymict and monomict lithic breccia dikes. The polymict breccias contain a great variety of mineral clasts. In thin-section and hand sample a small fraction of these clasts are insoluble, non-carbonate minerals. By dissolving away the carbonate, the remaining (insoluble) minerals will be evaluated for stratigraphic provenance to provide insight on transport distance for clasts in the breccia dikes and to look for shocked quartz, which has not yet been found at this location.
Mentors: Patricia Videtich, John Weber

Padnos Hall 261

A Statistical Consulting Experience: Bridging the Gap Between the Allendale Community and GVSU Students

ROSE VANDERWEELE

Candy Kraker, on behalf of Allendale Township, would like to determine different ways for the Allendale Community to reach out to the Grand Valley Students. My role as consultant involved analyzing an online survey given to GVSU students last fall, the results of which will be shared with Allendale's Chamber of Commerce. Come to find out more about my consulting experience and the outcome of Allendale's Grand Valley Survey.
Mentors: Neal Rogness, Phyllis Curtiss, Candy Kraker

Padnos Hall 262

Should We Bag the Plastic Bags: A Cost-Benefit Analysis of Eliminating Free Grocery Bags

ABBY TOMASZEWSKI

Virtually everyone in developed countries such as the United States visits a grocery store, commonly a few times each week. Along with each shopping trip often comes a few bags to make carrying those groceries a little easier. Unfortunately, those bags carry a price. The many bags end up in land fills, as litter along the sides of roads, and in wildlife habitat where they can cause great harm or death to animals. Not only do they negatively affect our environment, but they also add an expense for grocers. This project uses phone surveys to analyze the costs and benefits of encouraging customers to bring their own bags by imposing a bag fee for each plastic bag a consumer uses from the store. Two local grocery stores, Meijer and Family Fare, are analyzed. If this implementation is found to be financially beneficial to the store, savings on expenses could be used to lower prices of goods. Numerous positive environmental effects would likely be gained as well.
Mentor: Erik Nordman

11:00 A.M.

Kirkhof Center 104

Don't Worry, Relax! The Collapse of the Grand Rapid's Streetcar: 1926-1935

MICHAEL KNOPF

In 1926, Grand Rapids had one of the most advanced streetcar systems in the entire country. Practical thinking and visionary leadership had made Grand Rapids a Mecca of public transportation. Despite this phenomenal success, the next few years would see every last track pulled from the ground as the bus became the dominant form of public transportation, making Grand Rapids only the second city in the nation to switch over completely. The reasons for the sudden death of the streetcars are complex, and not quite what they might first seem. Public records, financial statements, and newspapers of the day all show that corporate conspiracy was not the culprit. Rather they paint the picture of a quickly changing American city whose love affair with the automobile and the untimely events of the Great Depression did as much to influence the public's decision as any politician. As Grand Rapids once again prepares to let streetcars run through its streets in the 21st century, the city and its inhabitants should be mindful of failures of the past and the opportunities it may present for the future.

Kirkhof Center 142

A Qualitative Analysis of the Mizizi Maji Mentoring Program at Baxter Community Center

JILL TALLMAN, GIUSEPPA LORE, BRYAN TRAN

Mentoring programs are widely believed to be beneficial for children. Despite the widely held belief that mentoring has positive effects, data supporting this belief are lacking. This study utilizes a qualitative approach to assess the outcomes of an inner-city mentoring program. This mentoring program provides children with mentors who offer a supportive relationship. Through weekly meetings of tutoring, field trips, and guest lecturers, the mentoring program was designed to help children develop a sense of empowerment and develop tools for educational success. The purpose of this study was to explore how participation in the mentoring program impacts the children's future outlook on job options, self-efficacy, getting along with others and academics from a qualitative perspective. Focus group interviews of children participating in the mentoring program were led by GVSU faculty. A total of 18 children took part in the focus group interviews. Children were divided into two age groups (13 years of age) and further stratified by gender resulting in a total of 4 focus group interviews. Questions and open-ended sentences were used to gather information. The responses were recorded and transcribed. Common themes were compiled into meaning units, or organized groups of thoughts. The results indicated that the participants gained confidence, social and academic skills, and commitment to non-violent living.

Mentor: Cynthia Grapczynski, Theresa Bacon-Baguley

Padnos Hall 107

What it Takes: The Journey Toward the Paralympics

SUSAN HEARNE , ALISON THORP , KATIE MATTESON , OLIVIA FLANDERS, TARA BROOKS, TARESEA AMMANN

Using qualitative research methods, this study explores characteristics of elite wheelchair athletes.

Mentor: Kari Kensinger

Padnos Hall 108

The Consumption of DHA During Pregnancy and Lactation among Low Income Women in Grand Rapids, Michigan

HANH NGUYEN, MIRANDA CRISTALES, BETHANY EASTMAN

Many research studies have documented that docohexaenoic acid (DHA, a valuable omega 3 fatty acid found in fish oils) provides multiple benefits for people of all ages. In fact, these benefits are seen even in utero, when DHA is necessary for normal neurodevelopment. Ample research on DHA has shown neurodevelopmental benefits for infants whose mothers received DHA in their diet while pregnant and for breastfed infants whose mothers continued to receive DHA while lactating. Infants with mothers who did not consume as much DHA during their pregnancy and lactation may show sub-optimal neurodevelopment, including poorer eyesight, more restless sleep patterns, and even lower IQ compared to infants with mothers who consumed greater amounts of DHA (Helland et. al, 2005). Presumed risk factors for dietary DHA deficiency include lower socioeconomic status, foreign country of origin or minority ethnicity, and noncoastal location. To determine the DHA consumption among high risk pregnant and lactating women in Kent County, Michigan, a registered dietitian from the Kent County Maternal Infant Health Program administered a demographics questionnaire and a cross sectional, dietary recall survey on the consumption of DHA to consenting, low income, pregnant or lactating women in and around Grand Rapids, Michigan. These results of the study will provide evidence as to the necessity of developing educational programs regarding DHA consumption which can then be targeted to those women who are at the greatest risk for deficiencies.

Mentors: Carmen Nochera, Linda Goossen

Padnos Hall 168

A Statistical Consulting Experience: Understanding the Attitudes of U.S. Automotive Workers

ALLISON WEHR

As part of a larger social and psychological analysis of U.S. auto workers, we are currently investigating the relationship between various demographic characteristics and general social attitudes. As a statistical consultant, my primary role is data organization and analysis. This report covers our findings to date, as well as my experiences as a statistical consultant. General social attitudes includes extrinsic measures regarding social issues, and intrinsic measures of attitudinal orientation, i.e. authoritarianism. Preliminary results suggest moderate levels of ambivalence.

Mentors: Phyllis Curtiss, Neal Rogness, George Lundskow

Padnos Hall 207

Analysis of Metal Artifacts from the Nineteenth Century Cabin Site: Headquarters 20MU93

KATHRINE HARDCASTLE

Conducted as a Field School for Grand Valley State University in the summer of 2006, the excavation of the Headquarters site (20MU93) was completed within the Muskegon State Game Area. Headquarters was a nineteenth century cabin. A large number of artifacts were yielded from this site. The purpose of this research was to analyze and catalog the metal artifacts found during the excavation of 20MU93, then to determine patterns of usage, dates of occupation, building methods, and activities on the site. It is hypothesized that this cabin was used as the living quarters while the main farm house was being built and once finished, the family moved and used the cabin simply as storage or a trash dump.

Mentor: Janet Brashler

Padnos Hall 209

Bird Use of the GVSU Ravine Ecosystem in Winter.

REBECCA NORRIS

The ravine ecosystem at GVSU is a diverse area with varying elevations; it also acts as an ecotone between the floodplain ecosystem of the Grand River and the upland ecosystems on GVSU's campus. Many different bird species utilize the ravine system at GVSU, and each species prefers particular aspects of each microhabitat. The objectives of this project are to identify individual bird species in this environment, compare species diversity across elevation changes within the ravine ecosystem, determine whether elevation or proximity to the river have any effect on species composition, and define species variation relationships that exist based on these factors.

Mentor: Carol Griffin

Padnos Hall 211

Comparison of Growth Rates of the Caribbean Reef-building Corals *Acropora cervicornis*, *Acropora palmata, Montastrea annularis,* and *Porites divaricata*

JASON HEIVILIN

The use of hermatypic scleractinians, also known as reef-building corals, as indicators of past and present environmental conditions has become prevalent in recent years. The myriad of environmental variables on a coral reef make hermatypic scleractinians excellent gauges of conditions because growth rates can vary greatly based on species and environment. Temperature and the availability of carbonate are key factors in growth. Both the age and growth rates of corals can be estimated through the examination and analysis of annual density banding found throughout the skeletal material. The results of such analysis may allow us to examine the regional climate and also to recognize episodic events. I will use specimens collected from the Belize Barrier Reef near Carrie Bow Cay, Belize, in 1978 in order to compare the growth rates of *Acropora cervicornis,*

Acropora palmata, Montastrea annularis, and *Porites divaricata*. Skeletal banding will be examined in petrographic thin section to probe for the possibility of daily and annual changes in calcification rates. The results will be interpreted alongside available past climate data from the region. I hypothesize that these specimens will show differing growth rates due to variations in species and environmental conditions. They may also show changes in growth rates at certain times due to either optimal or adverse environmental conditions. The fluctuation in conditions may be due to El NiÃ±o oscillations, which can cause an increase in mean annual sea surface temperatures and subsequent bleaching and die-off events.

Mentor: Patricia Videtich

Padnos Hall 261

The Latin American Consensus

AMANDA MIRALRIO, MCNAIR SCHOLAR

Anti-Americanism has reached an unsettling global high that has been manifested in everything from opinion polls to violent protests. Latin America is geopolitically important to the United States, while harboring anti-American sentiment. The history of U.S.-Latin America relations and the most recent public opinion polls are analyzed to unearth the roots of regional anti-Americanism. Two case studies include a country notorious for its blatant anti-Americanism (Venezuela) and a country traditionally allied with the United States (Mexico). Despite different political or historical relations with the United States, Latin American countries have come to an anti-American consensus.

Mentor: Polly Diven

Padnos Hall 262

The Millenium Development Goals Today

EMMA TUCKER

In 2000, The UN ratified a series of goals they called the Millennium Development Goals. These goals, adopted by many countries, were developed with the objective of creating social justice and equality throughout the world. It is now seven years later, and we are halfway through the time allocated to address the challenges highlighted by the UN. What progress has been made in accomplishing these goals? This presentation will focus on both the global and the local efforts made to achieve greater social justice and equality. Suggestions for continuing progress will be offered.

Mentor: Mary Banghart Therrien

11:20 A.M.

Kirkhof Center 104

An Itheoryless Work

KRISTOPHER SNYDER

It has to be understood and then changed. It can never remain the same, because if it did we'd lose it. It has evolved. It has changed. We change it, they change it--it's changing. It must change. It must. It must. It's important. It's not. Supposedly an intrigant is needed; it's not; we could place a series of them together, linking them by nothing other than themselves, until they become one. And with this one, we have a new meaning. It will become what it's meant to be, in and of itself. To build it from its basic singular-self is hard for most--in fact many. Very few have accomplished this; fewer have managed to put it down.

Mentor: Dr. D. Ihrman

Padnos Hall 107

Distribution of *Dreissena* Mussels in Great Lakes Coastal Ecosystems: Are Wetlands Resistant to Invasion?

KRISTIN NELSON

Invasive *Dreissena* mussels have become widespread throughout the Great Lakes basin. However, Great Lakes coastal wetlands appear to demonstrate varying levels of resistance to this invasion. To determine if some Great Lakes coastal wetlands are resistant to invasion, artificial substrates were placed in adjacent lake and wetland habitats. Substrates were incubated for 12 weeks at 15 sites in the Great Lakes, including coastal drowned river mouths and open/protected lacustrine wetlands, during summer 2007. Concurrently, an experiment to determine if *Dreissena* mussels can survive in each wetland type was performed. We did not find a significant difference ($p=0.65$) in *Dreissena* abundance between lacustrine wetlands and adjacent lake habitats. However, *Dreissena* abundance was significantly lower ($p=0.022$) in drowned river mouth wetlands than adjacent lake habitats. We found decreased survival in drowned river mouth wetland versus lake habitats ($p<0.001$), whereas survival did not vary based on habitat type ($p=0.38$) in the lacustrine systems. Drowned river mouth wetlands appear to be resistant to Dreissena mussel invasion while lacustrine wetlands do not display this resistance. Possible mechanisms for this resistance include differences in organic sediments depth, chemical/physical variables, and water movement between habitat types.

