UURAF

University Undergraduate Research and Arts Forum

April 13, 2007

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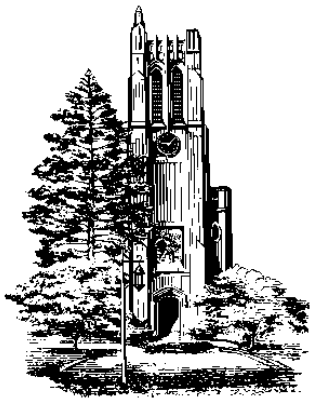

University Undergraduate Research and Arts Forum

Welcome to the Michigan State University Undergraduate Research and Arts Forum. Today, undergraduates from diverse academic disciplines present their outstanding research and creative endeavors. Thank you for joining us as we observe the exciting work and impressive accomplishments of these students.

We acknowledge President Lou Anna K. Simon and Provost Kim Wilcox's continued support of undergraduate education and research at Michigan State University. The University Undergraduate Research and Arts Forum received support, guidance, and planning from Associate Provost Douglas Estry; Dean Ronald Fisher and Associate Dean Steve Kautz from the Honors College; undergraduate associate and assistant deans, Dr. Kelly Funk, Director of Academic Assessment, and Dr. Korine Steinke, Coordinator of Undergraduate Research. We thank the many dedicated faculty mentors who guided the research projects and creative activities presented today, as well as those faculty members serving as judges.

April 13, 2007

MSU Union Building

Michigan State University

Acknowledgements

We would like to offer special thanks to Lindsey Oehmen, Sandra Walther, Dr. Matthew Wawrzynski, and all of the judges, moderators and volunteers for their support of the 2007 University Undergraduate Research and Arts Forum.

Awards Ceremony

To recognize exemplary scholarly achievements, monetary prizes will be awarded. One first-place award ($100) and one merit award ($50 each) will be given in each poster and oral presentation category. In addition, two grand prizes will be awarded to one student from science, mathematics, and engineering and one student from humanities, social sciences, and communication arts and sciences.

Students working together in groups of five or less will each receive the award money independently (i.e., If a group of 5 students wins a first-place award, each member would receive $100 each). The maximum amount awarded for groups with six or more members will be $500 for first-place awards and $250 for merit awards; this money will be evenly distributed amongst the group members. Award money will be deposited directly into the students MSU account. If the student does not have any unpaid bills, a check will be mailed to the student at the end of the semester.

At 4:30 PM, there will be an awards presentation in Parlors A, B, and C during which the prize winners in the various categories will be announced. We hope that all participants will stay for the awards ceremony and encourage you to invite family and friends to attend.

Table of Contents

2007 UURAF Schedule of Events
MSU Student Union

Time	Event	Location
8:30 AM – 9:15 AM	Check-In for Morning Oral Presentations and Poster Session	Second Floor Concourse
9:30 AM – 11:30 AM	Morning Poster Session **Posters must be taken down between 11:30 AM – 12:00 PM*	Ballroom Sunporch
9:45 AM – 11:45 AM	Breakout Session #1—Oral Presentations	Gold A Gold B Green Lake Huron Lake Superior Tower
11:00 – 12:00 PM	Check-In for Afternoon Oral Presentations	Second Floor Concourse
11:45 AM – 12:00 PM	Break	
12:00 PM – 12:15 PM	Welcome Message from Dr. Douglas Estry, Associate Provost for Undergraduate Education	Parlors A, B, and C
12:15 PM – 4:00 PM	Breakout Session #2—Oral Presentations	Gold A Gold B Green Lake Huron Lake Superior Tower
1:00 PM – 1:45 PM	Check-In for Afternoon Poster Session	Second Floor Concourse
2:00 PM – 4:00 PM	Afternoon Poster Session **Posters must be taken down between 4:00 PM – 4:30 PM*	Ballroom Sunporch
4:15 PM – 4:30 PM	Break	
4:30 – 5:00 PM	Awards Ceremony: Dr. Ronald Fisher, Dean of the Honors College	Parlors A, B, and C

Light refreshments will be provided at 10:30 AM and 2:00 PM in the Concourse Area

Oral Presentations

Please refer to the index in the back of the program book to find the presentation time and room location for each presenter.

Gold A Room

Category: Communication Arts and Sciences—Group 1

#	Time	Presenter(s)	Title
7	10:00 AM	Alexandra Henderson, Amanda Peterka	Steel: Hot Metal, Cold Reality
9	10:15 AM	Jenna Bender, Shannon Morey, Erin Roach	The Effects of Liking on Compliance After a Pregiving Favor
12	10:30 AM	Frank Kwarcinski, Dennean Lippner, Danielle Michael, Erin O'Connor, Taj Rahman	Elder Abuse According to U.S. Newspapers
26	10:45 AM	Stephanie Green	Blogs to Books: A Look at How New Digital Media is Affecting Traditional Publishing Practices
33	11:00 AM	Sneha Goud	Communication Attitudes and Behaviors in Indian-American Romantic Relationships
36	11:15 AM	Mathew Runyan	Cyber Storytelling: The Art Machinima and World of Warcraft
38	11:30 AM	Marie Hollenbeck	Developing Community Media: A Social Network Analysis of Local Media Users

Gold A Room

Category: Communication Arts and Sciences—Group 2

#	Time	Presenter(s)	Title
122	12:15 PM	Jeffrey Allen, Mike James, Mike Kelly	Widget: The Making of an Independent Film
52	12:30 PM	Kelli Foy	I Missed My First Child's Birth: Technology and Soldiers' Communications Home
58	12:45 PM	Kristin Key	Internet Abstinence
73	1:00 PM	Sherry Bagnall, Lauren Schroeder	MSU & U: Connecting Students & College Life Producers
83	1:15 PM	Dyana Males	Photographic Truth and Image Appropriation
91	1:30 PM	Aaron Berton, Jason Conley, Joe Fitzgerald, Addam Pushman, David Sahlin, Tom Stark, Eric Vogel	Serious Game on Training Proper Hygiene Practices in Child Care Centers
104	1:45 PM	Andrew Sobotka	The History of Arab Americans in Metro Detroit
121	2:00 PM	Jeffrey Allen, Mike James, Mike Kelly	The Re-Enactor
47	2:15 PM	Brittany Foley	Escorts, Attack Dogs or Style Setters - How Magazine Reporters Covered the 2004 Presidential Candidates' Wives

Gold A Room

Category: Molecular Biology

#	Time	Presenter(s)	Title
27	3:00 PM	Elizabeth Bartlett	Bovine Hereditary Zinc Deficiency: Identification of a Splice Site Mutation and Evaluation of Functional Consequences
32	3:15 PM	Ashwin Thiagaraj	Clearance Mechanism of N-Acetylgalactosamine-Modified Von Willebrand Factor from Blood Circulation
60	3:30 PM	Steffany Kerkstra	Investigation of LRRK2 Homodimerization
94	3:45 PM	Bryan Mets	Sprouty-2 Sustains Expression of the EGFR MAP Kinase Pathway Which is Required for Cancer Formation by Human Fibroblasts
112	4:00 PM	Zachary Zalewski	TRIM22: A New Player in the Feline Host-Pathogen "Arms Race?"

Gold B Room

Category: Social Sciences—Group 4

#	Time	Presenter(s)	Title
4	9:45 AM	Marissa Baca, Jenna Bender, Heather Bick	Did the 2004 Vote on Proposition 2 Represent the Will of the People?
10	10:00 AM	Sara Cottrill, Paul Luethy, Jessica Nickrand	The HPV Vaccine Legislation: Michigan and Beyond
28	10:15 AM	Nicholas Romley	Can Campaign Promises be Held as Truth? An Analysis of the 1998 Freshman Senate Class
61	10:30 AM	Charles Szafir	Is Pork Partisan?
62	10:45 AM	Thomas Knezek	Is There a Gubernatorial Exception to Red and Blue?
66	11:00 AM	Charles Szafir	Majority Party Power in the U.S. Senate
98	11:15 AM	Frank Orlando	The Effect of Various Redistricting Methods on Voter Turnout
99	11:30 AM	Aaron King	The Effects of Felon Disenfranchisement Laws on American Politics: An Analysis of Race and Age Discrimination

Gold B Room

Category: Humanities—Group 1

#	Time	Presenter(s)	Title
63	12:15 PM	Aidel Paul Belamide	KAPWA in BHARA: A Preliminary Report on the Lexical Manifestation of Pakikipagkapwa Psyche in Bhara of Ternate, Cavite
25	12:30 PM	Nastassja Whitman	1960's and 1970's Black Theater Movement: The Intentionality of the Movement and its Affects on Black Theater Today
79	12:45 PM	Nathaniel Bliton	Out/In Sound: A Piece on my Compositional Process
6	1:00 PM	Caroline Baas, Nicole Stein	Interacting with Online Course Content: Using the Student Experience to Develop Assessment and Evaluation Tools for Online Courses
16	1:15 PM	Kinya Yamazaki	[Re]presenting Oppression and Liberation of African-American Women: Kindred and The Color Purple as Neo-Slave Narratives
24	1:30 PM	Ashley Waldorf	Beauty and Feminism: Exploring the Evolving Implications of Conceptual Rhetoric in Western Media
30	1:45 PM	Melissa Byl	Christianity in Dostoevsky's Crime and Punishment
34	2:00 PM	Andrew Cuda	Culture and Vision
37	2:15 PM	Jackson Buddingh	Cyborgs, Sexuality, and Film
57	2:30 PM	Jackie Canan	Informal Discourse Patterns in the Classroom
53	2:45 PM	Ryan Shannon	Imaginings of Biological Eschatology: Post Human Sentience in Fiction

Green Room

Category: Engineering, Mathematics, & Computer Science

#	Time	Presenter(s)	Title
8	9:45 AM	Ziying Pan, Bethany Wenzel, Richard Worhatch	The Dynamical Behavior of Quadratic Maps
23	10:00 AM	Renaldo Ferguson, Nathan Furtwangler, Daniel Merritt, James Pita, Timothy Wall	Autonomous Terrain Mapping for Robotic Exploration
22	10:15 AM	Steve Lung	Assessment and Improvement of Construction Project Closeout at Michigan State
54	10:30 AM	Marc Schlaud	In Vitro Exercise Affects the Response of Articular Cartilage to Blunt Impact Loading
65	10:45 AM	Gail Bornhorst	Kinetics of Thermally-Induced Shrinkage of Beef Muscle During Isothermal Heating
78	11:00 AM	Adam Dietrich	Non-Destructive Firmness Analysis on Apple Fruit
105	11:15 AM	Paul John Ross Narciso	The Impact of Overloading on Pavement Life: A Focus on the Influence of Truck Weight Regulation Efforts in the Philippines