Mentor: Carl Ruetz

Padnos Hall 168

Whitetail Management Plan in White Cloud, MI

BLAKE MALLORY

The goal of this project is to develop a management plan to increase the number of trophy whitetail deer on 300 acres of privately owned forested land in White Cloud, Michigan. The land is mainly use for hunting of big game; focusing on whitetail deer, the landowner wants more deer and more deer that are trophy-sized. I gathered present land cover, water sources and population estimates of deer to determine the existing and potential habitat for the whitetail deer herd. By managing these aspects the goals of the land owner can be met. This management plan includes a deer harvest plan establishing which age and how many of each sex should be taken each year. If the management plan is implemented the results should allow the number of trophy whitetail deer to increase.

Mentor: Carol Griffin

Padnos Hall 207

Therapeutic Recreation as a Related Service

SARAH SPRINGER, LINDSEY BERG, CATHERINE REYNOLDS, JENNIFER SCHULTZ, NICHOLE GAYNIER

Using qualitative research methods this study will explore the best practices for recreation as a related service.

Mentor(s): Kari Kensinger

Padnos Hall 209

Analysis of Radio Emissions from Multiple Celestial Sources

PATRICK MINOR

Radio Jove is a NASA Mentored project designed to provide beginning amateur radio astronomers with a low cost radio telescope which can observe the loudest sources in our sky, the Sun and Jupiter. The radio telescope uses a dual dipole antenna and radio receiver centered at a frequency of 20.1 MHz. This particular frequency was chosen because the emissions from the Sun and Jupiter fall primarily in this region of the electromagnetic spectrum. Solar radio bursts result from solar flare activity while Jupiter's bursts are due to its strong magnetic field and interaction with Io, it's volcanically active moon. Therefore, a radio telescope can yield information about solar and Jovian activity and aid in a better understanding of these phenomena. Our goal was to calibrate the radio telescope and record the audio intensity output of the receiver during the

observation window. The data set was analyzed to obtain an equivalent noise temperature for the source of the audio bursts and calculate the total power output from Jupiter. Radio burst data will be submitted to the Radio Jove archive where it will be publicly accessible.
Mentor: Geoff Lenters

Padnos Hall 261

Waterfront Film Festival: Improved Ticketing System

DANA VANDENBRINK, TOM HAM, TARA EERKES, ANDREW MASSAR, SUZAN MWANGI

Waterfront Film Festival (WFF) provides a "middle coast" venue for independent film makers to showcase their talents. Our team worked with WFF during the 2008 winter semester. Our goal was to evaluate the use of the existing ticketing system, as well as recommend new solutions to improve the tracking of ticket and merchandise sales. After researching different ticketing systems, we made recommendations to WFF based on cost efficiency, reliability and convenience.
Mentor: Nancy Levenburg

Padnos Hall 262

Monitoring the Distribution of *Phragmites* with Remote Sensing and Image Classification for West Michigan's Coastline, 2001

DUSTIN HALL

Exotic and invasive species are becoming a major concern throughout the world. *Phragmites australis* is an aggressive, non native and perennial reed plant that invades the wetland ecosystems of North America. *Phragmites* is a unique plant in that it is considered a keystone species to the maintenance of biodiversity throughout Europe. At the same time, it is considered to be an invasive species disrupting the natural ecosystems and biodiversity in the United Sates, especially areas of the common cattail. The goal of this research was to map the West Michigan coastline for *P. australis* and the common cattail to determine the possible invasions that could occur. The procedure used a multi-spectral Landsat satellite imagery (6 spectral bands, 30 m resolution) to monitor the growth for the West Michigan coastline for 2001. The program, ERDAS, performed an unsupervised image classification to collect the data that was needed to locate and identify the plant species. ArcGis software was used to create, manage, analyze, and display the spatial information. I will perform an accuracy assessment on the classified image using a ground truth technique.
Mentor: Erik Nordman

11:40 A.M.

Kirkhof Center 142

Liberalization in Iran: The Reactions of Leaders and Civil Society

STEPHANIE MYOTT

When reform candidate Mohammed Khatami was elected president of the Islamic Republic of Iran on May 23, 1997, the potential for the country to liberalize emerged. Khatami granted civil liberties to students and women (two groups often ostracized by the Islamic regime). However, the religious clerics soon reacted by tightening their fist on any further liberalization, believing the changes to be incongruous to their beliefs and Islamic teaching. Subsequently, civil society has responded unfavorably, silently and vocally opposing the regime in the hopes of inciting change. This research paper will explore in detail how the religious clerics of Iran have stifled liberalization through the state's highly developed institutions, with the result being a narrower dictatorship. This will be done by analyzing the censoring of media and free speech, the controlling of elections and government officials, and the invoking of Shari'ah law. Furthermore, it will examine how civil society has

responded to this thwarting of liberties through three main avenues: 1) intellectuals and women speaking against the regime both inside and outside the country; 2) formation of NGOs within Iranian society; and 3) students adopting Western values and practices.
Mentor: Heather Tafel

Padnos Hall 107
Prostitution and Trafficking in the Americas
ERIC HUNTING

The primary objective in this inquiry is on the different aspects of human trafficking and the sex trade industry as they pertain to the Caribbean and the Americas, Nicaragua specifically. I propose that the inequalities created through the globalization of economies in Latin America influences and maintains new and emerging markets, like that of the sex trade industry. I will also address how trafficking and prostitution have contributed to the commodification of humans as a product for sale and trade.
Mentor: Richard Yidana

Padnos Hall 108
Evaluating Passive Integrated Transponder Tags for Tracking Movements of Round Gobies
MEGAN COOKINGHAM, 2007 STUDENT SUMMER SCHOLAR

The round goby (Neogobius melanostomus) is an invasive species in the Great Lakes basin. We evaluated the efficacy of passive integrated transponder (PIT) tags for marking round gobies and tracking their movements with a portable underwater antenna in shallow areas (105 mm during the final sampling period. Nevertheless, tagging did not increase mortality regardless of size class, and tag retention was 100% for caged fish. Tagged round gobies in a 20-m Ã— 20-m block net avoided detection by the portable underwater antenna, and a high proportion of fish probably escaped from the net, suggesting that round gobies may be more mobile than previously reported. In conclusion, PIT tags are a viable method for individually marking round gobies, but detecting tagged round gobies with a portable underwater antenna, given current technology, does not appear promising in shallow areas with low habitat complexity.
Mentor: Carl Ruetz

Padnos Hall 168
Comparison of United States Forest Service Forest Management Practices with Forest Stewardship Council Management Principles
ERIC STRICKLER

The United States Forest Service (USFS) has evolved to be a leader in developing and adopting land management practices that are environmentally, socially, and economically beneficial in order to administer more sustainable forest lands. These management practices have been refined through time and are the result of much public discourse as well as scientific scrutiny. The Forest Stewardship Council (FSC) is an international organization which strives to put into practice sustainable forest management through organizational, institutional, or private adoption of their principles through certification by organizations whom they accredit. There are presently over 90 million hectares (ha) of forests in 45 countries that conform to the FSC's stringent forest management principles. Adoption of the FSC's principles could assist the USFS in implementing sustainable management approaches, which may be superior to those presently in place, in the coming decades. This paper will examine USFS forest management practices to determine how closely related they are to FSC sustainable management principles.
Mentor: Carol Griffin

Padnos Hall 207

Enhancing Quality of Life for Older Adults with Dementia

JENNIFER NAYLOR, SHANON HASKINS, KATHRYN SIEHLING, KELLY COTTER

Using qualitative research methods, this study will explore "best practices" for enhancing quality of life among older adults with dementia.

Mentor: Kari Kensinger

Padnos Hall 211

Petrography of Proterozoic and Cambrain Conglomerates in the Mount Rogers Area, Virginia

CAMERON ROSS

Following petrographic analysis of three conglomerates collected throughout the stratigraphic sequence of the Mount Rogers area in Virginia, results will be compared to published works to see if they coincide with current hypotheses on depositional environments for the individual formations. Analysis will include samples from the Proterozoic Lower Mount Rogers and Upper Konnarock Formations, and the Cambrian Lower Unicoi Formation. Macroscopic analysis of hand specimens produced some insight into the general petrography. The specimen collected from the Lower Mount Rogers Formation is a gneissic clast supported conglomerate believed to be volcanic in origin. The specimen collected from the Upper Konnarock Formation is a diamictite. It is composed of poorly sorted, angular to subangular clasts in a clay-rich matrix and is believed to be a tillite. The specimen from the Lower Unicoi Formation is a clast-supported conglomerate composed of quartz, feldspar, and some heavy minerals and is believed to be of fluvial origin. Petrographic analysis and point counting of thin sections will be utilized to quantify the mineralogy. If metamorphic fabric is found, petrofabric or microstructral analysis will be preformed to determine the conditions under which metamorphism took place.

Mentor: Patricia Videtich

Padnos Hall 262

Tree Health Mapping Using Remote Sensing Data at GVSU, Allendale, MI

ZACHARY PENNALA

Tree health directly affects the function and performance of urban ecosystems and can be used to evaluate their health and sustainability. Conventionally, ground surveys and monitoring programs were relied on to determine urban forest tree health. I will use multispectral remote sensing data and GIS techniques to determine tree health at Grand Valley State University in Allendale, Michigan. Tree health conditions will be mapped for each physiognomic type at the whole tree scale. Raster based statistical analysis will be used to calculate tree health index, which is the ratio of healthy pixels to entire tree pixels in the study area. The tree was classified as healthy if the index was greater than 70%. Accuracy of the study will be checked against a random sample of 100 trees. I expect 90% of the campus tree cover will be classified as healthy, with 85% accuracy. This technique for evaluating tree health allows managers to track insect and disease outbreaks, as well as seasonal or annual changes in tree health, and pinpoint unhealthy trees for treatment or removal. The information derived from mapping tree health is essential to modeling and analysis of the social, economic, and environmental benefits of urban forests.

Mentor: Erik Nordman

12:00 P.M.

Kirkhof Center 104

Queer Beijing: An Ethnography of Marginality

VANESSA CROWLEY, 2007 STUDENT SUMMER SCHOLAR

Using semi-structured and unstructured interviews, this study presents an ethnographic picture of queer life in China's capital, Beijing culminating in a case study of a transgendered woman. To date, no ethnographies of queer life in Beijing have been published. Therefore, a look at queer life in Beijing offers a unique opportunity to see how an emergent yet marginalized population lives in one of the world's largest, most powerful cities. Concerns raised by the respondents include: familial and societal pressures to marry and reproduce, stresses associated with living closeted lives, and fears of retribution if their sexual orientation is revealed. Additionally, the paper illustrates how Beijing offers opportunities not typically available elsewhere in China.

Mentor: Josef Gregory Mahoney

Kirkhof Center 142

Student Teaching Placements: Understanding Cooperating Teachers and Responding to their Needs

CARLY ALEXANDER WARNSHUIS

Student teaching, also known as the field experience, has frequently been identified as the most important aspect of teacher education. During the student teaching semester, each prospective teacher is placed with an experienced teacher in an area K-12 school. These cooperating teachers offer their guidance and classrooms to give student teachers an opportunity to practice and develop their skills. The College of Education at GVSU places about three hundred student teachers with cooperating teachers each semester, more than any other university in the area. In the interest of recruiting and retaining quality field placements for GVSU's student teachers, we set out to discover why some teachers choose to supervise student teachers and others do not. An online survey conducted in early 2007 asked a random sample of teachers in Kent County, MI about their opinions regarding the training and supervision of student teachers. Teachers' motivations for supervising student teachers were revealed, as well as the motivations for teachers who had not supervised a student teacher in the last three years. The results of the study will be discussed, along with practical implications for the College of Education.

Mentor: Nancy Dausman, Douglas Busman

Padnos Hall 107

Risk of Predation Across a Gradient of Habitat Structure: Are Results Scale Dependent?