Green Room

Category: Humanities—Group 2

#	Time	Presenter(s)	Title
117	12:15 PM	Abigail Brengle	Freud and Crime and Punishment
110	12:30 PM	Nayantara Sen	The Young Blasian Experience: Socio-Political Investments and Motivations in the 21st Century
71	12:45 PM	Tom Nehil	Mexican and Chicano Views on Immigration Policy
77	1:00 PM	Matthew Messerschmidt	Nietzsche, Dostoevsky, and the Modern World
82	1:15 PM	Leah Rudolph	Perceptions and Use of Dark Literature in the Secondary English Classroom
86	1:30 PM	Alex Davis	Raskolnikov's Inherent Personality in Dostoevsky's Crime and Punishment
92	1:45 PM	Tanya Rodriguez	Slaughter of an Innocent: The Pawnbroker’s Sister in Crime and Punishment
103	2:00 PM	Felix Popescu	The Error of Political Manifestos in Dostoevsky's Crime and Punishment
106	2:15 PM	Ashley Romanowski	The Impacts of Michigan's NCLB English Language Proficiency Testing on ESL Teachers and Students
109	2:30 PM	John Breen	The Poetry of Horace and the Economy of the Roman Principate
69	2:45 PM	Jasmine Angelini-Knoll	Memoirs of Genocide: From Poland to Sudan

Lake Huron Room

Category: Social Sciences—Group 2

#	Time	Presenter(s)	Title
87	10:00 AM	Kathleen Watson	Regional Destabilization and Post-Apartheid Reconciliation in Southern Africa
111	10:15 AM	Blair Starnes	Transitions: African Influence of 17th and 18th Century Curacao
43	10:30 AM	Adam Hallett	Estimating the Societal Cost of Domestic Terrorism: The Case of the Oklahoma City Bombing
81	10:45 AM	Ryan Etzcorn	Parliamentary Labour Party Division on the Eve of the Iraq War
93	11:00 AM	Adam Wagner	Spartan Security: The MSU Police Group in South Vietnam 1955-1961
15	11:15 AM	Marissa Baca, Myron Chang, Lauren Kelly, Hiu-Lam Lau, Ryan Skynar	An Assessment of Outward Migration from the State of Michigan

Lake Huron Room

Category: Cell Biology, Microbiology, & Biochemistry

#	Time	Presenter(s)	Title
44	12:15 PM	Dionisia Quiroga	Evaluating siRNA-mediated Gene Knockdown to Study Angiotensin-Converting Enzyme 2 Function in Mouse Lung Epithelial Cells
45	12:30 PM	Megan Goodall	Evaluation of Adipogenic Differentiation of Canine Mesencymal Stem Cells
80	12:45 PM	Jeff Hakim	Oxidative Stress Induced Endothelial Progenitor Cell Dysfunction in Diabetes
97	1:00 PM	Kevin Ogden	The Cytochrome P450 Inhibitor Ketoconazole Potentiates Serotonin-Induced Contraction in Rat Aorta: Who is the Culprit?
2	1:15 PM	Vincent Lu, Zimin Zhao	Cutting-edge Advancements in the Expression and Purification Utilized to Crystallize ADP-Glucose Pyrophosphorylase
17	1:30 PM	Rebecca Frear	Alternative Fuel Derived from Vegetable Oils
19	1:45 PM	Nicholas Barbu	Analysis of Intestinal Microbiota Shifts in IL-10 Deficient Mice Exhibiting Spontaneous Colitis Using Terminal Restriction Fragment Length Polymorphisms (T-RFLP)
21	2:00 PM	Jenna Gettings	Assaying Cytokine Production in Response to Primary Campylobacter Jejuni Challenge in a Murine Model
29	2:15 PM	Karley Hermans	Characterization of the Production of Reuterin, an Antimicrobial Compound Secreted by Strains of Probiotic Lactobacillus Reuteri
50	2:30 PM	Lauren Broske	Haplotype Analysis of GJB2 Regulatory Region

Lake Superior Room

Category: Social Sciences—Group 3

#	Time	Presenter(s)	Title
35	9:45 AM	Jonathan Murphy	Curricula Under Review: An Investigation of the Historical Biases within the Three Michigan School Districts
96	10:00 AM	Kimberly Beaubien	Subsidiarity: Religion in the Public Square
108	10:15 AM	Brett Staron	The Limits of Freedom
113	10:30 AM	Jennifer Patros	Underlying Effects of Authority: Past to Present
114	10:45 AM	Kyle Steele	UnLockeing Liberalism: A New Morality of Individual Rights
118	11:00 AM	Chinell McCarthy	The Children of the Sun: A Comparative Study of Race as Seen by the Children of Afro-Caribbean Immigrants and Indigenous Blacks
1	11:15 AM	Justin Haveman, Kim Kyungrok, Aaron Warshay	An Analysis of Modern Society via Comparision
3	11:30 AM	Jeff Franklin, Leah Moss	Deindividualization

Lake Superior Room

Category: Food, Agriculture, & Environmental Sciences

#	Time	Presenter(s)	Title
5	12:15 PM	Brittany Blankenship, Katherine Chumack, Dani Giles, Elizabeth Hoxie, Lauren Jones	Going to the Beach? Factors Affecting Great Lakes Beach Use
42	12:30 PM	Michaela TerAvest	Effects of Water Level Management in Crooked Lake, Barry County, Michigan
46	12:45 PM	Serina Mazzoni	Growth and Development of Potato Tissue Culture Plants on Long-Term Media
72	1:00 PM	Britt Larson	Modeling the Inertial Movement of the Head and Neck in the Trotting Horse
75	1:15 PM	Sarah Gray	Naked Hooves: The Effects of the Physiological Trim
102	1:30 PM	Rachel Komosinski	The Effects of Mating Systems on Genetic Diversity in Populations of the Blanding's Turtle (Emydoidea blandingii): A Species of Regional Conservation Concern
116	1:45 PM	RajReni Kaul	Effects of Nutrients on the Genetic Structure of M. Aeruginosa
20	2:00 PM	Danielle Scheetz	Anti-Müllerian Hormone in Heifers with High Versus Low Numbers of Antral Follicles Growing During Ovarian Follicular Waves
51	2:15 PM	Monica VanKlompenberg	Hypergravity Exposure Affects Lipid Synthesis in Rat Mammary Gland During Pregnancy and Lactation
115	2:30 PM	Kristen Pratt	Youth Sense of Place and Environmental Stewardship

Tower Room

Category: Social Sciences—Group 5

#	Time	Presenter(s)	Title
18	10:00 AM	Wil Rankinen	An Upper Peninsula of Michigan Vowel System Study
49	10:15 AM	Cary Middlebush	Girl Talk; Boy Talk: Gender and Classroom Discourse
56	10:30 AM	Megan Firestone, Emme Giese	Influence of Polish on English
31	10:45 AM	Rachel Jacobson	Cinema's Portrayal of Colombia's Cocaine Crisis
84	11:00 AM	Erin Biebuyck	Prudes and Perverts: The Role of the Dichotomous 'Other' in Sex Advice Literature
89	11:15 AM	Luke Capizzo	Rhetoric, Technology, and the American President: Adaptation to Radio, Television, and the Internet

Tower Room

Category: Social Sciences—Group 1

#	Time	Presenter(s)	Title
39	12:15 PM	Erin Carr	Do Mothers Shop Differently After They Have Had Children?
119	12:30 PM	Jeffrey Stearns	The Shape of Threat: Simple Geometric Forms Evoke Rapid and Sustained Capture of Attention
13	12:45 PM	Jenna Bender, Myron Chang, Lauren Kelly, Ryan Skynar	Examining Discrepancies in Reported Levels of Student Drinking
55	1:00 PM	Katherine Morabito	Individual Differences in Memory in Relation to Emotional Stimuli
76	1:15 PM	Jessica Suisman	Negative Affect and Cortisol as Mediators of the Relationship Between Teasing and Binge Eating in Adolescent Girls
85	1:30 PM	Ging Cee Ng	Racialization and the Effects on Identity and Educational Attainment of the Asian American Experience in the Midwest
95	1:45 PM	Shawn Katterman	Stigmatization of Eating Disorders: A Controlled Study of the Effects of the Television Show Starved
100	2:00 PM	Hannah Nuckols	The Effects of Feminist Beliefs on the Internalization of Media Images and Body Dissatisfaction
101	2:15 PM	James Sorenson	The Effects of Induced Rumination on Working Memory Performance in Dysphoric Individuals
107	2:30 PM	Marissa Baca, Heather Bick, Hiu-Lam Lau	The Influence of Vocal Characteristics on Securing Compliance in Telephone Interviewing
11	2:45 PM	Alexander Brown, Timothy Clark, Elyssa Fielder, Amrita Jaswa, Allison Pianosi, Kevin Shrestha	Using fMRI to Investigate Functional Anatomy of the Human Brain
41	3:00 PM	Jocelyn Frey	Effects of Physical and Training Characteristics on Marathon Performance
64	3:15 PM	Megan Black	Kinetic Analysis of Walking Gait with and without Orthotics: A Case Study

Poster Presentations

Poster presentations are divided into morning and afternoon sections. All poster presentations are located in the Ballroom and Sunporch Room of the Union. Please refer to the index in the back of the program book to find a presentation time for a presenter.