MATTHEW ALTENRITTER, 2007 STUDENT SUMMER SCHOLAR

The importance of habitat structure on predation in streams is better understood for mineral substrates than leaf packs. We examined the effects of leaf pack structure and prey density play on fish (Cottus bairdii) predation of stream invertebrates (*Gammarus pseudolimnaeus*). We hypothesized that: 1) risk of predation to invertebrates would decrease as habitat structure increased, and 2) predation effects would be proportional to prey density. We also examined whether results were dependent on spatial scale (arena area: 510, 1,225, and 2,331 cm2). We found that the proportion of prey remaining in small arenas increased with leaf pack size (dry mass: 0, 1, 5, and 10 g). The proportion of prey remaining was not influenced by the prey stocking density (15 or 30 individuals/510 cm2), suggesting predation was proportional to prey density. Our results show that leaf packs provide refuge habitats from predation for stream invertebrates and larger leaf packs are better refuge habitats than smaller leaf packs. We also found that our results were not dependent on the size of arenas. Our research highlights that leaf pack size is an important factor affecting the degree of refuge a leaf pack provides stream invertebrates against fish predation.

Mentor: Carl Ruetz

Padnos Hall 108

Comparison of Settling Velocities of Various Particles within Turbulent and Laminar Flow

ABBEY POST

A river can exhibit one of two types of flow, either turbulent or laminar. The type of flow can affect the settling velocity of sediment particles within the stream. The purpose of this study is to explore how air bubbles in turbulent flowing water affect the settling velocity of the different sizes and shapes of clasts. In a natural river, cobbles vary in size and shape. To simulate river cobbles, uniform spheres, rods and blades will be used in this study. These objects will be released from the top of a 4-inch settling tube first in plain water, simulating laminar flow, and then in water with dry ice at the base, simulating turbulence. A stopwatch will be used to time the objects as they travel over a marked distance and settling velocity will be calculated. It will then be possible to explore the affect of CO2 bubbles on settling velocity, and the implications for natural river turbulence.

Mentor: Peter Wampler

Padnos Hall 168

Student Research of Power Transformations Using SAS

CASEY JELSEMA

Box and Cox Power Transformations are a relatively common statistical technique used to transform a dataset so that it conforms to certain assumptions. During this past year, Soon Hong and I have used SAS to run simulations exploring these power transformations. Specifically we were investigating whether there is an optimal power for transforming monotonically increasing or decreasing datasets. Over the course of study, a program using the Newton-Rhapson method has been developed to optimize the power transformation. This program will be discussed along with its creation and applications.

Mentor: Soon Hong

Padnos Hall 207

A Statistical Consulting Experience: Park Development Opportunities in Allendale Township

PETER LAPHAM

Candy Kraker, on behalf of Allendale Township, seeks to determine if the people of Allendale want to expand their existing parks or build new ones. My role as a statistical consultant consisted of analyzing data from a survey that was sent out to registered voters of Allendale last fall. During my presentation you can learn about my results and experiences as a statistical consultant.

Mentor: Candy Kraker, Phyllis Curtiss, Neal Rogness

Padnos Hall 209

Perceived Barriers to Accessing Community Recreation for an Individual with a Spinal Cord Injury

CHRISTIEN POLANCO, COURTNEY LOCKE, MARISSA KNIGHT, BRIAN HANSON, SHELLY MCMILLEN

Using qualitiative research methods this study will explore perceived barriers and solutions to acessing community recreation for individuals with paraplegic spinal cord injuries.

Mentor: Kari Kensinger

Padnos Hall 211

Depositional Envrionment and Diagenesis of the Cambrian Deadwood Formation, at Deadwood, South Dakota

NAOMA LEONARD

The Cambrian-Late Ordovician Deadwood Formation, located in the Black Hills of South Dakota, is a complex sequence consisting of basal conglomerate, limestone, sandstone and shale. As part of the Paleozoic Carbonate Plateau, lying unconformably above the Precambrian basement of the Black Hills, the Deadwood Formation was one of the first major marine events of the Paleozoic in North America. The strata are interbedded and normally tabular. The interbedding is indicative of a shallow water depositional environment. According to the literature diagenesis of members of the Deadwood Formation varies as a function of lithology. Photographs and field notes were taken, and small hand samples collected, at a road cut exposure at the type locality for the Deadwood. Bedding and other sedimentary structures were also described at the outcrop. Point count and observation of thin sections are used to determine the mineralogy, grain size and cementation. Results and interpretation from hand sample and thin section analyses are compared to the literature to verify if my conclusions are consistent with those of past workers.

Mentor: Patricia Videtich

Padnos Hall 261

Macroinvertebrate Community Structure in Disturbed Streams Affected by Excess Storm-Water Runoff

JASON NELSON

Ravine tributary streams surrounding Grand Valley State University are variously affected by storm-water runoff, representing a spectrum from severely impacted to pristine. Quantitative macroinvertebrate samples taken from six streams in late June 2007 indicated that insect diversity was negatively correlated to nitrate-nitrogen ($p=0.0271$) and sulfate concentration (ppm) ($p=0.0046$), and was highest in a golf course stream (Least Significant Difference post-hoc test). Richness was negatively correlated to iron ($p=0.0077$) and pH ($p=0.0103$), and tended to be higher in the more impacted streams, although not exclusively. EPT abundance was negatively correlated to dissolved oxygen (DO) percent saturation ($p=0.0010$), DO (mg/L) ($p=0.0015$), and positively correlated to mean discharge ($p=0.0006$). Trichoptera abundance was negatively correlated to DO percent saturation ($p=0.0081$), dissolved oxygen (mg/L) ($p=0.0027$), and positively correlated to mean discharge ($p=0=0157$). Chironomidae abundance was negatively correlated to DO percent saturation ($p=0.0243$), and positively correlated to mean discharge ($p=0.0138$). Total abundance was positively correlated with mean discharge ($p=0.0052$) and all six stream were significantly different from each other, with the biggest stream having highest abundance and one of the most impacted streams having the lowest abundance. In summary, we found that (i) there was a positive correlation between the extent of storm-water runoff and concentrations of nitrate and sulfate, resulting in lower macroinvertebrate diversity; and (ii) the larger the stream, the more macroinvertebrates were found including pollution intolerant taxa (mayflies, stoneflies, and caddisflies). Additionally we established biological base-line conditions prior to the initiation of a campus wide storm-water abatement program.

Mentor: Eric Snyder

Padnos Hall 262

Grand Rapids Parks and Recreation Analysis

MATT NIELSEN

The conditions of West Michigan's public parks and forests, either good or bad, are most often a direct result of management policies that are put into place. Creating and managing public land that will both serve the public's recreational needs and protect environmental qualities can be a difficult balance for park managers to control. City parks, state parks, national forests, and a designated wilderness are all present on the west side of the state of Michigan. These different types of public lands hold their own separate management problems.

Each type of park is different in area, recreational uses, ecosystem type, and environmental quality standards. Keeping public land in a healthy condition can be difficult and examples of problems are evident in most recreational areas. Problems that managers face within their parks can range from vandalism, pollution/litter, social trails, pets/pet waste, unwanted public activities, and environmental quality issues. These problems can be a result of insufficient policies or from an inability to carry out proper policies. Research aimed at testing policies for West Michigan's recreational areas will be focused on policy flaws and what should be done to maintain a healthy parks system.

Mentor: Erik Nordman

12:20 P.M.

Kirkhof Center 104

Is Territorial Behavior in Green Frogs (*Rana clamitans*) Related to Defending Oviposition Sites or Protection from Predators?

DENITA WEEKS, MCNAIR SCHOLAR

Successful reproduction makes individuals evolutionarily fit but requires balancing costs. Literature suggests green frogs defend territories for breeding. Males will call in these territories to attract a mate. Unfortunately, calling may increase susceptibility to predation requiring males defend habitat with more protection. In contrast, females select the oviposition sites, potentially based on factors besides predation. Males defending habitat appropriate for oviposition may be more successful. We examined habitat for calling and egg-laying to determine whether territoriality is associated with defending oviposition sites or protection from predators. Our results show that calling males are more closely associated with emergent vegetation, especially medium emergent vegetation and negatively associated with open water. A comparison of the habitat at calling, non-calling, and oviposition locations suggests that there is no real difference between oviposition and calling or non-calling locations. However, calling locations had significantly more emergent vegetation (both medium as well as all combined heights) than non-calling locations. The oviposition sites had intermediate levels of emergent vegetation, suggesting that calling males may be selecting habitat more for protection than oviposition sites.

Mentor: Stephen Burton

Kirkhof Center 142

Water Evaporation From Tropospheric Aerosols

ALEX GILDE

Due to the discovery of organic material in tropospheric aerosols, it has been proposed that thin surfactant films affect the aerosol's evaporation and condensation rates. This could eventually affect the way clouds form. There has been some work done, as Nathanson et al. have begun to study the effects of water evaporation from sulfuric acid solutions covered with the short-chain surfactant butanol. They have found that a nearly full monolayer of butanol has no affect on the water evaporation from the acid. Because their system uses sulfuric acid at low temperature and vapor pressure it creates many questions as to how accurate it is in representing a tropospheric aerosol. By using molecular dynamics I intend to answer those questions and contribute further to this topic as this system can be studied under conditions closer to that of the troposphere.

Mentor: Christopher Lawrence

Padnos Hall 107

Liberating a Language: A History of the Feminist Perspective on Language Use

JACQUELINE HETTEL

This study analyzes the attitudes of American feminists regarding language use over the last 160 years. Also, the evolution of the use of language by the authors, whose works are selected for this research, is addressed. If linguistic activism is needed by the contemporary movement, awareness and knowledge of language atti-

tudes and uses are imperative for feminists. Feminist works that describe, explain, and analyze the conditions of women's lives comprise the data of this study. Therefore, it is not unexpected that feminist theory is vital for semantic textual analysis of the descriptions or definitions of language attitudes. The results of this study show that the attitudes of feminists concerning the way that language is used by society has changed over the course of the feminist movement. The English language was first characterized as being a language based on male norms that has kept women in confined, submissive roles in society. Simultaneously, these women of the First Wave are, themselves, conforming to androcentric, prescriptivist norms for language. Then, feminists in the Second Wave express a desire that language must be reclaimed so that women can become truly free to use it with authority despite its roots in patriarchy. These authors avoid the use of gender-neutral lexemes which perpetuate sexism while coining new terms and creating new spellings to promote the empowerment of women. Modern feminists express the idea that rather than voicing the fact that language needs to be changed to promote equality, they should be doing it individually in their own writings. This new perspective on language use is coupled with the tactic of writing with the tone of a collective voice rather than authoritatively for credible, academic pieces.

Mentor: Kathryn Remlinger

Padnos Hall 108

Women, Nature, and the Attempt at Male Dominance in Bierce's Chickamauga

JESSE MAGNAN

Utilizing close reading techniques, in addition to evidence found within the text of "Chickamauga", I will be illustrating Bierce's portrayal of nature and women as a single entity, and man's attempt to suppress both. The purpose of this analysis is to reveal man's self destruction, and that this self destruction is inevitably caused by the oppression of women and nature. Proving ultimately "Chickamauga" is about man's downfall at his own hands because of his own actions.

Mentor: Dr. D. Ihrman

Padnos Hall 168

Response of the Arctic Wet Meadow Sedge, *Carex aquatilis*, to Changing Temperature

MICHAEL LOTHSCHUTZ

A concern of scientists is how a temperature increase will affect the tundra since even a modest warming could have a large impact on the ecosystem. Experimental warming sites were set up in northern Alaska to study the effects of simulated warming on vegetation during the growing season. Each site was set up with 24 passive open-top chambers and 24 control plots. These sites include a wet meadow community near Barrow and Atqasuk. *Carex aquatilis* was chosen for this experiment because it is a dominant sedge throughout most wet meadows of the tundra. Collection of the data occurred during the short growing season of 2007 and consisted of phenological observations, inflorescence counts, and growth measurements. *Carex aquatilis* showed higher growth and reproduction rates when temperatures are increased at each site. The results of this research indicate that an increase in temperature may change the existing tundra vegetation. The possible irreversible changes to the ecosystem make monitoring the changes in tundra vegetation due to climate change essential for understanding vegetation shifts in other regions.

Mentor: Robert Hollister, Carol Griffin

Padnos Hall 207

Beowulf: A Tale of Impotence

TESS HOAGLUND

Beowulf is the hero of Anglo-Saxon times. He is the greatest, the strongest, and seemingly unbeatable in every battle. However, in each instance of the epic where he is fighting, he is unable to do so effectively with a sword. The sword in medieval times was representative as "the instrument of slaughter in heroic combat" (Puhvel 282). Also, the image of a sword is extremely phallic in nature. It is perhaps the utmost image of masculinity from medieval times, and it is one at which Beowulf is at a loss to wield. If we read the text in this way, can the

argument be made that Beowulf is making up for his lack of sexual prowess with his brute physical strength? In the way that a man today is said to be compensating for his lack of height by working out ferociously or when he starts going bald he buys a sports car, Beowulf is compensating for his lack of sexual abilities by taking on any fight he can. Beowulf does not fit the typical Germanic hero in that he is incapable of fighting effectively and killing with a sword. Both the phallic and masculine nature of this weapon, along with other suggestions in the epic, imply that Beowulf was impotent, and in this presentation, that is what I will be arguing with the help of scholars such as Martin Puhvel, Arthur G. Brodeur, and H.L. Rogers, among others.
Mentor: Rachel Anderson

Padnos Hall 209
Structuring Identity in White Prison Society
ANNA GREINKE

This paper examines the Wotanist prison gang from an anthropological perspective, looking at ritual, body modification, ideology, and religion in the structuring of group identity. Firsthand ethnographic research will be used to highlight the issues concerning how these societies are formed and operate. Members are indoctrinated with a mixture of Germanic mythology and Nazi propaganda to create a distinct sub-culture within prison society, as well as American society at large. The study demonstrates that white supremacist society is not monolithic but is fragmented into sub-groups that attempt to distinguish membership. Violence is often employed as an initiation into the group, and violent behavior is reinforced through the rituals, the belief system and the iconography of the society. Tattoos are a major aspect of identity, signifying group belonging and conviction. Through the study of this subculture in modern America, anthropologists can begin to analyze how individuals form identity, as well as their motivations for joining distinct social groups.
Mentor: Mark Schwartz

Padnos Hall 211
Analysis of the Precision and Accuracy of a Spectrex Laser Particle Counter
MIGUEL MERINO

Measuring the precision of the Spectrex Laser Particle Counter (LPC) is important because we need to know if the grain size data that we obtain using it are consistent, and if the data are comparable to grain size data collected using a hydrometer. The hydrometer, used as a control, involves sediment suspended in water in a graduated cylinder, specific gravities of the sediment, and various time intervals to separate the size fractions. In contrast, the LPC uses a revolving laser beam to measure the size and number of grains. This works by projecting a laser through a glass beaker onto a particle. The light is scattered off the particle onto a collector lens and then relayed onto a photo detector. The LPC can report values from 0.5 to 100Âµm (~fine silt to fine sand). Numerous samples were run to determine precision. They were prepared in two different ways, one with a 2% sodium hexametaphosphate solution (a deflocculant) and one without. These two methods will be compared to see which preparation is more precise, and to see if smaller grain sizes are indicated with the use of the deflocculate. The same samples will be analyzed using a hydrometer to acquire the data necessary for this comparison.
Mentor: Patricia Videtich

Padnos Hall 261
Exploring the Best Practices in TR for Individuals with Autism
MEGAN WARREN

Using qualitative research methods, this study will explore the best practices in TR for individuals with Autism.
Mentor: Kari Kensinger

Padnos Hall 262

North Country Trail and Sleeping Bear Dunes National Lakeshore Use Patterns and User Demographic Comparison

BETHANY DYKSTRA

As recreational usage on federal public lands continues to increase, collecting, analyzing, and interpreting user demographics and usage patterns is an essential step in successfully managing campgrounds, trails, recreational areas, and waterways in the Untied States. Throughout 2006 and 2007 data was collected, input and analyzed at two different federally managed recreational areas. Important aspects such as amount of use, where and how far users typically travel to recreate, and what time of year the majority of usage occurs was compared and contrasted between the Western Michigan section of the North Country Trail and Sleeping Bear Dunes National Lakeshore. The results have confirmed my hypothesis that more usage occurs between the spring and summer months of the year, and that although the majority of the users of these two areas are located in central to midwestern Michigan, more people travel further distances to visit Sleeping Bear Dunes National Lakeshore. After comparing these results to that of other federal agencies and park types, I found that these federal lands and the rest of the eastern United States showed less usage than the western United States federal lands. Through this and other research I intend to plan management strategies in order to improve future trail conditions and increase the geographical extent of use and user travel.

Mentor: Erik Nordman

12:40 A.M.

Padnos Hall 107

El Avance de la Tecnología

BRIAN CESAROTTI, ALICIA DEMBINSKI

In modern western culture, technological advance has become synonymous with human progress. We now look back on the era before electronic devices, televisions and automation as a dark age where we had the inconvenience of using our hands, minds and time to complete a task. While we have made significant gains in productivity, we ignore the loss of humanity. Our communication devices have impeded meaningful communication, our dedication to work has made family and friends irrelevant, and in the end with are left with solidarity, our only company being our machines. As we admire how far mankind has come in the past one hundred years, we should ask ourselves if what we have created is representative of our nature. Have we lost our way in this world of technology?

Mentor: Zulema Moret

Padnos Hall 168

Comparing the Density and Demographics of Backcountry Campers in Sleeping Bear National Lakeshore between 2001 and 2005

NEALY MOLHOEK

Sleeping Bear Dunes National Lakeshore is located along the northwest coastline of the lower peninsula of Michigan in Benzie and Leelanau counties. It is managed by the National Park Service and is comprised of lakeshore on the mainland and North and South Manitou islands. The Lakeshore is utilized by over a million visitors in a typical year. Only a fraction of those users enter the backcountry. Backcountry camping requires permits. Use of the backcountry in Sleeping Bear Dunes National Lakeshore will be compared between the years of 2001 and 2005 for patterns and demographics. Variables for comparison include city of origin, number in party, point of entry and exit, type of transportation to and within the lakeshore, dates issued, and location. Information about user density and demographics will prove useful to managers in the protection and management of the Sleeping Bear Dunes National Lakeshore.

Mentor: Carol Griffin

Padnos Hall 209

Investigating the Formin Protein Family: A Focus on DAAM1

BRENT HEHL, MCNAIR SCHOLAR

Members of the formin protein family exist in most eukaryotic organism ranging from slime mold to humans. As a closely conserved family of proteins, the formins dramatically influence cytoskeletal and microtubule dynamics, which play a large role in many important cellular processes. While the cytoskeleton is a dynamic set of structures requiring a great deal of control, tight regulation of the formin proteins (and the processes they impact) remains critical to maintaining normal cellular function. By examining the sequence similarities between DAAM1 (a formin protein expressed in most human cells) with more well-studied family members, this investigation takes an in-depth look into DAAM1 regulation. Through the use of DNA subcloning, somatic cell microinjection, and fluorescence microscopy, we are elucidating one of the underlying mechanisms of DAAM1 regulation.

Mentor: Brad Wallar

Padnos Hall 211

Experiments Using a Stream Table to Determine Grain Size, Shape and Mineralogy Distribution Versus Length

AMANDA PERRY

Water is an important instrument in sorting sediment. Grains are deposited based on mineralogy, shape, and size at different locations within a river system or canal. To go to different areas of a stream and collect natural samples in order to interpret the effects of gradient and flow velocity on deposition would take a great deal of time. Therefore, an experimental procedure will be used. By using a stream table, adjusting the velocity of the water, and changing the gradient (slope) of the model stream, hopefully a universal equation relating these parameters will be found. Two types of tests will be run, one with adjustments in gradient and another set with adjustments in flow velocity. The increments in gradient will be 5, 15, 25 and 30Â°. Changes in velocity will be made by increasing the flow by turning the control by a half turn for four tests at a 15Â° gradient. The same sediments will be used for each test. After the system is allowed to run from a set time, samples will be taken from predetermined distances, dried, sieved for size analysis, and microscopically examined for size, shape and mineralogy. I hypothesize that coarser, angular grains with high specific gravity will be proximal and finer, rounded grains with low specific gravity will be distal, but as the gradient of the stream and flow velocity is increased the coarse grains will be dispersed throughout the system.

Mentor: Patricia Videtich

Padnos Hall 262

The Sustainability of Local Agriculture

JOHN DENIS

Many individuals today are paying more attention to where their food is coming from, and striving for products produced or grown locally. But with world populations steadily increasing, the question arises whether everyone can be provided for without mass food production. By learning how many people community supported farms around Grand Rapids, Michigan, support on average, and how far people travel to receive these goods, a better understanding of "local" agriculture and its sustainability can be achieved. As farm operations are scaled down, less fossil fuels are used for production and transport. Therefore food is fresher for customers, and the environment receives less of an impact. Survey data from local farmers combined with findings from previous studies should provide a better understanding of the potential for local agriculture, and question the need for large scale farming operations.

Mentor: Erik Nordman, Patricia Rowe

1:00 P.M.

Padnos Hall 107

La Música

ASHLEY ZIRKLE, CLARE MAZUR

This project is an expression of the effect of music on the lives of everyone. While the written parts of the project are in Spanish, music is a universal language that all people can understand and connect to, and that is what this project is about. Music is deeply rooted into all of our lives, bringing us together and allowing us to express ourselves. The types of music can vary from person to person and culture to culture, and all types allow for the freedom of emotion and expression that music brings. The different types of music in our own culture alone are numerous, from classical to hip hop, country to metal. Some of us perform music, and some of us just listen and enjoy, but all of us are affected by it, even if only by singing Happy Birthday once a year. Music brings together friends, family, and even strangers in special moments of emotion and understanding, and it is this that our project celebrates.

Mentor: Zulema Moret

Padnos Hall 108

Life is Art: The Use of Art in Proust's Swann's Way

KELSEY KRUIS

In "Swann's Way," the first installment of In Search of Lost Time, Marcel Proust brings to life a fantastical world where nighttime imaginings transform a bedroom and where one bite of a madeleine dipped in lime tea evokes a torrent of memories. Parts one and three, "Combray" and "Place-Names: The Name," relate the events of the narrator's childhood and the colorful people who surrounded him. In part two, "Swann in Love," this same narrator tells the story of Monsieur Swann, a society man and aesthete, who falls in love with a woman most unlikely for his tastes. For both of these men, people and places become real through the sphere of art. Only through constant reference and comparison to works of art and characters from this realm do M (the narrator) and Swann form their views of the "real" world. I shall accompany my presentation with representations of the art works that most influenced M and Swann.

Mentor: Christine Rydel

Padnos Hall 168

A Statistical Consulting Experience: Evaluating Area K-12 Physical Education Teachers Interest in a Masters Program

WHITNEY MINER

Dr. Patricia Rowe of the Movement Science Department is interested in learning about physical education teacher interest in a masters degree program in physical education. Surveys were sent to all K-12 physical education teachers in the neighboring counties to gauge interest in this masters program. The survey covered areas such as degree preference, course scheduling preferences, and course subject matter preferences. My role as a statistical consultant was to analyze the data in an effort to find support for this potential masters program at GVSU.