Morning Poster Session (9:30 AM - 11:30 AM)	Afternoon Poster Session (2:00 PM - 4:00 PM)
Biochemistry	Cell Biology
Communications Arts & Sciences	Engineering, Mathematics, & Computer Science
Humanities	Molecular Biology
Food, Agriculture, & Environmental Sciences	Physical Sciences
Microbiology	Social Sciences

Biochemistry Posters—Group 1

#	Presenter(s)	Title
305	Andrea Stavoe	A Role for the Mg-Chelatase Complex in Chloroplast Biogenesis in Arabidopsis Thaliana
311	Heather Born	Analysis of Metal Binding to the ISL of U6 snRNA Using Electron Paramagnetic Resonance and Calorimetry
312	Kimberly Anderson	Analysis of Putative Nickel Binding Residues in Klebsiella Aerogenes UreG
313	Jacqueline Brosius	Analysis of the Csn5 Subunit of the COP9 Signalosome; A Complex Required for Retinoblastoma Protein Stability in Drosophila
314	Joshua Mackaluso	Analyzing the Properties of the Non-Covalent Bond Networks in Proteins
329	Andrew Potere	Capturing a Free Negatively Charged Hydrogen Atom
332	Jaclyn Peraino	Chimera Plan for Analysis of Tumor Suppressor Protein p53
338	Noah Choi	Conformational Changes at Protein-Proteininterfaces

Biochemistry Posters—Group 2

#	Presenter(s)	Title
353	Jacob Harold Chan Co, Nathan Davis, Jessica DiMarzio, Sean Dyer, Amanda Harris, Julianne Kalmar, Kara Mannor, Laura Pressprich, Shannon Rossio, Katrina Weirauch, Julie Yam	Does Lipid Ingestion Reduce the Brain Functional Imaging Response?
387	Marci Baranski	Inhibiting Urokinase Plasminogen Activators
389	Seth Dickey	Interaction of Galectins and TFII-I: Their Role in pre-mRNA Splicing
395	Kenneth Barns	Light-Induced Unfolding of Zn —Substituted Cytochrome c: A Continuous-Wave Fluorescence Excitation Study of the Unfolding Transition State
426	Rebecca Kornas	Preliminary Evidence of a Novel Neutral Polysaccharide in Human Brain that is Age and Disease Regulated
444	Farid Nossoni	Studies on the Protein-Substrate Hydrophobic Interactions of the Retinoid Binding Proteins
455	Stephanie Tran	The Crystal Structure of Human 1-L-myo-Inositol-1-phosphate Synthase
461	Kaveri Korgavkar	Retinal Analogs and Binding of CRABPII

Cell Biology Posters

#	Presenter(s)	Title
361	Megan Harding	Effects of Glucocorticoids on the Composition of Mouse Bone Marrow: Granulocyte Survival and Proliferation
363	Jessica Priestley	Endogenous Serotonin Potentiates Norepinephrine-Induced Contraction in the Superior Mesenteric Artery
391	Elisabeth Starnes	Investigating the Role of Stat5a in Pubertal Mouse Mammary Gland Development
439	Sarah Rothstein	Short-Term Exposure to Anesthesia in Newborn Rats has Chronic Debilitating Effects on Anatomy and Behavior
469	Kathryn Fletcher	The Role of hRev7 in Human Mutatgenesis
478	Elissa Pastuzyn	Using Immunocytochemistry to Visualize Proteins in the Brain

Communication Arts & Sciences Posters—Group 1

#	Presenter(s)	Title
308	Jenna Brown, Kristen Daum, Brittany Greenleaf, YiQing Shao, Andrea Zagata	An Exploratory Study of Newspapers' Elder Abuse Coverage
324	Nathaniel Bliton	Bovalve Synthesizer Controller
341	Aisha Howard	Coverage of Arabs in Metro Detroit Post 9/11
357	James Pita	Dynamically Generated, Contextually-Linked Goals in Persistent Systems
367	Tracy Tuyn	Examining the Use of Diadochokinetic Rate Measures in Speech-Language Pathology Graduate Programs
369	VaNessa Thompson	Exploring Interpersonal Communication Motives and its Effects on Face-to-Face and Computer Mediated Communication Among College Students
383	Krista Anderson	How Higher Education Institutions Differentiate Themselves through Slogans
400	Mary Slonske	Major Newspapers' Coverage of College Binge Drinking Prevention Strategies
409	Ryan Alloway, Michael Horgan, Brandon Peeples	MSU Telecasters — Sideshow
413	Michael Harvey	Online Campus Tour

Communication Arts & Sciences Posters—Group 2

#	Presenter(s)	Title
396	Alexandra Artymovich, Tori Frost, Minyoung Jeong, Fan Lin, Neil Patel, Emilie Sweet	Listening to Music: University Students' Device Preferences
414	Hazel Atienza, Sameer Bhagwan, Alicia Kramer, Allan Morris, Daniel Pabst, Amy Warren, Nathan Williams	Output Levels of the Apple iPod for Three Types of Earphones

Communication Arts & Sciences Posters--Group 2 *(continued)*

#	Presenter(s)	Title
425	Hazel Atienza, Sameer Bhagwan, Alicia Kramer, Allan Morris, Daniel Pabst, Amy Warren, Nathan Williams	Preferred Listening Levels of MP3 Music with Three Types of Earphones
463	Toshira Johnson	The Legacy of Perceptions of Interracial Relationships as Demonstrated in News Media Coverage
466	Carolyn LaPlante, Samantha Munday	The Prevalence of Theoretical Behavior Change Components in the Top Breast Cancer Websites to Encourage Detection or Prevention Behaviors and to Solicit Donations
475	Alexandra Artymovich, Tori Frost, Minyoung Jeong, Fan Lin, Neil Patel, Emilie Sweet	University Students' Patterns of MP3 Player Use: Is There Hearing Health Risk?
479	Ryan McAward, Jennifer Mitchell	Using the Health Belief Model to Assess Risk Perceptions Associated with the Asbestos Exposure in Libby, Montana
487	Michael Horgan, Brandon Peeples	MSU Telecasters
500	Natalie Giannosa	Media Coverage of Asian American's Tuberculosis Disparity

Engineering, Computer Science, & Math Posters--Group 1

#	Presenter(s)	Title
304	Emma Hummel	A New Magnetic Polymer for use in the Electrochemical Biosensor for Bacillus Cereus
315	Danielle Habitz	Antioxidant Activity in Relation to Packaging, Temperature and Age
322	Elizabeth Brown	Biodiesel Improvement by Ozone Chemistry
323	Michael DelBene, Trevor McLean	Bioluminescent Bacteria as Biological Sensors for Toxic Agents in Food
356	Bryan Reemmer	Dynamic Background Subtraction
358	Zachary Beamer, Erica Manoppo, Dan Shaffer, Phillip Studans	Dynamics of the Tent Map: Chaos, Fixed Orbits, and Fractals
364	Katie Gu, Elizabeth Kersjes, Igor Levit	Energy Conservation on Small- and Medium-Scale Dairy Farms
405	Jacob Martin, Jeremy Zalud	Mechanical Properties of Typical Paving Concrete Mixtures
407	Sam Leitkam	Motion Capture in a Clinical Environment: An Approach for Objectifying Head/Neck Motions Related to Palpatory Diagnosis

Engineering, Computer Science, & Math Posters--Group 2

#	Presenter(s)	Title
408	Rosamond Meerdink	MSU Athletic Buildings
412	Rebecca Frear, Ruoting Sun	Noise Pollution at MSU
423	Michael Wiederoder	Practical Applications of Noni Juice Derived from the Plant Miranda Citrifolia

Engineering, Computer Science, & Math Posters--Group 2 *(continued)*

429	Rebecca Busk	Rapid Detection of Bovine Viral Diarrhea Virus
438	Matt Ryerkerk	Sensitivity Analysis of DSC Measurements of Denaturation of a Protein Mixture
490	Brian Goldberg, William Monticello, Joseph Podolsky	Investigation into the Coefficient of Thermal Expansion of Portland Cement Concrete
497	Mamud Dako	Preparation of Improved Biodiesel from Waste Oil

Food, Agriculture, & Environmental Science Posters--Group 1

#	Presenter(s)	Title
316	Emily Jacobson	Assessing Food Web Effects of Lake Residential Development: Assessing the Efficacy of Stable Isotope Baselines
317	Farid Nossoni	Assessing Genotoxicity of Fullerene Nanoparticles Using Single Cell Gel Electrophoresis (Comet Assay)
359	Mitra Sticklen	Eating What We Teach: Evolving Relationships with Food at a Land Grant University
360	Liana Nichols	Differentiating the Effects of Soil Fertility and Microbial Communities on Corn Yield in Diverse Crop Rotations
366	Donna Bozgan	Examining Sequences of Barley and Cereal Yellow Dwarf Viruses Found in Michigan Wild Grasses
373	Nicole Goldman	Functional Characteristics of Extruded Pinto and Navy Bean Flours
376	Brittany Blankenship, Katherine Chumack, Dani Giles, Elizabeth Hoxie, Lauren Jones	Going with the Flow? Attitudes about Water Diversions in the Great Lakes
381	Victoria Hekman, Andrea Minella, Leslie Warner	Home Sweet Home-or is it? The Impact of Housing Systems on Chicken Welfare and Behavior

Food, Agriculture, & Environmental Science Posters--Group 2

#	Presenter(s)	Title
399	Danielle Hiser, Rachel Linsmeier, Shalyne Love	Localizing Michigan State Food Sources
417	Jacob Baker	Paulownia Intercropping in Heze, Shandong Province: Its Past Success, Current Demise, and Future Potential
431	Stephanie Blumer	Regeneration of Ash Following Invasion by Emerald Ash Borer: The Role of Ash Seed Banks
447	Justin Biega, Priyanka Joshi, Brittany Murphy	Sustainable Use of MSU Copy Paper
482	Jason Bernstein	Viva Les Trout: An Exploration of the Relationship Between Snow and Soil Variables
483	Amy Hendricks	Welfare and Behavior

Humanities Posters--Group 1

#	Presenter(s)	Title
300	Jena Donlin	A Deeper Look at Sonya
302	Martha Garces	A Guerrilla Girl Analysis of Midwestern Art Museums
319	Kerry Litwinski	Assessment of the Learning of Less Commonly Taught Languages
321	Denise Martaus, Kristen Wolfe	Big and Beautiful Beaumont: A Brief Guide to MSU's Landmark
325	William Levine	Brazilian Work on Kant
326	Valerie Vanderkolk	Cameo in the Costume Shop
331	Erin O'Connor	Children and the Future: The Acquistion of Comprehension of Will and Gonna by Children
333	Jillian Blakkan-Strauss	Collaboration for the Theatre: A Practical Guide for Designers and Directors
335	David Hunter	Comparative Adjectives within an Adjectival Stack
342	Garrett Warnell	Crime and Punishment: The Projections of Raskolnikov
344	Marianne Tritten	Cultural Geology Guidebook to the North Campus of Michigan State University
355	Lauren Gallinger	Dura-Europos House Church
388	Seth Morton	Ink: A Serious Online Multiplayer Game Designed to Facilitate the Teaching and Learning of Writing

Humanities Posters--Group 2

#	Presenter(s)	Title
393	Sarah Van Domelen	Laboratory Row: History, Renovation, and Preservation
420	Lindsay Allen, LeighAnna Beach, Chelsea Hosey, Kaitlin Lonc, Laurie Tennant, Eric Vrtis	Polymaths: Arts Avocations of Members of the National Academy of Sciences (USA), 1900-2005
430	Jessica Sack	Raskolnikov's Motives for Murder
433	Terence Echterling	Restoring Diagrams to Ancient Philosophical Works
434	Effie Alofoje	Rites of Passage and the African-American Female
436	Angela Fox, Theodore Madsen, Rachel Roys, Michelle Vogel	Rotavirus Vaccination in Michigan
453	Natalie Youakim	The Campus Circle
459	Jacqueline Lapp, Kendell Pawelec, Abigail Podufaly, Stacey Weinlander	The Geography of Innovation: Distribution of Members of the National Academy of Sciences, 1900 - 2005
464	Lisa Shaw	The Letters of Robert Coles
499	Chad Glinsky, Joseph Jalbert, Matthew Kelly, Peter Klecha, Erin O'Conner	Interpretations of Relative and Absolute Adjectives in Child Language Acquisition
502	Hanna Christiansen, Stephanie Koenig, Ethan Link, Anne Mosbacher, Rebecca Simons	Expecting Isabel: The Journey
503	Gabriel Iocco, Lindsay Reilly	Women in Boot Camp
505	Heather Arnold	Historical Trends of Building Stone Use on Michigan State University Campus