Mentor: Phyllis Curtiss, Neal Rogness, Patricia Rowe

Padnos Hall 207

Gunshot Residue Chemical Enhancement Validation Study

TAMIRA COOPER

Testing for gunshot residue is a common procedure in forensic laboratories. However, not all of these tests

deal with the suspect. At the Kent County Sheriff's Department I tested three different chemical reactions used to show if a gun had been fired at a specific object. Griess is used to detect the presence of nitrates (usually found in fired gunpowder), DTO is used to detect the presence of copper and nickel (bullet jackets are usually made of this), and Sodium Rhodizonate is used to detect the presence of lead (usually what the bullet is mostly comprised of). I tested these reactions on different fabrics and surfaces that had been fired upon at different distances. I found that Griess only works on fabrics, not hard surfaces. DTO did not work on any of the samples. Sodium Rhodizonate worked on all fabrics and surfaces. Griess and Sodium Rhodizonate were shown to react less the farther the bullet was fired. No tests were done on skin samples.
Mentor: Nancy Shontz

Padnos Hall 209
Creating Easy Instructions for Muslims to Learn Formal Prayer
WESLEY MUELLER

There are many books that explain as-Salaah (formal Islamic prayer) in detail. The goal here, however, is to produce a set of instructions for as-Salaah so concise and clear that new English speaking Muslims could take them with them and use them anywhere, even while in the act of prayer itself. The document would direct the learner to perform and memorize both a series of movements as well as speech. At the very same time, the directions would promote a sincere and authentic understanding of as-Salaah and stress the importance of a lifelong effort to perfect it. Initial tests using a working set of instructions indicate positively that an instructional document of this type can be effective. However, continued testing of a working product will be necessary in arriving at the optimal result. Input from experienced Muslims is also proving invaluable.
Mentor: Carol Kountz

Padnos Hall 211
Mineralogy, Cementation, and Porosity Analysis of Ooids in the Mississippian Newman Limestone at Pound Gap: Letcher County, Kentucky
ANTHONY RODRIGUEZ, MCNAIR SCHOLAR

Ooids are spherical grains composed of either aragonite or calcite. To form they require a high level of super-saturation with respect to carbonate, the presence of nuclei, and high energy. Ooids form typically in marine environments, ideally in depths of about two meters, although they can form in deeper water. Ooids in the Mississippian Newman Limestone at Pound Gap in Letcher County, Kentucky, are thought to have formed due to a regressive depositional sequence resulting in a coarsening upward sequence. This increasing wave energy and decreasing water depth allowed the ooids to form. Three samples were collected from the Newman Limestone and thin sections were analyzed using a petrographic microscope to determine the mineralogy of the ooids. By point counting the thin sections the relative abundances of the various grain, cement, matrix, and porosity components were quantified to determine if the mineralogy or abundance of the ooids is related to the amount of matrix, which may be a proxy for energy level.
Mentor: Patricia Videtich

Padnos Hall 262
Adaptive Management Plan to Increase American Beaver (*Castor canadensis*) Populations on Carlson Creek in Luce County, Michigan
JACQUELINE TROMBLEY

The American beaver (*Castor canadensis*) is known for building dams that raise water levels, flood upstream areas, and create wetland habitats. In some cases beavers are considered a pest, but in the case of Kaks Lake and Carlson Creek in Luce County, Michigan, beavers could be used to raise low water levels and restore wetland habitat. I will develop an adaptive management plan with the goal to increase the current beaver population on Carlson Creek in an attempt to encourage dam-building, which may raise water levels in the river and Kaks Lake, and also increase populations to sustain trapping for local property owners. I hypothesize that improving beaver habitat by increasing aspen, alder, maple, and birch numbers near Carlson Creek and Kaks Lake will increase beaver populations in that area.

Mentor: Erik Nordman

Kirkhof Center 142

Edmund's Endeavor: Pursuing Justice in King Lear

CASSEY STANK

This program is an exploration of the concept of justice as it plays out on the pages of King Lear. The primary goal of the presentation is to discuss the pursuit of justice by Edmund and Cordelia as well as the possible consequences when opposing views of morality intersect. This discussion will be furthered by an examination of why this theme in William Shakespeare's most complex play remains relevant outside of the literary world.

Mentor: Dr. D. Ihrman

1:20 P.M.

Kirkhof Center 104

Abelard and Heloise: Voyeurism in 18th and 19th Century Art

AMANDA THOMSON

In the years following the monumental affair of philosopher and teacher, Peter Abelard and his prized student Heloise, audiences have been fascinated by the relationship. This interest in Abelard and Heloise is evident in the art of the 18th and 19th centuries. The artists Angelica Kauffmann, Achille Deveria, Jean Vignaud, Bernard d'Agesci, and Edward Blair Leighton hone in on the public's interest in the illicit nature of the affair between a young girl and her much older teacher by focusing their attention on the discovery of the pair in a private moment, as well as the reception of their story by later audiences. Within these paintings, there is a common theme of not only the discovery of the couple, but also of the pair unknowingly being watched. Thus, creating a voyeuristic aspect which ties together the five artists and their works while speaking volumes about the nature of the public fascination with Abelard and Helosie.

Mentor: William Levitan

Padnos Hall 107

A Theoretical Determination of the Conductivity of a Thin Metal Film

NATHAN LINDY

The goal of this project is to investigate how the thickness & the surface roughness affect the electrical conductivity of a thin metal film. Electrical conductivity is the measure of how well electrical currents can pass through a material. Film thickness and surface roughness both affect electrical conductivity due to their influence on the motion of the electrons in the material. The electrical conductivity of the film will be determined analytically from the Boltzmann transport equation. Theoretical results will be compared to the experimental data.

Mentor: Kingshuk Majumdar

Padnos Hall 108

To Possess is to Extinguish; Reclaiming Orality in a Text-Driven World

LINDSEY DRAGER

The Western conception of literature is rooted in recorded text, but this definition is clearly culturally biased, excluding oral traditions that span the globe. This presentation hopes to explore the significance of orature in the literary realm and to eradicate the unilinear historical notion that the oral tradition is below text in the hierarchy of language.

Mentor: Nicole Walker

Padnos Hall 168

Hell Through the Ages: Dante's Inferno as a Model for Gogol's Dead Souls

STEFANIE HOSFORD

The nineteenth century novelist and playwright, Nikolai Gogol viewed himself as a prophet and a preacher. His novel, Dead Souls, depicted the sick, ailing Russian society of the post-Napoleonic period and offered solutions to Russia's problems. He intended this novel to represent the Inferno of a modern day Divine Comedy, wherein Chichikov, the main character, would traverse the perils of a contemporary Hell, and eventually gain redemption in later books. In my paper, I analyze the structural correlations between Dead Souls and Dante's Inferno, from the first circle to the ninth; I use quotations and descriptions from the text to demonstrate how the structure of both works serves to underline the social and moral problems of Dante's Italy and Gogol's Russia.

Mentor: Christine Rydel

Padnos Hall 207

Benefits and Wellness Among GVSU Faculty and Staff: A Statistical Consulting Experience

CASEY JELSEMA

David Smith of the Human Resources Department is part of a team which conducted a survey to obtain feedback on the current benefits and wellness programs which Grand Valley offers to its faculty and staff members. Preliminary findings have been obtained, but my role as a statistical consultant was to provide further analyses and prepare an executive summary of the findings on several key areas covered in the survey. I will be sharing some of the results along with the experience of being placed in the role of a statistical consultant.

Mentor: Neal Rogness, Phyllis Curtiss, David Smith

Padnos Hall 209

Female Playwright - Mary Gallagher

JESSICA KLEIN, TIFFANY DUPONT

Mary Gallagher's works vary from humorous pieces about women and cake to hard-hitting stories of immigration and struggle. Although many of her shows, produced in off-Broadway and regional theaters, are continuing to gain popularity, she is not very well known. From the information that we have acquired about women in theatre, we feel as though women are recognized for their efforts by exploding the canon. Based on our analysis of Â¿De Donde? and Windshook, we find Gallagher's work to be heart-felt and political; yet, we feel that it is too traditional and not unique enough to stand out in the canon. Female playwrights must often create revolutionary work in order to be recognized. We believe if a man were to place his name on Gallagher's plays, they would ultimately gain more attention.

Mentor: Karen Libman

Padnos Hall 211

Mineralogic Composition and Porosity of Ooids in the Middle Jurassic Great Oolite Limestone, Wealden Basin, Southern England

KEISHA DURANT

Oil has been produced from the Wealden Basin in Southern England partly due to the high porosity in the Middle Jurassic Great Oolite Limestone. One of the factors affecting the distribution and amount of porosity is the fabric of the ooids. Most modern marine ooids are composed of aragonite, whereas ancient ooids are composed of calcite. Ooid cortex composition also varies between modern and ancient ooids with modern cortices consisting of tangentially oriented aragonite needles and cortices of ancient ooids consisting of radially oriented calcite crystals. Completely micritized ooids, ooids replaced by calciate spar, and oomoldic porosity are also seen in ancient ooids. The samples were collected from wells that form three parallel traverses perpendicular to paleoshoreline. Using a petrographic microscope, the fabric of the ooids in these samples was examined in order to determine the original mineralogic composition and type of cementation. Point counts were also done to quantify the percent and type of porosity to see if trends occur relative to paleoshoreline.

Mentor: Patricia Videtich

Padnos Hall 262

Adaptive Management Plan for Wetland Restoration

JUSTIN ULBERG

Over 5.6 million acres of wetlands have been destroyed in Michigan since the early colonization of the state. Today, even more pressure is being placed on wetlands due to the continued population boom and the creation of more agriculture lands. With the destruction of wetlands comes the loss of habitat for diverse wildlife. The purpose of this project is to develop an adaptive management plan for the restoration of a wetland located in Ottawa County, Michigan. The current land parcel had been ditched and drained for agricultural purposes, and a management plan is now being implemented to return the area to its natural wetland condition. The adaptive management plan will encompass soil surveys and studies of topographical maps of the area to determine how much of the area can be returned to natural conditions. The plan will then incorporate the construction of a berm to block drainage from the area's primary drainage ditch. Once wetland conditions are restored, the plan will be evaluated based on the health and growth of native vegetation and wildlife interactions within the wetland ecosystem. Changes can then be incorporated into the plan to improve the overall health of the system.

Mentor: Erik Nordman

1:40 P.M.

Kirkhof Center 104

A Study in the Identification of GAP-43 Isoforms via Densitometric Analysis

BRIAN BRITZ

The currently accepted theory for learning and memory is that learning is associated with an increase in neuronal activity at existing synapses in the brain. We seek to corroborate this currently accepted theory, which states that the synapses have already been formed prior to the learning process, and that when the learning process takes place, the phosphorylation of the growth associated protein 43 (GAP-43) occurs. We propose that the level of GAP-43 phosphorylation increases proportionally to the amount of increased synaptic activity during learning, which may account for the creation of a memory. This project seeks to continue the specific identification of the various isoforms of the presynaptic protein GAP-43 isoform through employing the use of densitometric analysis. We anticipate that our results will provide data to help accurately elucidate the molecular underpinnings of learning and memory.

Mentor: John Capodilupo

Kirkhof Center 142

Conductivity, pH, Salinity, and Turbidity Changes as a Function of Sediments Transport Duration

NOAH SLUITER

Water flowing in streams and rivers provides transport energy for sediment. The transport energy in rivers and streams continually moves sediments along the river bed. A bed load is comprised of sediments varied in size and mineralogy flowing through the extent of the transport system. Sediments of different lithologies and range of size will be placed into a rock tumbler with a constant volume of de-ionized water. The duration of the trials will be on a scale of minutes to days to compile data regarding the change in the composition of the water. I hypothesize that sediment mineral composition, size, and weight will affect conductivity, pH, salinity, and turbidity with relation to sediment transport duration.

Mentor: Peter Wampler

Padnos Hall 107

Tolstoy's Sevastopol in May in Sonata Form

ALEX PLOTKOWSKI

During the Crimean War (1853 to 1856), Leo Tolstoy was just beginning on the path to his destiny as a literary giant. During his time in the military, stationed at Sevastopol, Tolstoy created one of his first works of literature: Tales of Sevastopol. He created a modern form of journalism, in which he designed fictionalized accounts of the real situations in Sevastopol to get past the Russian censors and still inform the public about the war. The events and themes of the second of these tales, "Sevastopol in May," closely follow the form of a sonata. Beginning with the exposition and continuing through the development, recapitulation, coda, and the various subsections, Tolstoy paradoxically uses the sonata form as an outline for his short tale that shows the brutality and uselessness of war. In addition, Tolstoy's lyrical writing intensifies the surreal death of a soldier. In this way he subtly gives the Russian people an idea of the horror and ugliness of the conditions of nineteenth century warfare masked in the beauty of his prose.

Mentor: Christine Rydel

Padnos Hall 168

General Education Foundations and Cultures: A Statistical Consulting Experience

TRAVIS CREE

As part of undergraduate requirements at GVSU, and because Grand Valley is a liberal education school, students must take a variety of General Education courses, including Foundation and Cultures classes. These classes vary in size. Dr. Carol Griffin, who is the Director of General Education, wants to determine if average class size is increasing in the General Education Foundations and Cultures from fall 2004 to fall 2007 at the Allendale and Grand Rapids campuses. As a statistical consultant, my role was to analyze class size data in the Foundations and Cultures classes over time. Select findings from these analyses will be shared.

Mentor: Phyllis Curtiss, Neal Rogness, Carol Griffin

Padnos Hall 209

Sex, Power, and Ostracism: Politeness Theory in Reality Television

JACQUELINE HETTEL

This study analyzed the particular types of face threatening acts used by male and female social outcasts in reality television shows. The goals were to gain a better understanding of the use of politeness in competitive environments and to discover if gender differences exist in the use polite language when social ostracism is the eventual outcome. The results indicate that there are gender differences in the use of face threatening acts, particularly when the gender make up of the other participants on the show varies.

Mentor: Kathryn Remlinger

Padnos Hall 211

Using Marine Fossils from the Michigan Natural Storage Company Gypsum Mine to Interpret a Mississippian Paleoenvironment: Wyoming, Michigan

NATHAN NOLL

The Michigan Natural Storage Company is an abandoned gypsum mine in Wyoming, Michigan, containing alternating units of shale, dolomite, and gypsum composing the Mississippian Michigan Formation. The majority of rock units found at this location have little evidence of bottom dwelling or burrowing organisms typical in biologically productive marine environments. The rock layers do, however, contain some other fossil remains such as coprolites (fossil excrement), scales, and bones from aquatic vertebrates such as fish. A possible explanation for these fossil assemblages includes stratification of the water column, resulting in uninhabitable bottom water. Another possible explanation for the fossil assemblages could be that some of the fossil remains were deposited outside of the habitat of the living organisms that the remains came from. Identifying fossils from the site will allow me to compare the death assemblage of organisms at the site with a predicted life assemblage for individual species. These comparisons will be helpful in determining the importance of transport of remains after death, deciding appropriate paleoenvironments, and eliminating the discrepancy of the possible age ranges given to the rock units. During identification, non-morphological properties of the fossils such as mineralogy and preservation quality will be carefully observed to uncover any unexpected pieces of evidence related to the life, death, and deposition of the organisms that once lived where the Michigan Natural Storage Company now lies.

Mentor: William Neal, Patricia Videtich

Padnos Hall 262

Spatial, Temporal, and Toxic Differences of Phytoplankton Communities in Spring Lake, Michigan

BRENT KASZA

Many species of cyanobacteria produce populations that are toxic to humans and animals. My research determines the species and composition of cyanobacteria populations in Spring Lake. I examined temporal variation compared to spatial variation. I also identified toxins produced by the cyanobacteria and their effects on the ecosystem. The sampling methods were three open water sites and three beach sites. I sampled three times a month. An integrated 1 ml water sample was collected at each location. The sample was preserved in Lugols solution and stored in an amber plastic nalgene bottle. The cyanobacteria species in each sample were identified and counted using an inverted microscope and counting chamber. Twenty to thirty fields of 300-500 units (filaments, colonies) were counted. We recorded species number per ml and biovolume based

on average dimensions of each organism. Once the species were identified the toxins they produced were established as well as the effect they have on the surrounding ecosystem. The findings indicated cyanobacteria densities increased from July to August. Limnothrix sp., which was a non toxin producer, was the dominant organism of cyanobacteria in Spring Lake during 2007. *Cylindrospermopsis raciborskii* was the second most dominant organism. This organism is a toxin producing species that is harmful to humans and can cause fish kills. *Aphanizomenon gracile*, another toxin producing species, appears to be found in higher numbers at beach locations. The remaining cyanobacteria had similar abundances between beach and open water locations. The high variability between station and time suggests that site specific variables are important.

Mentor(s): Erik Nordman

2:00 P.M.

Kirkhof Center 104

Highland Group Technology Audit

CORY MCDANIEL, BRAD ROBERTSON, ALISSA STIELER, JOSH TRZINSKI, DANIEL THURSTON

Highland Group is a growing Apple-based advertising agency in East Grand Rapids. The company is planning on moving its location in order to support its internal growth. Our group performed an audit on Highland Group's hardware in order to make recommendations during the company's growth. Recommendation topics included the general layout of the hardware in the new location, as well as new media to accommodate the company's changing needs.

Mentor: Nancy Levenburg

Kirkhof Center 142

The Symbolism of Food in Roman Myth

MELANIE COUGHLIN

This presentation analyzes how references to food in Roman myth are used to symbolize underlying social norms. The symbolic function of four myths in Ovid's Metamorphoses is examined in terms of Roman historical and cultural context, supplemented by anthropological models of cuisine. My analysis shows that the use of food in these four myths reflects Roman constructions of the social stratification of gods and men, as well as some of the moral values of Roman society that food exemplifies. By looking at this type of source from such a unique perspective, this analysis allows for deeper insight into the past as well as revealing important information about how society functions today.

Mentor: Melissa Morison

Padnos Hall 107

Character Education in Wyoming Public Schools

DANIEL MEYERS

Character education is being examined within Wyoming Public Schools. Research has shown that when character education has been implemented, academic achievement improves and negative behavioral attributes decline. Through the use of principal interviews and anonymous teacher surveys, in addition to publicly available state test, school safety, and school demographic data, an argument will be made regarding the effectiveness of character education within the district's elementary schools. Currently only about half of the elementary schools in Wyoming Public Schools identify as having a character education program implemented; therefore, comparisons will be made to determine if all of the elementary schools within Wyoming Public Schools would

benefit from the implementation of some form of character education.
Mentor: Norman Kravitz

Padnos Hall 108
A Prodigious Poetry Presentation
JESSICA PROUSE

Skip the poetry analysis and get a taste of the real thing instead. Student writer, Jessi Prouse, will present a culmination of her poetry spanning the 2007/08 academic year. Tell your friends.
Mentor: Ander Monson

Padnos Hall 207
Target Inquiry: Teacher professional development impacts on classroom practices involving inquiry instruction
LAURA KENNEDY

Current studies of research experience for teacher (RET) programs, based on teacher self-report data, assume RETs affect instruction. Target Inquiry (TI) at Grand Valley State University is an innovative professional development (PD) program for chemistry teachers. Based upon best practices in PD, TI is designed to impact the quality and frequency of inquiry teaching through the participation in a RET and development/implementation of inquiry-based activities. The extent to which instructional practices changed due to these experiences is indicated by classroom observational data using the Reformed Teaching Observation Protocol (RTOP). Findings indicate if and how teaching practices were impacted by the RET and curriculum development experiences. These results have implications for professional development program designs in other contexts.
Mentors: Ellen Yezierski, Deborah Herrington

Padnos Hall 209
Construction of a pHDC-eGFP transformation plasmid for Drosophila
ERIK ANDERSON, MCNAIR SCHOLAR

The genomic DNA region containing the transcriptional promoter for the Histidine decarboxylase gene (pHdc), which is required for synthesis of the neurotransmitter histamine, has been functionally identified in Drosophila melanogaster. A fusion between pHdc and the enhanced Green Fluorescent Protein (eGFP) has been made in a plasmid that will allow generation of transformant flies. The transgenic flies containing the pHdc-eGFP gene fusion will later be studied to determine whether the pHdc region causes expression of the enhanced Green Fluorescent Protein (eGFP) in cells that are known to express the Hdc gene. This research will demonstrate whether the pHdc region is necessary and sufficient for controlling Hdc expression and be a useful tool for examining the physiology of histaminergic cells.
Mentor: Martin Burg

Padnos Hall 211
Determining the Hydraulic Conductivity through Grain Size Analysis of Monitoring Wells in Aman Park
ALEXANDER FRYE

This research will use grain size analysis to estimate the hydraulic conductivity of sediment near Sand Creek in Ottawa County, Michigan. In fall 2007, three monitoring wells were installed at different depths (~5.8, 7.1, and 10.6 feet) and distances from the creek. The wells were installed with five foot well screens intersecting the water table. In these wells, slug tests were performed to measure the recovery rates for each well in order to

estimate the hydraulic conductivity. A slug test is a measurement of time of recovery for a well after a known volume of water is removed. To follow up on this, sediment collected during the boring operation from the screened intervals will be sieved, a cumulative grain size curve constructed, the d10 grain size calculated, and then used in Hazen's equation, K= 1.0d10Â². In this equation, K is the hydraulic conductivity in centimeters/second, 1.0 is an empirical coefficient that accounts for the shape of the pore channels in the direction of flow and the total volume of pores within the sediment, and d10 is the grain diameter in millimeters such that 10% of the material is finer and 90% is coarser. The grain size at 10% will be determined using the cumulative grain size curve. The results of this study will allow us to compare the hydraulic conductivity obtained for each well using grain size analysis and Hazen's equation to that obtained using slug tests.
Mentor: Peter Riemersma, Patricia Videtich

Padnos Hall 261

Where Are Michigan's Giant Salamanders? The Mudpuppy (*Necturus maculosus maculosus)* and the Western Lesser Siren (*Siren intermedia nettingi*)

WILLIAM FLANAGAN

The siren and mudpuppy are two large aquatic salamanders known to occur in Michigan. The current status of the western lesser siren (*Siren intermedia nettingi*) in Michigan is known from only two localities. No formal surveys have been conducted and the species has not been documented in the state since 1963. The mudpuppy (*Necturus maculosus maculosus*) faces a mixture of threats and is believed to be declining throughout the Great Lakes Region. We present preliminary results from ecological niche modeling of siren and mudpuppy distributions in southwestern Michigan using occurrence, bioclimatic, and topographical data. We tested the following hypotheses: 1) Lake Michigan provides a buffering effect on the climate of southwestern Michigan which allows *S. intermedia* to persist as a relict species, and 2) *N. maculosus* is more widely distributed in southwestern Michigan than previously documented and that its sparse southwestern Michigan distribution is likely an artifact of inadequate and biased museum records. Field surveys were conducted to test model predictions and to estimate abundance for each species. Abundance estimates are based on occupancy from field surveys of historic localities. The combination of field corroborated distribution models and surveys of historic localities represents a novel approach to evaluating amphibian status and distribution.
Mentor: Shaily Menon

Padnos Hall 262

Stepping Lightly: Reducing the Carbon Footprint of GVSU

CASEY BOASE

Climate change caused by carbon dioxide and other greenhouse gases is the single largest threat to our society. Grand Valley, as an institution of higher learning and as a signatory of the American College & University Presidents' Climate Commitment, is obligated to develop a plan to become carbon neutral at the earliest possible date. The presentation outlines the steps that are being taken by the University to reach this goal, which include a greenhouse gas inventory as well as reduction and offset strategies.
Mentor: Norman Christopher

2:20 P.M.

Kirkhof Center 104

'merican Poems

ANDREW DE HAAN

I like to write poems. I use words when I write poems. The Oxford English Dictionary defines the word "word" as a part of "Speech, utterance, verbal expression." These small pockets of expression, these workhorses of utterance, I try to keep them close. My poetry is largely written in free verse, though I do enjoy the company of form (both formal and informal), shape, and thematic form. There is an emphasis on the autobiographical and the impact of immediate surroundings on perspective. I am largely influenced by both the larger aspects of culture (religion, the arts, etc.) and the specific human interdependencies all have, but most of all, how these both intertwine, form some patchwork of life. Like I said, I like to write poems. In my presentation I will be reading from the poems I've written while attending GVSU.

Mentor: Patricia Clark

Kirkhof Center 142

Digital Wingman, Inc.

BRIAN RIDER

Entrepreneurship is the driving force behind a successful economy. This presentation discusses what can be done now to help increase the entrepreneurial spirit in West Michigan. Examples include support programs for middle and high school classes and incubators Mentored by the university to help student entrepreneurs start and grow successful companies. The challenges encountered during the process of starting and running a corporation will be highlighted and suggestions for how the university could be more helpful to entrepreneurs will be offered.

Padnos Hall 107

Humanity in Beowulf as Revealed by the Symbolism of Mail

KAITLIN LAMPHERE

Chain mail, or mail, in Beowulf symbolically reveals the courage, determination, and fear of the characters. However, many of the situations in which mail is used in the text are physically impossible or improbable. When combining these two ideas, some of the symbolism falls apart, leaving characters and plot points revealed as slightly more human than the somewhat supernaturally heroic poem suggests.

Mentor: Rachel Anderson

Padnos Hall 108

Between Black and White

WHITNEY LASTER , MCNAIR SCHOLAR

The U.S. and S. Africa both endured periods of intense racism produced from rigid social hierarchies. While European populations controlled these institutions, black populations remained marginalized. Critical race theory proposes that race is socially constructed as opposed to inherently biological. Although social construction of the white and black ethnicities formed similarly, the development of the mixing of white and black into biracial peoples developed uniquely in each country. This study will apply concepts from critical race theory to analyze similarities and differences within the constructions, highlighting the elements of colonization, slavery, and de facto segregation and investigating the effects on the social identity.