Microbiology Posters--Group 1

#	Presenter(s)	Title
310	Alexia Karanikas	Analysis of Fragments that Stimulate PilA GTPase Activity in Neisseria Gonorrhoeae
328	Jaime Heissler	Canine Influenza: An Emerging Viral Disease of Dogs
339	William DePas	Construction of an Ad5 Vaccine Vector Expressing a Profilin-Like Protein
345	Martha McCoy	Deleting the p33 Gene from the AcNPV Baculovirus
347	Megan Duffy	Development of a New Automated Genotyping System to Find the Canine Scotty Jaw Gene
348	Molly Peebles	Development of a Selective Growth Medium for Actinobacillus Pleuropneumoniae
354	David Stepien	Dominant Negative HrpA Mutants with Changes of Amino Acid Residues Critical to Hrp Pilus Assembly and Function in Type III Secretion
365	Erica Lehotzky	Epidemiology and Characterization of Group B Streptococcus (GBS) Isolated from Non-Pregnant Female College Students
377	Adam Edmunds	Growth Studies and Development of a Gene-Knockout System in the Succinate-Producing Bacterium Actinobacillus Succinogenes
385	Corrinne Thomas	Identification of Neisseria Gonorrhoeae-Specific Gene Clusters
392	Eric Kleiner	Knockout of the Photorhabdus Luminescens Homolog of the Yersinia Murine Toxin Gene and Determination of its Function in Nematode Transmission and Insect Virulence

Microbiology Posters--Group 2

#	Presenter(s)	Title
403	Andrea Silva	Measurement of the Activity Level of Succinyl-CoA Synthetase (SucCD) as a Tool to Detect Activity of Alpha-Ketoglutarate Dependent Dioxygenases
406	Lisa Abernathy	Molecular Identification, Virus Detection, and Blood Meal Analysis of a West Nile Virus Vector
410	Jeffrey Urquhart	Musquitocide within Heterorhabditis Bacteriophora
411	Heather Peplinski	New Insect Cell Lines for Baculovirus Expression Vectors
419	Sarah Buddenborg	Phylogenetic Relationships Among Diverse Environmental and Pathogenic E. coli Using Oligonucleotide Microarrays
422	Michelle Marinich	Potential for PA19 Protein from Toxoplasma to Inhibit Cancer
435	Keara Grady	RNA Silencing in the Determination of Symbiosis-Related Genes in Heterorhabditis Bacteriophora
445	Matthew Enell	Susceptibility of Chloroplast DNA to Oxidative Damage in Very High Light Resistant Strains of Chlamydomonas Reinhardtii
468	Jessica Vonck	The Relationship between Coxsackie B4 Virus and Insulin and Insulin Receptor
476	Stephanie Rolsma	Use of DNA Microarrays to Probe Gene Function and Antimicrobial Mechanisms
481	Richard Lucas Gray	Virulence of Clinical and Environmental Isolates of Burkhoderia Cenocepacia to Caenorhabditis Elegans Nematodes

Molecular Biology Posters--Group 1

#	Presenter(s)	Title
318	Allison Blaine	Assessment of Chloroplast Gene Function through Open Reading Frame Variability
334	Mohammad Esfahanian	Common Markers of Sympathetic Neurons are Unchanged Following Functional Chemical Denervation by 6-Hydroxydopamine
351	Charmaine Lo	Do Plants Contain a ZipA Functional Analog?
370	Erica Travis	Expression and Purification of Neisseria Gonorrhea Protein NG1684 for Structural Studies
379	Fatima Foflonker	Helicase-dependent Isothermal Amplification for Hand-held Diagnostic Devices
390	Robert Orler	Investigating the Multiple Targeting Pathways that Direct Proteins to Various Membranes within the Chloroplasts

Molecular Biology Posters--Group 2

#	Presenter(s)	Title
437	Volkan Karabacak	Search for a Novel Mutation Causing Hereditary Zinc Deficiency in Angus Cattle
440	Theresa Maatman	SNP Analysis of Canine CYP450 Genes
443	Patrick Bosman	Sprouty-2 Sustains Expression of the EGFR MAP Kinase Pathway which is Required for Cancer Formation by Human Fibroblasts
458	Joyce Bower	The Genetic Role of Plant FtsZ
477	Sandra Troxell	Use of Flutamide as a Potential Therapy in a Mouse Model of Kennedy's Disease
491	Megan Sargent	Mutant Screen for Upstream Components of the Cold Acclimation Response in Arabidopsis Thaliana
498	Waleed Brinjikji, Ramy Goueli	The Role of Src-Homology-3 in the Activation Mechanism of MLK3

Physical Sciences Posters--Group 1

#	Presenter(s)	Title
303	Alyssa Schwartz	A History of Morrill Hall and the Effects of Salt Weathering on Decay
327	Jan-Michael Hessenauer	Can Fin Tissue be Used Instead of Muscle Tissue for Stable Isotopic Analysis?
330	Carmen Affonso	Cardiac Sympathetic Norepinephrine Transporter Protein Content has an Inverse Relationship to the Norepinephrine Content in the Heart
340	Michele Berry	Correlations Between White Dwarf Supernovae and Their Host Galaxy
350	Matthew Montney	Divalent Metal Coordination Polymers with Flexible Chain Dicarboxylic Acids and 4,4'-Dipyridylamine
352	Jeffrey Ambrose	Does Chronic Endurance Training Influence the Magnitude of the Post-Contractile Blood Flow Increase
368	Shannon Snider	Exploring Galaxy Environments with Characteristic Field Mapping
380	Daniel Young	History of Mason-Abbot Hall
501	Ryan Norris	Segment Calibrations for Segmented Germanium Detectors

Physical Sciences Posters--Group 2

#	Presenter(s)	Title
397	Julie Krugler	Lithium Production in Asymptotic Giant Branch Stars
401	Kellyn Strong	Material Decay of MSU Residence Halls
404	Katherine Rabidoux	Measuring the Evolution of Pulsating Giant Stars
421	Wenzheng Chong	Polymethylhydrosiloxane (PMHS) in Pd Catalyzed Reactions with Acid
448	Maxwell Braverman	Synthesis and Characterization of Metal Benzenedi- and Tri-Carboxylate Coordination Polymers Incorporating the Kinked Dipodal Organodiimine 4,4'-dipyridylamine
449	David Martin, Justin Thomas	Synthesis, Structure and Magnetic Properties of Trimetallic Mu-tert-butylimide Complexes
450	Katie Krieger	Testing the Use of Light Attenuating Dye in Zoolankton Column Experiments
452	Priyanaka Pandey	The Brody Complex: The Foundation of the Past, Present and Future
465	Cody Weston	The Magnitude of the Post-Contraction Blood Flow Increase is Influenced by Relative Force

Social Sciences Posters--Group 1

#	Presenter(s)	Title
301	Sarah Losinski	A Focus on the Native American and African American Religious Belief System
343	Richard Chasney, Elizabeth Huber, Christopher Irby, Jennifer Krohn, Elizabeth Rabidoux, Noel Schroeder	Crime Heinousness and Juror Decision Making
375	Marc Allen, Piotr Pasik	God and Corruption in Polish Politics
386	Emily Dworkin	Impulsivity and Compulsivity in Self-Harm
394	Dominick Quinney	Learning For Liberation: A Critical Look at the Impacts of the Intercommunal Youth Institute
441	Matthew Piszczek	Social Disapproval and Individual Differences in Social Dilemmas
442	Don Lyons	Spirituality and Religious Beliefs in African American and American Indian Women Ages 55-70
456	Elizabeth Chidsey	The Demography of Philanthropy
457	Cherylanne Glassner	The Effect of Religion and Spirituality on Older Adults and the Aging Process
470	Sarah Frantz	The Role of Social Work with Regard to Religion and the Lives of American Indian and African American Senior Citizens
471	Sarah Frantz, Cherylanne Glassner, Megan Kursik, Sarah Losinksi	The Role of Spirituality and Religion in the Older African American Female Population

Social Sciences Posters--Group 2

#	Presenter(s)	Title
320	Kristen Smith	Attachment Classification at 12 Months as a Predictive Factor for Frequency of Self-Stimulatory Behaviors at Age Four in a Heterogeneous for Risk Sample
336	Alexander Brown, Timothy Clark, Elyssa Fielder, Amrita Jaswa, Allison Pianosi, Kevin Shrestha	Comparative Analysis of Brain Activity between Reading Stories and Solving Math Problems: An fMRI Study
337	Melissa Alsobrooks	Comprehension of Anything in Children: Anything or Nothing
382	Zachary King	Hormonal Regulation of Neural Plasticity in the Adult Mouse Amygdala
424	James Beck	Predicting College Student Success: New Measures and New Directions
460	Cathleen Pasia	The Impact of Gender Interaction between Rater and Child on Behavioral Scores on the Devereux Early Childhood Assessment Scale
462	Meghan McKenzie	The Interactive Effects of Domestic Violence and Substance Use on Maternal Parenting Behaviors
473	James Beck	Training for Complex Skill Acquisition: The Effects of Goal Content and After-Event Reviews on Self-Regulation and Training Outcomes in a High Learner Control Environment
485	Jennifer Jones	Gender and Domain Identification as Moderating Variables of Stereotype Threat in Women
492	Feyza Menagi	Religiosity and College Student Alcohol Use: An Investigation of the Mediating Role of Social Support Coping
493	Megan McCullough	Violence and/or Sexual Abuse Relate to Severe Overweight Status in Michigan Adults
496	Michael Daniels	Goal Setting and Revision Over Time

Social Sciences Posters--Group 3

#	Presenter(s)	Title
306	Joseph Jalbert	Adult Use of Future Tense Markers
307	Eric O'Shaughnessy	Alternatively Owned Enterprise in Michigan
309	Katie Scott	An Exploratory Study of the Effects of Sports Participation
346	Emily Battista	Designing for Disability: Filling the Gap between Services and Solutions
349	Sameer Bhagwan, Adrienne Kischnick, Justin Lockwood, Jason Thomas	Diffusion of Responsibility: The Influence of a Personal, Direct Request on Helping Behavior
374	Peter Klecha	Future Reference in Spontaneous Child Language
504	Ragini Bhadula, Caitlin Russ	Health Attributes of Members of the Royal Society, 1900-2005
378	Justin Fast, Ben Kremkow	Health Attributes of Members of the National Academy of Sciences (USA), 1900-2005
402	Erin Holcomb	Meaningful Experiences with One-to-One Correspondence and Mathematical Development in Kindergarten Children

Social Sciences Posters--Group 3 *(continued)*

#	Presenter(s)	Title
415	Ryan Morgan	Paleobiogeography of North American Bryozoa in the Middle Mississippian Era
416	Michael Gallagher	Simulations of Optimal Redistributive Taxes and Transfers
418	Abigail Baker, Kristi Brown, Amy Carey, Lauren Paluta	Peabody Picture Vocabulary Test--III: Receptive Language in Preschool Aged Children
428	Lindsay Dietz	Problem and Emotion-Focused Coping in Men and Women as a Predictor of Alcohol Use
446	Holly Chandler, Sebastian Jacobi, Susan Parker, Kelly Steffen	Sustainable Development: An Exploration in the Implementation of Green Development into our Society

Abstracts

Abtracts for both the oral and poster presentations are listed by program number. Please refer to the index to find the program number for a student.