Mentor: Jennifer Stewart

Padnos Hall 207

College Experiences and the Intercultural Development of College Students: Research to Date
ERIN BERG

Intercultural competence defined by Deardorff (2004) as, "the ability to communicate effectively and appropriately in intercultural situations based on one's intercultural knowledge, skills, and attitudes", is an area of interest on college campuses. This presentation will review Bennett's (2004) Developmental Model of Intercultural Sensitivity, the associated Intercultural Development Inventory (IDI) (Hammer, M.R., Bennett, M.J., & Wiseman, R., 2003), and their application to measuring intercultural competence in college students. Data collected at GVSU which matched scores on the IDI with self-reported measures of involvement in both on and off campus activities and common college experiences will be discussed.
Mentor: Sherie Williams

Padnos Hall 209
Effects of Experimental Manipulations on Restoration of Urban Riparian Habitat
COREY KAPOLKA

Urban ecosystems harbor native biodiversity, and provide a variety of ecological services and natural resources for urban residents, but are degraded by anthropogenic disturbances. Our study site, a small inland lake adjacent to the City of Wyoming's Clean Water Plant, underwent extensive gravel mining until 2002. In 2005, we initiated experiments investigating the effects of soil amendments (manure and sucrose/sawdust mulch) and the installation of bird perches and rodent-exclusion fences on the restoration of soil quality and riparian vegetation. For each experiment, we applied treatments in a series of ten randomized, complete blocks. Each block contained four 1m x 1 m plots, each with one of four treatments. In Experiment #1, treatments included perch, fence, both, or control (nothing); in Experiment #2, treatments included manure, sucrose/sawdust, both, or control (nothing). We assessed plots annually (2005-2007) for plant biodiversity, density and soil quality. We compared species diversity and density of vegetation among years, sites and treatments using 3-way ANOVA's and diversity indices. Exotic species, especially spotted knapweed, dominated vegetation every year, but grasses and woody plants, which are more common in nearshore than upland habitats, were dominated by native species. Mulch treatments suppressed knapweed slightly, while perch-fence combinations fostered the invasive exotic. Overall, experimental treatments intended to foster native plants had little effect on community composition or dominance or native vegetation during early succession. As the riparian vegetation matures and woody species increase in diversity, it is likely the experimental treatments will have a more conspicuous influence on community composition.
Mentor: Jodee Hunt

Padnos Hall 261
Hidden Parameter Theory in Quantum Mechanics
NICHOLAS PIKE

Quantum mechanics is an indeterministic theory that correctly describes the behavior and evolution of atomic phenomena. This indeterminism has been the cause for some physicists to believe that quantum mechanics is incomplete. The Einstein-Podolsky-Rosen paradox questioned the incompleteness in quantum mechanics. This paradox prompted attempts to formulate classes of so-called hidden parameter theories to bring back the determinism to quantum mechanics. It is possible to test the existence of a complete theory by use of Bells inequalities and subsequent experimental verification. Bell's contribution to this hidden parameter theory is investigated, as well as the responses to the Einstein-Podolsky-Rosen paradox by Bohr and Bell. The meaning of hidden parameter theory is rigorously examined in an overall attempt to describe what classes of theories are experimentally rejected.
Mentor(s): Milun Rakovic

Padnos Hall 262

Diderot's Article "CAFFÉ" (Coffee) in the Encyclopédie
REBECCA BOLEN

In my presentation I discuss Diderot's article CAFFÈ (coffee) in the Encyclopédie (1751-1772). I focus on what Diderot thought and (thought he knew) about this influential commodity. In the light of contemporary research into the introduction of coffee in Europe in the late seventeenth century, I point out that much of the information presented in the article is erroneous. Historians today argue that the coffee house consituted a democratic institution in which citizens came together to discuss politics and culture, explicitly invoking humans' capacity to arrive at truth via the use of reason. In this way, the emergence of the coffee house contributed to the revolutionary foment of the eighteenth century. Surprisingly, though Diderot was a radical Enlightenment luminary and advocated dialogue throughout his oeuvre, he dismisses the café as a place where people overestimate their intelligence and spout nonsense.

Mentor: David Eick

2:40 P.M.

Kirkhof Center 142

Interactive Media--the Next Literature?
LATRICIA PHILLIPS, MCNAIR SCHOLAR

Perceptions of video games (computer games/ games played on consoles) have evolved from earlier stereotypical viewpoints that games are just a type of passive learning. I proposed that video games are indeed active. I attempt to demonstrate this by categorizing levels of interactivity and by identifying additional ways that they have educational value. I then establish the relationship between video games and literature. I conclude that video games can re-categorize literature.

Mentor: Chris Haven

Padnos Hall 207

The Critical Nexus: Deindustrialization, Racism and Urban Crises in Post-1967 Detroit
DANIELLE DERUITER-WILLIAMS, MCNAIR SCHOLAR

With so much poverty, crime and an overall ambiance of abandonment it is easy to forget that Detroit is a city with a rich history. Today it is scarred with widespread urban decay. On July 23rd, 1967, what began as an almost routine raid initiated a five day riot that would leave 43 dead, 467 injured, 7,200 arrested and over 2,000 buildings scorched. The 12th Street Riots that began that night soon became the most violent civil incident in US history and left a permanent mark upon the city. The objective of this research was three-fold; 1.) identify and qualify the claim that at the nexus of deindustrialization and racism there is an initiator and accelerator of urban crisis; 2.) examine the concept of racism as a result of scarcity of resources (i.e. jobs, housing, education, etc.) amongst unskilled laborers caused by heavy industrialization and later deindustrialization; 3.) explore the impact of the 1967 race riot on race relations and Detroit s success or failure (economic and socially) since those riots.

Mentor: Daniel McClure

Padnos Hall 262

Determining Forest Health Around Urban Developments in Laketown Township, Michigan
ERIN WILDT

This experiment will look at the health of remaining forests in Laketown Township in Ottawa County, Michigan. The township has seen great urbanization in recent years, and the new housing developments have cut into pre-existing forests. Comparing the biodiversity, age and forest composition of various forest plots found throughout the township and using a preserved forest as a control, the health and economic value of these forests can be determined. From these findings a management plan can be created to establish whether these

forests should be preserved, used for the ecosystem services, or cleared and used for development purposes.
Mentor: Erik Nordman

3:00 P.M.

Kirkhof Center 104

Irrationality of Love: An Analysis of Three Foreign Novels

COREY FELLOWS

The irrationality of love is analyzed in the three novels: "The Art of Love" by Hong Ying, "A Hero of Our Time" by Mikhail Lermontov, and "Candide" by Voltaire. These three foreign novels use relationships to show how love is irrational, but at the same time something we all seek. Since these books were written across the globe, they also allow us to realize the hardships that lie within relationships are similar in many cultures. The thoughts these books provoke can be applied to our lives to help us understand more about why we sometimes love without reason.
Mentor: Dr. D. Ihrman

Padnos Hall 107

Religion in the Trenches: Liberation Theology and Evangelical Protestantism as Tools of Social Control in the Guatemalan Civil War (1960-1996)

BRYAN MANEWAL, MCNAIR SCHOLAR

During the early years of the Guatemalan civil war (1960-1996), which pitted the right-wing military regime against leftist revolutionaries, Liberation Theology became popular among some in the Latin American clergy. Fearing that this new ideology would inspire indigenous populations to join the rebels, the dictatorship looked to suppress the movement inside Guatemala. This research looks at Liberation Theology, its prominence in the context of the Guatemalan civil war, and the military dictatorship's use of the opposing tenants of Fundamentalist Protestantism to counter Liberation Theology's mass appeal, particularly the ideas of institutionalized sin and the necessity of popular action to exact change.
Mentor: David Stark

Padnos Hall 168

The Effects of Sediment Thickness on Stream Water Temperature

BRIDGET BROWN

In stream systems, temperature is an important factor in determining the species composition, as well as the amount of nutrients and solids that can be dissolved. Streams are warmed through circulation with warmer air at the surface and absorption of radiation from direct sunlight; recent observations suggest that sediment thickness may also play a role in the process. This experiment was designed to determine the effect, if one exists, sediment thickness has on stream warming. In a controlled environment, stream flow was simulated directly beneath a heat lamp. Temperature measurements were recorded over a two hour time span for each variation of sediment thickness; the data were plotted to show the increase in water temperature over time. These results may offer insight into the complicated processes that occur in stream systems.
Mentor: Peter Wampler

Padnos Hall 207

How to Start a Home-Based, Web Development Business
JULIANNE MINNIE

How to start a home-based web development business will be the focus of this independent research study. This study will include four main sections. 1) Definition and establishment of a business plan (forming a mission / vision / strategy, and determining the products and services the business will offer). 2) A marketing plan (including research of the target market, SWOT analysis, and consideration of the 4 P s: Product Design, Placement, Promotion, and Pricing). 3) A resource plan for the business (including financial, material, human, and geographical resources required and budgeting). 4) An administrative plan for the business (including registering a business name and licensure, meeting IRS requirements, accounting, customer relationship management and administrative record-keeping).
Mentor: David Montanino

Padnos Hall 209
Marie-Jeanne Riccoboni and George Sand: Views of Love and Marriage
in the Best-Selling Female Novelists of Eighteenth- and Nineteenth-Century France
HEIDI COLLINS, 2007 STUDENT SUMMER SCHOLAR

Marie-Jeanne Riccoboni (1713-1792) and George Sand (1804-1876) were both best-selling authors in their time. In this paper, I compare their narrative techniques, situating them within contemporaneous literary trends, and the major theme in both, to wit, the unfulfilling nature of marriage for women. I demonstrate how Riccoboni depicts marriage based on mutual affection as being no more beneficial to women than marriages arranged for social or financial benefits had been. I propose that this is due to the fact that the affection that Riccoboni describes is based solely on physical attraction whereas Sand portrays affection based on emotional intimacy. I contend that where Riccoboni offers a strident and incisive feminist critique of marriage, Sand goes further by providing a solution in the form of mature platonic friendship which grows into passionate love.
Mentor: David Eick

Kirkhof Center 142
The Significance of Red Sox Nation:
An Evolutionary Perspective on Vicarious Identification with Sports Teams
BENJAMIN WINEGARD

One striking feature of modern industrial societies is that many individuals show strong emotional attachments to particular sports teams despite not being members of those teams. Social scientists have paid considerable attention this phenomenon which we refer to as VISTing (Vicarious Identification with Sports Teams). Previous research has examined coping with team losses, and hormonal changes based on game outcomes. Yet, little attention has been paid to explaining why males, on average, show greater VISTing than women and why is there marked individual variation in VISTing. We hypothesize that VISTing is the manifestation of an evolved disposition to form coalitions with others, especially men, in the context of potential inter-group conflicts based on overt aggression. Given the enduring recurrence of warfare in human evolution and its likelihood of shaping human psychology, we hypothesize that the psychological legacy of warfare has, as a byproduct, produced a tendency to VIST. If our evolutionary hypothesis holds, then VISTing should correlate positively with masculinity, concerns about ingroup loyalty, correlates of prenatal brain masculinization (digit ratios) and testosterone (body shape ratios), and negatively with empathy. Furthermore, for any level of VISTing, men should report greater team loyalty and greater knowledge about the rules of team sports relative to knowledge about their outcomes.
Mentor: Robert Deaner

Padnos Hall 211

Commitment, Involvement, and Satisfaction of Union Workers: A Research Study

CHERI LOZON

Data was collected via surveys in 2004 and 2007 from a local union. The surveys included demographics such as gender, age, race, and transfer status. The surveys also included questions regarding commitment, involvement, and satisfaction with the local union. The data was analyzed with particular interest given to comparing attitudes of the union members for these two years. Major findings from this study will be highlighted along with my perspective on managing and analyzing data.

Mentors: Brian Phillips, Phyllis Curtiss

Padnos Hall 261

Stoic *Lekta* and Chomsky's Super-rules

DONNA ST. LOUIS

Generative grammar, a development in linguistic theory pioneered by Noam Chomsky, yielded the concept of linguistic "super-rules", a grammatical skeleton supporting all linguistic expression. According to this theory, all human languages may be distilled to a central core of super-rules, providing a common, underlying Universal Grammar behind each specific language grammar. Yet just as modern scholars study language and its intricacies, so did the ancients, particularly the Stoics. One idea sprouting from the ancient Stoic philosophy of language is *lekta*, the underlying, subconscious thought, or meaning, behind the structure of language. Although Chomsky's generative grammar and the Stoics' *lekta* ultimately fall on different levels of thought and expression, both concepts seem to present a similar understanding of the human language that transcends a strictly "verbal" level.

Mentor: Peter Anderson

Padnos Hall 262

Adaptive Management Plan for Species Diversity and Wildlife Habitat in Hardwood Stand

LINDSEY GOSS

For this project I will create an adaptive management plan for a mixed hardwood stand located in Spring Lake Township, Section 4, T8N R16W, Ottawa County, MI. No known management has taken place within the stand for the past 50 years. Recent development of the surrounding area has lead to a decreased wooded landscape and a concern about the possible loss of biodiversity. The property owner, Rich McKellips, would like to encourage woody species diversity while promoting habitat features for wildlife. To meet these goals I must evaluate and then research the current overstory and understory structure, as well as current wildlife habitat and food sources within the stand. For the assessment I will collect data on DBH, basal area, canopy layers, species composition and frequency, habitat structures, and available food. All data collection and research is expected to be completed by mid to late March. Recommendations for the adaptive management plan and an estimate of costs to engage such a project will be presented to the property owner on Student Scholarship Day, April 9, 2008. I hypothesize the overstory will be found to have a dense canopy and will require a thinning treatment. The species removed will likely include those having the greatest frequencies. I also hypothesize that some additional habitat features may be necessary to encourage wildlife.

Mentor: Erik Nordman

3:20 P.M.

Kirkhof Center 142

Royal Securities - Streamlining Office Communications Using Technology

RYAN GIDLEY, DALAN VIENGKHAM, KIMBERLY SCHMIDT

It goes without saying that in today's world, communication is essential to an organization. Royal Securities is an investment firm that has two main branches in Grandville and Downtown Grand Rapids, with smaller branches located throughout West Michigan. Currently they are experiencing problems with communications and data sharing between branches. Through research, our team has come up with solutions including, Voice over Internet Protocol (VoIP), web based software for data sharing, and off site hosting for data storage. We believe these solutions will help Royal Securities streamline communication and data sharing while allowing them to expand in the future.

Mentor: Nancy Levenburg

Padnos Hall 107

Stateness and Democratization: Differing Paths in Post-Communist Europe

CHRISTIAN GOETZ

My research shows how and why democratization processes differed in four post-communist countries, Slovenia and Croatia of the former Yugoslavia and Ukraine and Moldova of the former Soviet Union. My analysis will show that Slovenia has made the most progress, followed by Croatia, Ukraine, and finally Moldova. A background condition to these differences concerns the level of political and economic liberalization, with Slovenia and Croatia having much greater levels compared to Ukraine and Moldova. The main factors causing these differences include civil society and the balance of power during the transition, leadership strategies, "stateness" issues and their politicization, and how each of these countries dealt with the dangers of the partial reform trap. My argument will be based on different processes of democratization, showing how the factors I identify affected each of these four countries in each of these processes. The conclusion will show where each of these countries is today in terms of democratization.

Mentor: Heather Tafel

Padnos Hall 108

The Care in Caregiving

KRISTEN COURTEAU

This oral presentation is an overview of an independent study which explores the dynamics of caregiving and caregiver role strain. In conjunction with the media committee of The Caregiver Resource Network, nine individuals have volunteered to be interviewed about the impact of caregiving on their lives. The interviews focus on therapeutic communication, and connecting caregivers with additional resources to help ease caregiver role strain. This presentation highlights the variety of challenges facing caregivers, their individual stories as told to this student and the inspiration that can be drawn from these courageous individuals.

Mentor: Cindy Beel-Bates

Padnos Hall 211

Student Opinions on Grand Valley's General Education Program

WHITNEY MINER

The goal of this study is to discover students' perceptions of the general education program at Grand Valley. The data was collected by Dr. Curtiss' STA 215 classes in fall 2006 and winter 2007. The STA 215 students designed and administered the surveys used for the current study. I will discuss perceptions involving themes, foundations, and the overall general education program while taking demographics into account. Further de-

scriptive information is discussed, along with possible relationships between questions.
Mentor: Phyllis Curtiss

Padnos Hall 261

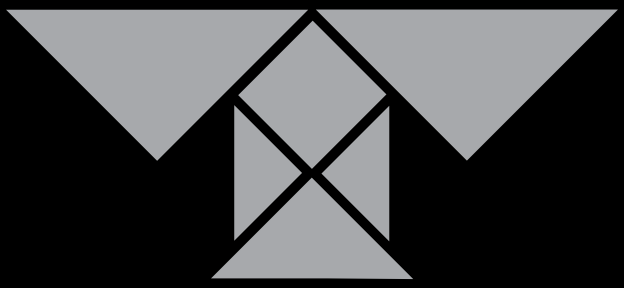
Clementia in Cicero's Pro Ligario

AARON ROZEBOOM, MCNAIR SCHOLAR

The theme of clementia (mercy) pervades three speeches Cicero delivered before the dictator Caesar in 46 B.C. The theme impinges upon social, political, and linguistic spheres, and becomes a nexus for Cicero's rhetorical strategies in those speeches. This project combines lexicographical research, close reading of the Latin text, analysis of the political and social trends in the final years of the Roman Republic, and a thorough survey of relevant secondary source material in order to examine Cicero's understanding, presentation, and manipulation of clementia as a rhetorical strategy in the Speech on before of Ligarius (Pro Ligario).
Mentor: Peter Anderson

EXHIBITION OF ART

4:00 A.M. - 4:30 P.M.



"At Grand Valley, we are fortunate to have faculty for whom undergraduate research is a priority. Students have many opportunities to work one on one with faculty, developing excellent research skills and a breadth of knowledge in their field. The opportunity to work closely with distinguished faculty cultivates students' expectations of themselves, their independence, and of course their level of performance."

- DEAN FREDERICK J. ANTCZAK -

*All submitted abstracts have been approved by the faculty mentor.

12:00 P.M. - 5:00 P.M.

Kirkhof Center 204

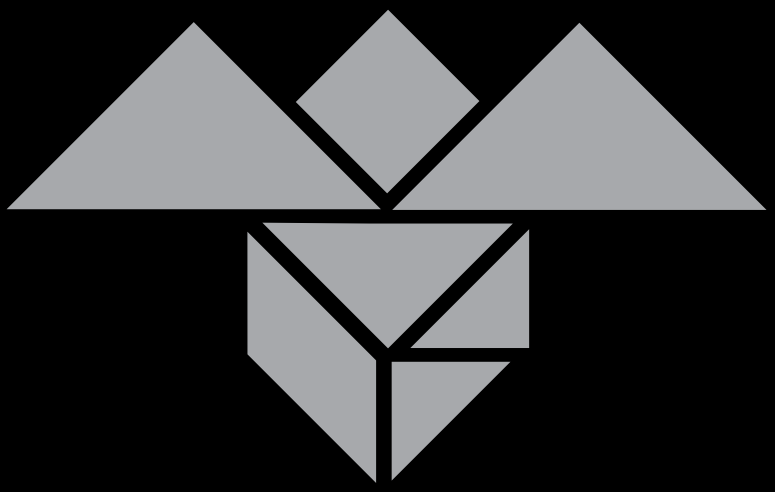
Color as Subject in Photography

RYAN ESSENMACHER

Popular understanding of photography widely accepts it as an art form about "things"- things which exist in front of a camera, are summarily photographed, and result in photographs inextricably tied to the very things from which they were derived. In contention with this supposition, an anonymous photographer once uttered the historic quote "photographs are not about what things look like, but what it's like to look." This body of work will reaffirm this assertion, with specific attention paid to color and form, not object information, as being the primary factors which dictate a photograph's discourse and commentary. To introduce color into the picture plane is to introduce a new element at odds with the physical "stuff" of the composition; the scientific interaction of colors as relative wavelengths of light and our psychological perception of these interactions culminate to produce a visual experience akin to a choreography of hues and their juxtaposition with shape and texture, altogether removing "the thing" as a concern to the viewer, however obviously placed it may be. As color presupposes object information as subject matter, the thing-ness of photography as an art is undermined, leaving only one quintessential inevitability- that color photography is invariably about color.

Mentor: David Rathbun

2007 GVSU STUDENT AND FACULTY COLLABORATIVE RESEARCH & CREATIVE PROJECTS



To submit your exhibit, presentation, or publication for inclusion in the 2009 SSD Abstract Book, contact ssd@gvsu.edu.

PRESENTATIONS

Altenritter, M., and C.R. Ruetz III. 2007. Risk of predation to stream invertebrates across a gradient of habitat complexity. Poster presentation at the West Michigan Regional Undergraduate Science Research Conference, Grand Rapids, Michigan. October 20.

Breen, M.J., C.R. Ruetz III, and K.J. Thompson. 2007. Movement patterns of mottled sculpins in a small stream: evaluating PIT equipment. Platform presentation at the 137th Annual Meeting of the American Fisheries Society, San Francisco, California. September 2-6.

Breen, M.J., C.R. Ruetz III, and K.J. Thompson. 2007. Relocation of PIT-tagged mottled sculpins: evaluating diel and seasonal recapture probabilities in a small Michigan stream. Platform presentation at the Indiana-Michigan-Ohio Chapters Joint Annual Meeting of the American Fisheries Society, Angola, Indiana. February 14-15.

Brower, T., Essenmacher, S., VanderVelde, C., and Mattox, S., 2007, Using Topographic Maps to Explore Volcanoes, National Science Teachers Association, Advance Program, p. 114.

Brusnahan, H., Weber, J., and Reynolds, R., 2007, Shock metamorphic effects on lattice structure of sphalerite (Zns) from polymict impact breccia dikes, Kentland crater, Indiana, GSA 2007 annual meeting.

Brusnahan, H., Weber, J., and Reynolds, R., 2007, Shock metamorphic effects on lattice structure of sphalerite (Zns), Kentland, IN impact crater, Michigan Academy annual meeting.

Busman, Douglas, Nancy Dausman, and Carly Alexander Warnshuis "The Placement Conundrum: Finding an Ideal Fit for Student Teachers" Presented at the Summer Conference of the Association of Teacher Educators (ATE), July 30, 2007 Milwaukee, WI

Cookingham, M.N., and C.R. Ruetz III. 2007. Evaluating passive integrated transponder tags for tracking movements of round gobies. Poster presentation at the Indiana-Michigan-Ohio Chapters Joint Annual Meeting of the American Fisheries Society, Angola, Indiana. February 14-15.

Cookingham, M.N., and C.R. Ruetz III. 2007. Evaluating passive integrated transponder tags for tracking movements of round gobies. Poster presentation at the Lake Michigan: State of the Lake Conference, Traverse City, Michigan. October 3-5.

Essenmacher, S., VanderVelde, C., and Mattox, S., 2007, Exploring Volcanoes Using Topographic Maps, Michigan Science Teachers Association Conference Program, p. 37.

Hall, J., Hallack, A., Kipp, B. H., & Sylvester, F. A. 2007, April. The Effect of Superoxide Generation by Ascorbic Acid and Imidazole on Coronary and Pulmonary Arteries. Presented at the Experimental Biology 2007, Washington, D.C.

Henriksen, N. J., Owen-DeSchryver, J. S., Matthews, A. L., & Meiste, J. (2007, February). Teaching play skills to young children with autism: Discrete trial training versus video modeling. Poster presented at the Association for Behavior Analysis Autism Conference, Boston, MA.

Leys, D., and Mattox, S., 2007, Exploring Students Conceptions and Misconceptions of Volcanoes, National Science Teachers Association, Advance Program, p. 154.

Nelson, K.M., C.R. Ruetz III, and D.G. Uzarski. 2007. Distribution of zebra mussels in Great Lakes coastal ecosystems: are wetlands resistant to invasion? Platform presentation at the Lake Michigan: State of the Lake Conference, Traverse City, Michigan. October 3-5.

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ANDERSON, RACHEL
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ASCHENBACH, TODD
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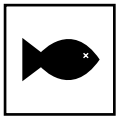

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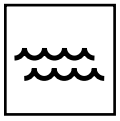

1,558 GAL.
wastewater flow saved

172 LBS.
solid waste not generated

339 LBS.
net greenhouse gasses prevented

2,597,276 BTUS
energy not consumed

Savings from the use of emission-free wind-generated electricity:

882 LBS.
air emissions not generated

2,097 FT^3
natural gas unused

In other words your savings from the use of wind-generated electricity are equivalent to:

NOT DRIVING 995 MILES

PLANTING 60 TREES

Primary values were derived from information publicly available at:
http://www.epa.gov/cleanrgy/egrid/index.htm and http://www.environmentaldefense.org/documents/1687_figures.pdf


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