1 ***An Analysis of Modern Society via Comparision***

Justin Haveman, Kim Kyungrok, Aaron Warshay
Under the direction of Dr. Christian Lotz, Philosophy
9:45 AM - 11:45 AM, Lake Superior

Society can be broken up into many pieces, specifically into different functional institutions each which creates different types of individuals. Such institutions are, for example schools, hospitals, retirement homes, and prisons. Each institution constructs a specific type of person, (students, patients, retirees, prisoners respectively), through social establishments and social practices developed from within that given institution. Each institution is characterized and can be examined by the following functions, control, organization, and purpose. This research project exposes these connections so that an average observer can relate and understand them. The ideas and theories uncovered by this research project can be applied and be helpful for a general understanding of society. In addition this project shows that reformation boot camp is a specific institution by which the fundamentals of corporate organization and families can be better understood.

2 ***Cutting-edge Advancements in the Expression and Purification Utilized to Crystallize ADP-Glucose Pyrophosphorylase***

Vincent Lu, Zimin Zhao
Under the direction of Dr. James Geiger, Chemistry; Dr. Stacy Hovde, Biochemistry and Molecular Biology
12:15 PM - 2:45 PM, Lake Huron

ADP-glucose pyrophosphorylase catalyzes the first committed step in plant starch and bacteria glycogen biosynthesis, and is the key regulatory enzyme in these pathways. The eukaryotic enzyme is composed of Î± and Î² subunits that form an Î±2Î²2 heterotetramer. Although the sulfate bound and allosterically inhibited form of the potato tuber enzyme Î±4 tetramer has been successfully crystallized, the extremely low expression of the Î± subunit posed a serious setback for efficiently producing enough enzyme for further crystallization research. In this study, attachment of a hexahistidine tag to the N-terminus of the Î± subunit, expression by using a mutant E. coli strain deleted for its pyrophosphorylase gene, growth in a casein hydrolysate media, purification with nickel column, anion exchange column, and size exclusion chromatography improved yield by 30-fold. The potato Î±2Î²2 heterotetramer was also efficiently expressed and purified by similar procedures. A form of the Î±4 tetramer uninhibited by sulfate was successfully crystallized under the condition of 0.2M ammonium acetate, 0.1 M sodium acetate pH 4.6, and 30% polyethylene glycol 4000 at 25Â°C. Structural analysis by using X-ray crystallography revealed a crystal structure at 3.5 Çº resolution. Further efforts to improve the resolution and solve the structure will grant insight into the mechanism of this key biological enzyme.

3 ***Deindividualization***

Jeff Franklin, Leah Moss
Under the direction of Dr. Christian Lotz, Philosophy
9:45 AM - 11:45 AM Lake Superior

The effectiveness of special alternative incarceration (SAI) camps is mainly dependent upon the camp's ability to enter an inmate and remove his identity. The result, after graduation from the boot camp's program is, ideally, a socially adjusted individual. However, this is not always the case. In our presentation, we will discuss the methods of deindividualization incorporated by the SAI staff, as

demonstrated by our visit to the program in Chelsea, MI, and how the amalgamation of these methods produces the desired results, as well as the extenuating factors that prevent 100% recidivism in SAI inmates, otherwise known as "trainees."

4 ***Did the 2004 Vote on Proposition 2 Represent the Will of the People?***
Marissa Baca, Jenna Bender, Heather Bick
Under the direction of Dr. Larry Hembroff, Institute for Public Policy and Social Research; Dr. Nathaniel Ehrlich, Institute for Public Policy and Social Research
9:45 AM - 11:45 AM, Gold B

Proposition 2 was adopted by the voters of Michigan in the 2006 election, by a margin of 58%-42%. Our survey questions are designed to address the question, "How well do the people who chose to vote represent the general population?" We will compare the people who say they voted in 2006 for the measure with those who were eligible to vote but did not, either because they were not registered, or because they did not vote, either by choice or because they were unable to cast a vote. Our questions are designed to provide the following information. Of adults in Michigan, what percentage is eligible to vote? Of those eligible, what percentage is registered? Of those registered, what percentage voted? Of those who voted, what percentage voted on Prop 2? Of those who voted on Prop 2, what percentage voted for and against it? Of the non-voting eligibles, what percentage would have voted for and against Prop 2? The null hypothesis (H0) is that the election margin of 58%-42% is not significantly different from the result that would have been obtained if all eligible voters had participated.

5 ***Going to the Beach? Factors Affecting Great Lakes Beach Use***
Brittany Blankenship, Katherine Chumack, Dani Giles, Elizabeth Hoxie, Lauren Jones
Under the direction of Dr. Michael Kaplowitz, Community, Agriculture, Recreation and Resource Studies; Frank Lupi, Agricultural Economics
12:15 PM - 2:45 PM, Lake Superior

Michigan has vast coastal shorelines, expansive beaches, and large numbers of Great Lakes beach users. However, almost no information is available about who uses Great Lakes beaches and why. To address this gap, we conducted an internet survey that queried the general public about their use of Great Lakes beaches. We statistically compared data from users and non-users to identify the factors that influence whether or not they visit Great Lakes beaches. For beach users, we also investigated the factors that affect which sites they visited. These factors included natural amenities, site facilities, environmental management practices, and water quality. Additionally, the survey collected information about how people respond to beach closures and beach-related health concerns. The findings of our analyses will help policy makers, regulators, and beach managers better understand and meet the needs of the public.

6 ***Interacting with Online Course Content: Using the Student Experience to Develop Assessment and Evaluation Tools for Online Courses***
Caroline Baas, Nicole Stein
Under the direction of Dr. R. Joy Durding, Integrative Studies - Arts and Humanities
12:15 PM - 3:30 PM, Gold B

Online instruction is becoming much more common, as technologies improve and the need for flexible education options grows. Although online courses provide flexibility and opportunities not offered by traditional face-to-face instruction formats, it can be a challenge to create effective, easy to use online courses and to develop ways in which to evaluate how successfully these courses are meeting students' needs. The Center for Integrative Studies in the Arts and Humanities is interested in creating effective blended and fully online courses for its IAH classes. The objective of this ongoing study is to develop strategies for assessing the online materials and components of IAH courses through examining the student experience. To achieve its goal, this study will analyze the experiences of students who use an IAH course

site, which acts as a supplement to regularly scheduled class meetings and recitations, to investigate how students are using and interacting with online course materials. In order to obtain information about the student experience, this study uses surveys and interviews in which students are asked to talk about their experiences. Information will then be analyzed and used to formulate ways in which to assess the effectiveness and use of online materials, which will result in the creation of practical assessment tools for professors of online courses.

7 ***Steel: Hot Metal, Cold Reality***

Alexandra Henderson, Amanda Peterka
Under the direction of Dr. Howard Bossen, Journalism
10:00 AM - 11:30 AM, Gold A

Steel defined the industrial age, as both a material and a way of life for the workers who built the industrialized world. Chronicled over the years by many photographers, steel's importance lives on through their images, even with the decline of the steel industry in the United States. The planned international exhibition, Steel: Hot Metal, Cold Reality, is a comprehensive examination of the work of photographers who have shaped the way steel is envisioned by the public in aesthetic, social, political and historical terms. In addition to the photographs, this project also includes two books and an audio and visual collection. Our responsibilities in this project include, but are not limited to, background library, documentary and Internet research, development of bibliographies and databases, organization of potential images, assembly of grant proposals and collection of oral histories.

8 ***The Dynamical Behavior of Quadratic Maps***

Ziying Pan, Bethany Wenzel, Richard Worhatch
Under the direction of Dr. Aklilu Zeleke, Statistics and Probability
9:45 AM - 11:45 AM, Green

The dynamical behavior of the quadratic family fc(x) = x^2 + c has been thoroughly studied and is well understood. In this project we investigate the impact of geometric transformations on the behavior of quadratic maps of the form gc(x) = a (x+c)^2 + bc. Here a, b and c are constants. By constructing a one-to-one mapping we were able to identify the dynamical behavior of gc(x) from that of fc(x). Specifically, we will show how to find and characterize the nature of fixed and cycle points of gc(x) from the fixed and cycle points of fc(x). Moreover, using the chaotic behavior of fc(x) we will show how one describes the chaotic behavior of gc(x). Theoretical arguments as well as computer generated orbit and bifurcation diagrams will be presented.

9 ***The Effects of Liking on Compliance After a Pregiving Favor***

Jenna Bender, Shannon Morey, Erin Roach
Under the direction of Dr. Franklin Boster, Communication
10:00 AM - 11:30 AM, Gold A

Pre-giving favors have been shown to increase the likelihood of compliance with a subsequent request. Previous studies have established liking as a mediator between the favor and compliance relationship. However, the exact relationship between these variables and the resulting compliance is still uncertain. In an attempt to fill this gap, this study was designed to experimentally control the subjects' liking and disliking toward a confederate who performed a favor. Greater compliance was gained by inducing liking; however, there was no difference between the disliking and control conditions.

10 ***The HPV Vaccine Legislation: Michigan and Beyond***
Sara Cottrill, Paul Luethy, Jessica Nickrand
Under the direction of Dr. Mark Largent, James Madison College
9:45 AM - 11:45 AM, Gold B

Strains of the Human Papilloma Virus have been shown to directly cause cervical cancer. With this in mind, Merck developed a new vaccine, Gardasil, to directly combat these certain strains, and then began to market the vaccine as a possible mandate in public schools to State governments. The Michigan legislature passed such a mandate and then quickly revoked it a few hours later. By contacting Michigan lawmakers and reading legislative journals, we investigated the reasons for this change. We have also compared the situation in Michigan to similar legislation throughout the nation.

11 ***Using fMRI to Investigate Functional Anatomy of the Human Brain***
Alexander Brown, Tim Clark, Elyssa Fielder, Amrita Jaswa, Allison Pianosi, Kevin Shrestha
Under the direction of Dr. Jie Huang, Radiology
12:15 PM - 3:45 PM, Tower

The goal of our research was to use the recently available functional magnetic resonance imaging (fMRI) technique for investigating the functional anatomy of the human brain. The technique was used to find the areas of the brain that are activated during reading stories and solving math problems. They were then compared to one another. Three males and three females, all right handed college students, participated in the study. Each subject had three fMRI scans and one anatomical scan. Each functional scan consisted of ten task periods interleaved with ten rest periods. Five of the task periods involved passive reading while the other five involved solving math problems. The order of tasks was randomly selected and the stimulus was presented to the subjects using an MRI compatible stimulus presentation system (IFIS). Each task lasted 18 s followed by an 18 s rest. Axial T2*-weighted images were acquired on a GE 3.0 T clinical scanner using a Gradient Echo Echo-Planar-Imaging pulse sequence (FOV=23 cm, TE/TR=28/2000 ms, flip angle 80°, matrix size 64×64, and slice thickness 4 mm). This resulted in 180 volume images for each functional scan. The functional images were analyzed using AFNI for determining the cortical areas activated during reading stories and solving math problems.

12 ***Elder Abuse According to U.S. Newspapers***
Frank Kwarcinski, Dennean Lippner, Danielle Michael, Erin O'Connor, Taj Rahman
Under the direction of Dr. Stephen Lacy, Journalism
10:00 AM - 11:30 AM, Gold A

This study provides details of U.S. newspapers' coverage of elder abuse during the last six months of 2006. This study focused on how the coverage framed the problem of elder abuse and the solutions of elder abuse. More specifically, the study examined whether coverage was more often framed as an individual or societal problem. Other variables that were examined included: form of abuse, commission or omission; types of abuse, material exploration, physical, psychological, and sexual; gender and race of the abused and the abusers; relationship between the abused and the abusers; abuse settings; and sources of attribution.

13 ***Examining Discrepancies in Reported Levels of Student Drinking***
Jenna Bender, Myron Chang, Lauren Kelly, Ryan Skynar,
Under the direction of Dr. Larry Hembroff, Institute for Public Policy and Social Research; Dr. Nathaniel Ehrlich, Institute for Public Policy and Social Research
12:15 PM - 3:30 PM, Tower

The National College Health Assessment and the Celebration Survey each collect data on the drinking habits of MSU students, but the NCHA averages are consistently higher. We formed three possible

hypotheses to explain the discrepancy: H1: Only one survey provided a clear definition of "1 drink" H2: The location of the drinking question relative to other questions varied between the two surveys H3: One survey was administered in February, the other in April We tested H1 and H2 by using a 2x2 factorial experimental design embedded in a cross-sectional survey of MSU students, manipulating question wording and order. We found no evidence to support either of the first two hypotheses, leaving seasonality as a possible explanation.

15 ***An Assessment of Outward Migration from the State of Michigan***

Marissa Baca, Myron Chang, Lauren Kelly, Hiu-Lam Lau, Ryan Skynar
Under the direction of Dr. Nathaniel Ehrlich, Institute for Public Policy and Social Research; Dr. Larry Hembroff, Institute for Public Policy and Social Research
10:00 AM - 11:45 AM, Lake Huron

The tendency of people to migrate out of the state of Michigan has many implications for its economy. In order to counter the negative effects of outward migration, it is necessary to determine why people are moving. By inserting an additional set of questions in the Michigan State of the State Survey, we are attempting to measure how much, how soon, and why outmigration is occurring. Knowing the answers to these questions will be helpful in developing ideas that will reduce the level of outmigration.

16 ***[Re]presenting Oppression and Liberation of African-American Women: Kindred and The Color Purple as Neo-Slave Narratives***

Kinya Yamazaki
Under the direction of Dr. Lynn Makau, English
12:15 PM - 3:30 PM, Gold B

Owing to their applicability to multiple genres, it has been a controversial issue among scholars to give a single, exact definition of Octavia E. Butler's Kindred and Alice Walker's The Color Purple in terms of generic category. As for Kindred, Butler herself calls it a "fantasy," while Lisa Yaszek, a Butler scholar, critiques this novel as a "science fiction." Still, other critics recognize the text as either a "historical fiction" or a "neo-slave narrative" (Kenan 495; Yaszek 1053-4). Similarly, bell hooks hesitates to give a single categorical definition of The Color Purple, mentioning that such a classification could "contain, restrict, control…obscure… suppress [and] silence" the novel (454). However, hooks, considering the multiple possibilities of this text's generic category, suggests that this novel could be a "social realism…fantasy… fairy tale and…fictionalized autobiographical narrative" (464). Admitting the applicabilities of these two texts to multiple categorical definitions, I dare to argue that both Kindred and The Color Purple can be defined as neo-slave narratives because they describe and explore issues of present-day oppression and liberation of African-American women, intermingling with the issue of literacy.

17 ***Alternative Fuel Derived from Vegetable Oils***

Rebecca Frear
Under the direction of Dr. Ramani Narayan, Chemical Engineering and Materials Science
12:15 PM - 2:45 PM, Lake Huron

The controversial issue of our time. Is it needed? Will it create a cheaper fuel for our cars? Soy-based biofuel is one of the most promising forms of alternative energy. Through the use of a novel catalytic ozonation process, soy oil can be easily transformed into a usable fuel that is compatible in current engines. In this process the double bonds of the fatty acids in the oil are cleaved by the ozone and the new chain-ends are converted in a single step to methyl esters. Unlike conventional biodiesel processes, no glycerol by-product is obtained. Further advantages include environmental benefits, political stability, socio-economic benefits to the rural area and extra money in your wallet.

18 ***An Upper Peninsula of Michigan Vowel System Study***

Wil Rankinen

Under the direction of Dr. Dennis Preston, English

10:00 AM - 11:30 AM, Tower

I am studying English in the Upper Peninsula of MI and am concerned with the possibility of a lingering influence of Scandinavian Germanic and Finnic languages among persons from the community who are no longer speakers of those languages but whose English is still distinct due to their unique experience. I will look at the vowel systems of these speakers and pay attention to the following: 1) There may be evidence of other language influences on their English; for example, most of the heritage languages have nondiphthongal mid-vowels (in words such as "late" and "home") and UP speakers may use monophthongs in their English. 2) These speakers may have acquired the older Midwestern vowel system or the system that has developed in the last fifty years or so - the "Northern Cities Chain Shift." If the latter, I expect the following: The vowel of a) cat will be pronounced like that of "pet" or even "pit" b) cot will be pronounced like that of "cat" c) caught will be pronounced like that of "cot" d) pet will be pronounced like that of "cat" or, alternatively, "cut" e) cut will be pronounced like that of "caught," and f) pit will be pronounced like that of "pet" 3) These speakers may also show Canadian influence on their English; if so I expect the following: The vowel of a) cat will be pronounced like that of "cot" b) as in c) above c) as in d) above d) cut will be pronounced like that of "pet" e) as in f) above In addition the diphthongs of "house" and "light" will begin at the vowel of "cut" and not that of "cot" as in most varieties of US English I will ascertain the acoustic characteristics of several of these speakers' vowels by using a LPC (Linear Predictive Coding) analysis. In each case, I will outline the vowel system of the speaker and attempt to show how a Scandinavian influence, older Midwestern influence, newer Northern Cities Shift influence, or Canadian influence has been a factor in the arrangement of the speaker's English vowels.

19 ***Analysis of Intestinal Microbiota Shifts in IL-10 Deficient Mice Exhibiting Spontaneous Colitis Using Terminal Restriction Fragment Length Polymorphisms (T-RFLP)***

Nicholas Barbu

Under the direction of Dr. Linda Susan Mansfield, Large Animal Clinical Sciences

12:15 PM - 2:45 PM, Lake Huron

The etiology of inflammatory bowel disease (IBD), manifesting as Crohn’s disease or Ulcerative Colitis, is currently unknown. It is hypothesized that commensal bacteria initiate a dysregulated inflammatory response. Identifying and understanding causes of IBD is important for human and animal health. Identification of commensal or pathogenic bacteria associated with spontaneous colitis will allow greater understanding of the complex relationship between host and microbiota. Interleukin-10 (IL-10) deficient mice exhibit spontaneous colitis and, thus can be used as models for IBD in humans. We hypothesized that a shift in the commensal microbiota occurs in mice exhibiting spontaneous colitis. We studied C3Bir.129P2(B6)-IL-10tm1Cgn/J mice housed in specific-pathogen free conditions. We compared age-matched mice of both sexes with and without colitis. Necropsy observations showed that mice with colitis displayed ileocecolic lesions accompanied by enlarged spleens and colons. Planned histopathology analysis and scoring will verify colon lesions in the mucosa, lamina propria and submucosa. We screened mice for known murine enteric pathogens Helicobacter sp., Campylobacter sp., Enterococcus feacalis, and Citrobacter rodentum by PCR amplification of 16s RNA genes. Thereafter, we analyzed the richness and evenness of microbiota using T-RFLP. Understanding microbiota shifts in this model may point to dietary and environmental factors that induce colitis. NIH Contract No. N01-AI-30058.

20 ***Anti-Müllerian Hormone In Heifers With High Versus Low Numbers of Antral Follicles Growing During Ovarian Follicular Waves***

Danielle Scheetz

Under the direction of Dr. Janet Ireland, Animal Science; Dr. James Ireland, Animal Science

12:15 PM - 2:45 PM, Lake Superior

Anti-Müllerian Hormone (AMH) is produced by small ovarian follicles and involved in regulation of primordial follicle growth. In humans, AMH levels in blood are positively correlated with number of follicles and eggs, and AMH decreases as women age because of the age-related decline in the follicular pool. This study's objective was to measure AMH in serum of heifers to determine if AMH levels differ between cattle with high (more than 25, determined by ovarian ultrasonography) vs low (less than 15) number of antral follicles during ovarian follicular waves. Based on studies in humans and mice, AMH levels should be greater in heifers with high vs low follicle numbers. A commercial human AMH kit was used to measure AMH in serum samples obtained from bovine fetuses, heifers, and an older cow. Results demonstrated that different dilutions of serum from fetuses and heifers were parallel with the AMH standard curve and serum from fetuses (presumably with high numbers of follicles) had the highest AMH concentrations. These results validated use of the human AMH assay to quantify AMH in heifers. Further studies showed that heifers with high follicle numbers had 6-fold higher serum AMH levels than heifers with low follicle numbers (0.275 vs 0.043 ng/ml, n = 3 heifers per group). Since cattle with high vs low follicle numbers have more follicles and oocytes in ovaries and thus may be more fertile, my results imply that measurement of AMH is useful to predict fertility in cows.

21 ***Assaying Cytokine Production in Response to Primary Campylobacter Jejuni Challenge in a Murine Model***

Jenna Gettings

Under the direction of Dr. Linda Susan Mansfield, Large Animal Clinical Sciences

12:15 PM - 2:45 PM, Lake Huron

Campylobacter jejuni is a leading cause of food borne bacterial enteritis. Young children, elderly, and immunocompromised individuals are most susceptible. Knowledge of C. jejuni pathogenesis and host immune response leading to resistance is necessary for effective prevention and treatment. A time course experiment was conducted challenging C57BL/6 IL-10 -/- mice with C. jejuni 11168 to examine host immune response. We hypothesized that C. jejuni elicits a TH1 response, up-regulating proinflammatory cytokines IL-1, IL-6, and TNF-a, and adaptive cytokines IL-12 and IFN-g associated with TH1 cells. A related hypothesis is that IL-10 is required for resistance to C. jejuni because it regulates the inflammatory response. Mice free of enteric pathogens were inoculated with 1010 CFU of C. jejuni. All mice produced antibodies associated with TH1 cells, mainly IgG2b, while TH2 associated antibody, IgG1, was low. To further study the immune response to C. jejuni infection, we will measure mRNA expression of genes representing TH1, TH2, and regulatory T cell cytokines in colon tissue using real-time RT-PCR. The TH1 subset is represented by IL-12 and IFN-g; the TH2 subset by IL-4; and regulatory T cells by IL-10 and TGF-b. IL-23 (chronic inflammation) and CXCL1 (neutrophil chemoattractant) will be measured. Assaying a broad panel of genes involved in immunity will offer a greater understanding of C. jejuni pathogenesis and why some people resist disease. NIH, Contract No. N01-AI-30058.

22 ***Assessment and Improvement of Construction Project Closeout at Michigan State***

Steve Lung

Under the direction of Dr. Tariq Abdelhamid, Construction Management; Dr. Tim Mrozowski, Construction Management

9:45 AM - 11:45 AM, Green

The closeout of construction contracts, from the large construction owners' perspective, is often inefficient and unnecessarily lengthy. Construction project closeout refers to the final completion of the

contract and includes activities such as inspections, correcting punchlist items, and final acceptance of the work. With little research done in this phase of construction, we wanted to examine and streamline the closeout process at Michigan State and other similar institutions of higher education. In an effort to improve project closeout practices, we have aimed our research at developing guidelines and recommendations for improvements in construction project closeout procedures. Improving the efficiency and shortening the time associated with closeout can potentially conserve monetary and human resources better used elsewhere.

23 ***Autonomous Terrain Mapping for Robotic Exploration***

Renaldo Ferguson, Nathan Furtwangler, Daniel Merritt, James Pita, Timothy Wall
Under the direction of Dr. George Stockman, Computer Science and Engineering
9:45 AM - 11:45 AM, Green

As robotic exploration of space and other potentially dangerous environments is becoming more common, it is also necessary to develop novel methods for utilizing this new robotic technology from safe distances. In an effort to develop a method for autonomous navigation of potentially very distant or dangerous environments, we are exploring the use of an iterative closest point algorithm. By tracking the relative rotation and translation of a mobile robot between depth scans, we are able to make an approximation of the alignment between successive images. This approximated alignment can then be used with an iterative closest point algorithm to create a three dimensional mosaic of the environment, which can be transferred through wireless connections to an end user for viewing. By storing map information as it is generated and using path finding algorithms, the mobile robot is able to make educated decisions regarding the most informative and safest route to explore. As information is generated and displayed to a user they can then make informed decisions about how to interact, through the mobile robot, with an environment that would otherwise be inaccessible.

24 ***Beauty and Feminism: Exploring the Evolving Implications of Conceptual Rhetoric in Western Media***

Ashley Waldorf
Under the direction of Dr. Danielle DeVoss, Writing, Rhetoric and American Culture
12:15 PM - 3:30 PM, Gold B

The objectification of women in Western media is not a new practice, and its repercussions inflicted upon females are widespread and diverse in their reach and illustration. As these superficial representations of women have evolved in appearance yet maintained a constant undertone over time, understanding the origins of their associated connotations and whether they are preventable through awareness are key to navigating their wake. This presentation will demonstrate the correlation of findings in two projects: one conducted as research in academia and the other as an ethnography exploring the societal echo felt resounding in an informed population. A case study unites the evolution of female representation in Vogue magazine over the past 70 years with the cultural, societal, and mental oppressions females face today, and explores a different avenue of depicting women in the media. Capitalizing on the broad understanding of the media's female objectification among the feminist community, the ethnography examines the influence the media has on feminists in light of their consciousness of its potential. A close look is taken at digital image manipulation in female images and whether its degree of superficiality alters its implications. This unique amalgamation illustrates how the conceptual rhetoric of female representation carries over into the everyday lives of arguably the most enlightened on the topic itself.

25 ***1960's and 1970's Black Theater Movement: The Intentionality of the Movement and Its Affects on Black Theater Today***

Nastassja Whitman

Under the direction of Dr. Gloria Smith, Counseling, Educational Psychology and Special Education

12:15 PM - 3:30 PM, Gold B

This study focuses on the intentionality of the Black Theater Movement and its influence on Black theater today.

26 ***Blogs to Books: A Look at How New Digital Media is Affecting Traditional Publishing Practices***

Stephanie Green

Under the direction of Dr. Danielle DeVoss, Writing, Rhetoric and American Culture

10:00 AM - 11:30 AM, Gold A

Blogs (short for weblogs) have become increasingly popular on the Internet since they were created in 1998. There are currently over 47 million blogs written by people all over the world. In recent years, some blogs have become so popular that their authors have gotten book deals with major publishing houses. Through analyzing blogs for which the authors have received book deals, and through interviewing professionals in the publishing industry, I will determine whether this blog-to-book phenomenon is affecting traditional publishing practices. In this presentation I will look at three different blogs that have transcended the digital medium and obtained book contracts with major publishing houses. I use questions that focus on how digital media are challenging the conventional practices of publishers and I conclude with a discussion on the implications of this research on the future of the editing and publishing industry.

27 ***Bovine Hereditary Zinc Deficiency: Identification of a Splice Site Mutation and Evaluation of Functional Consequences***

Elizabeth Bartlett

Under the direction of Dr. Vilma Yuzbasiyan-Gurkan, Small Animal Clinical Sciences

3:00 PM - 4:15 PM, Gold A

Bovine hereditary zinc deficiency (BHZD) and human acrodermatitis enteropathica (AE) are autosomal recessive diseases caused by defects in intestinal absorption of zinc. Skin lesions, diarrhea, immunodeficiency and death from infections occur in hereditary and dietary zinc deficiencies, unless individuals are treated with supplemental zinc. In BHZD affected animals, we found aberrant mRNA transcripts from ZIP4 (or SLC39A4), which codes for a zinc transport protein and is the gene mutated in AE. We isolated RNA and DNA from banked tissues of BHZD affected and normal animals, amplified by polymerase chain reaction (PCR) using primers based on consensus sequences. Sequence analysis of the PCR products revealed that the mRNA transcripts from affected animals were missing exon 10 due to alternative splicing, resulting in a shortened predicted protein. We uncovered a single nucleotide mutation at a splice donor site in affected animals, and have developed a DNA based diagnostic test, which can be used to distinguish affected, carrier, and normal animals. In addition, we are investigating the functional consequences of this mutation using bovine fibroblast cells transfected with normal or mutant forms of the ZIP4 gene in a green fluorescent protein (GFP) fusion vector. With the GFP fusion and a zinc fluorophore to measure cellular uptake of zinc, we hope to determine the functional significance of this splice site mutation and the role of the deleted exon in zinc transport.

28 ***Can Campaign Promises be held as Truth? An Analysis of the 1998 Freshman Senate Class***
Nicholas Romley
Under the direction of Dr. Nathan Monroe, Political Science
9:45 AM - 11:45 AM, Gold B

Every two years, roughly one-third of the members of the United States Senate find that their six year terms are coming to an end. As a result of their Senatorial terms ending, several states will hold elections to determine who will fill their now empty seat. These elections will host a field of candidates from which the voters in the state must choose. Accompanying these elections are promises put forth by a candidate. Such promises contribute to form the candidate's campaign platform. Come election day, voters will evaluate the candidates based on their campaign platforms when they cast their ballot. Since Senate terms last six years, and the expiration of seats in the Senate is staggered by roughly one-third, there are four years and two elections where a Senator will not be up for reelection. This staggered re-election cycle was intended by America's founders as intentional insulation to public opinion. Yet, is this institutional insulation from public opinion subject to abuse? Does insulation lead a Senator to neglect their campaign promises for a significant portion of their term? In order to answer this question, the 1998 Freshman Senate class will be examined by using a correlation analysis to determine how their campaign promises correlate with the members roll call voting as well as their bill sponsorships and cosponsorships. This analysis will examine the Senate class as a whole and individually, from a per congress, as well as an overall perspective.

29 ***Characterization of the Production of Reuterin, an Antimicrobial Compound Secreted by Strains of Probiotic Lactobacillus Reuteri***
Karley Hermans
Under the direction of Dr. Robert Britton, Microbiology and Molecular Genetics
12:15 PM - 2:45 PM, Lake Huron

Probiotic bacteria have been defined as live microbial feed supplements that when ingested benefit the host by altering the composition of the microbiota. Although probiotics are currently used as preventative therapy and in the treatment of disease, the exact mechanism(s) by which probiotics exert their beneficial effects are unknown. One proposed mechanism is that probiotic bacteria secrete anti-microbial compounds that inhibit the growth of incoming pathogenic organisms. We are investigating the production of the reuterin, an antimicrobial compound produced by probiotic L. reuteri. Reuterin (also known as 3-hydroxypropionaldehyde [3-HPA]) is an intermediate in the pathway of the metabolism of glycerol to 1,3-propanediol. Using a suicide plasmid knockout strategy we created mutants in the reuterin synthesis and conversion pathways. We found that when the enzyme glycerol dehydratase was knocked out there was no measurable reuterin production. When 1,3-propanediol oxidoreductase is disrupted the concentration of reuterin produced increases ~5-fold over wild-type cells. Co-incubation of L. reuteri with Escherichia coli increased reuterin production 8-fold, indicating that interaction with pathogens can stimulate the production of reuterin. This stimulation is independent of the production of secondary metabolites by E. coli or L. reuteri and appears to require direct cell-cell contact. This work provides a starting point to elucidate the role of reuterin in probiosis.

30 ***Christianity in Dostoevsky's Crime and Punishment***
Melissa Byl
Under the direction of Dr. Sherman Garnett, James Madison College
12:15 PM - 3:30 PM Gold B

This presentation is focused on the subject of Christianity in Crime and Punishment. Faith is an important aspect of Fyodor Dostoevsky's writing and his personal convictions have a strong influence on much of his work. In this particular novel, he communicates a clear image of Christianity. This image is a crucial element of Crime and Punishment as well as the central theme of this presentation.

31 ***Cinema's Portrayal of Colombia's Cocaine Crisis***

Rachel Jacobson

Under the direction of Dr. Antoinette WinklerPrins, Geography

10:00 AM - 11:30 AM, Tower

With the relatively recent releases of the movies Blow (2001) and Maria Full of Grace (2004), cinema has portrayed two distinct and conflicting images of the cocaine trafficking from Colombia to the United States. Blow depicts the extensive illicit cocaine trade between Colombia and the United States which was initiated by the infamous partnership between American entrepreneur of sorts George Jung and the most powerful Colombian drug lord Pablo Escobar in the mid-1970s. Fueled by the popularity of the illegal drug in the US and the economic and cultural climates of the two indicated countries in the 1980s, this unique business enterprise only amplified. By the end of the twentieth century, Colombia had become the world's premier producer of coca—the base plant for the production of cocaine—and distributor of cocaine which was, and still is, smuggled into importing countries via the use of mules—men and women who ingest pellets of cocaine wrapped in latex—as shown in Maria Full of Grace. But do these movies accurately portray today's cocaine trade? This paper argues that, yes, the multifaceted Colombian cocaine crisis is well-represented by these two movies. Supportive research suggests that the comprehensive interpretations of the contrasting roles of a drug lord and a cocaine mule are thorough and authentic and ultimately portray the underlying influence and power of economics.

32 ***Clearance Mechanism of N-Acetylgalactosamine-Modified Von Willebrand Factor from Blood Circulation***

Ashwin Thiagaraj

Under the direction of Dr. Jill Johnsen, Department of Human Genetics, University of Michigan; David Ginsburg, Department of Human Genetics, University of Michigan

3:00 PM - 4:15 PM, Gold A

Von Willebrand Factor (VWF) is an endothelial blood-clotting protein that stabilizes blood coagulation Factor VIII and binds platelets at vascular injury sites. Type 1 Von Willebrand disease is a prevalent (~ 1%) bleeding disorder characterized by a reduction in blood plasma VWF to up to 50% of normal levels. A regulatory mutation in a gene coding for N-acetylgalactosaminyltransferase turns on expression in endothelial cells, and glycosylates VWF. The Asialoglycoprotein receptor (ASGPR) is a candidate for mediating the plasma clearance of glycosylated VWF via a high affinity for N-acetylgalactosamine. We expected that, if mice showing a high rate of clearance express the ASGP receptor, this receptor could be involved in mediating clearance. In an effort to delineate the exact role of this receptor, unmodified and modified VWF were expressed in vitro and harvested. The proteins were quantified using an immunosorbent assay, and were injected into mice with and without the ASGP receptor. Quantification of VWF levels from bleeds taken at different time-points allowed us to ascertain rate of VWF clearance from both sets of mice. Although the results matched our hypothesis with regard to clearance in mice with ASGPR, unexpectedly, mice injected with unmodified VWF were showing equally rapid clearance. The role of the ASGP receptor is still unconfirmed, but these results continue to support ASGPR as a candidate, shed light on the best method to test for VWF clearance, and encourage inquiry into the possible involvement of other receptors. Further investigation will have important implications for treating the most common inherited bleeding disorder of our time.

33 ***Communication Attitudes and Behaviors in Indian-American Romantic Relationships***

Sneha Goud

Under the direction of Dr. Steven McCornack, Communication

10:00 AM - 11:30 AM, Gold A

This study examined communication attitudes and behaviors of Indian American college students. In particular, we examined the degree to which parental attitudes regarding dating influenced students'

attitudes and behaviors, related to dating individuals outside their ethnic, religious, and regional backgrounds. We also examinined how students discuss such matters with their parents. Although the number of Indian Americans within the United States has dramatically increased in recent years, no extant study has yet examined these issues. Consequently this study was exploratory in nature, involving a general survey of attitudes and behaviors.

34 ***Culture and Vision***

Andrew Cuda
Under the direction of Dr. Christian Lotz, Philosophy
12:15 PM - 3:30 PM, Gold B

Vision and the act of seeing has often been considered a cultural act. However, with the recent advent of cognitive science, many philosophers and scientists have tried to define vision and perception naturally, independent of culture. They claim that since science can describe vision, it ought to define it as well. I argue that cognitive science offers an adequate but incomplete description of vision. By placing culture alongside a naturalist account, a more adequate description of vision can be achieved without falling into culture relativism.

35 ***Curricula Under Review: An Investigation of the Historical Biases within the three Michigan School Districts***

Jonathan Murphy
Under the direction of Dr. Gloria Smith, Counseling, Educational Psychology and Special Education
9:45 AM - 11:45 AM, Lake Superior

According to the Michigan Curriculum Framework, the responsibility of public social science educators is to develop a moral compass for students based on historical, geographic, and civic education. The purpose of the social science curriculum framework is to create "disciplinary knowledge, thinking skills, commitment to democratic values, and citizenship participation." The details of social science education such as history and language arts are delegated onto the school districts. All district school boards use the Michigan Curriculum Framework to draft curriculum and select textbooks, but the ultimate decision is in the hands of the district school boards. James W. Loewen's investigation of a collection of public school history textbooks led him to conclude that a Eurocentric or white-American archetype is promoted within our history textbooks. I will investigate whether or not this archetype exists within the curricula of in three different districts: Lansing, Okemos, and Williamston. Within this list, urban, suburban, and rural districts are represented respectively. I will review the American history curricula and textbooks adopted by the three school boards. In order to develop the "disciplinary knowledge, thinking skills, commitment to democratic values, and citizenship participation" of students, social science curricula must reflect the different experiences/perspectives/histories of all groups within American history.

36 ***Cyber Storytelling: The Art Machinima and World of Warcraft***

Mathew Runyan
Under the direction of Ben Medler, Telecommunications, Information Studies, and Media
10:00 AM - 11:30 AM, Gold A

Machinima is a rather new form of what many consider to be filmic art. Machinima involves capturing footage from computer or video games, inserting the footage into a video editor such as Final Cut Pro, and, just like in regular cinema, editing together a coherent and interesting product and including music and often times pre-recorded dialogue. In this specific research product, a short film was made using the game World of Warcraft as the source for the footage. This project was an interesting experiment in cyber communities, film producing, and learning the limitations of a game being used for the art of Machinima.

37 ***Cyborgs, Sexuality, and Film***
Jackson Buddingh
Under the direction of Dr. Ramona Fernandez, Writing, Rhetoric and American Culture
12:15 PM - 3:30 PM, Gold B

The goal of Dr. Fernandez's work for this project is to develop a cirriculum for a class this fall which is an examination of theories of representation and the analysis of popular culture with a larger focus on film. Major topics to be covered include representations of race, gender, feminism, and class among others. Accordingly, this presentation will focus on applying some of the unique and interesting analyses of Donna Haraway and others to popular culture texts, for example, "Blade Runner," and "Dark Angel."

38 ***Developing Community Media: A Social Network Analysis of Local Media Users***
Marie Hollenbeck
Under the direction of Dr. Jeff Grabill, Writing, Rhetoric and American Culture
10:00 AM - 11:30 AM, Gold A

The problem that my research helps solve is how to develop a media center in the Lansing area. In order to solve that problem, it is necessary to understand who uses media in the community, how they use it, and therefore how a media center might help them. I'm particularly interested in the reasons why people decide to broadcast to the public and how they go about doing so. In order to solve these problems, my research focuses on questions about who produces community media and why. I have conducted an interview-based research study designed to create an inventory of media-users in the Lansing area with the goal of producing a social network analysis. In my presentation, I will present the results of my interviews and social network analysis. I anticipate that the results of my work will demonstrate who the users of the media center are likely to be, the kinds of media they produce and want to produce, and the relationships between these producers (in what sense are they a community). This social network analysis will tell us stories about media use in the community.

39 ***Do Mothers Shop Differently After They Have Had Children?***
Erin Carr
Under the direction of Dr. Patricia Huddleston, Advertising, Public Relations and Retailing
12:15 PM - 3:30 PM, Tower

There are approximately 82.5 million mothers in the United States controlling around 1.3 trillion dollars in spending and making 80% of household purchases. Control and influence of household spending gives these women a tremendous amount of purchasing power. Our research aims to understand how mothers' shopping behaviors are influenced by the one thing they have in common: children. This study will review previous academic research and use a qualitative approach to conduct personal interviews of mothers to better understand how having children has altered their shopping behavior and suggest what retailers can better do to accommodate their needs.

41 ***Effects of Physical and Training Characteristics on Marathon Performance***
Jocelyn Frey
Under the direction of Dr. Jim Pivarnik, Kinesiology
12:15 PM - 3:30 PM, Tower

Previous research on predictors of marathon performance has utilized laboratory testing with small sample sizes of elite runners. Few studies have involved a large number of participants with variable running abilities. Purpose: To evaluate physical and training characteristics of all registered runners in a large marathon. Methods: Online survey was offered to all registrants the 2005 Detroit Marathon. To determine which variables were associated with race time, the following variables were evaluated: gender, age, body mass index (BMI), weekly training mileage, number of years running, past-year running injuries, and race

related physical symptoms. After performing bivariate analyses with each potential predictor variable, stepwise-regression was used to predict race time using variables that showed a significant relationship with marathon performance. Results: Race time averaged 4.2±0.7 hrs (range=2.4-6.8 hrs). Stepwise regression showed that weekly training mileage, age, BMI, gender, and in-race physical symptoms accounted for 41% of the variance in race times. The strongest predictors were weekly training miles, BMI, and gender accounting for ~39% of the variance. Conclusions: Our results showed training mileage, gender, and body size to be major predictors of marathon race performance in a large sample of runners with varying abilities. Training injuries, years of running experience, and physical symptoms during the race had no apparent effect on performance.

42 ***Effects of Water Level Management in Crooked Lake, Barry County, Michigan***
Michaela TerAvest
Under the direction of Dr. Stephen Hamilton, Zoology
12:15 PM - 2:45 PM, Lake Superior

Crooked Lake is a lacustrine system in Southwestern Michigan. It includes both natural and developed areas and several types of submerged, floating and emergent vegetation, spread out over three sections, Lower, Middle, and Upper Crooked Lake. Fluctuation of water levels has at times threatened recreational activities and aesthetic qualities of the Upper Lake, especially in low water periods. To alleviate these problems a pipe was installed in 1942, to control flow between the Upper and Middle Lakes. Since 1942 the pipe has lost altitude, and this has allowed more water to flow out from the Upper Lake, causing a 2.6 ft. drop in its water level. Some property owners in the area are unhappy with this lake level and wish to return it to its previous level. The proposal is to build a weir above the pipe in the flow gradient. The effects that implementing this plan will have on Middle and Lower Crooked Lakes are little known; lake levels below the weir may go down significantly, slightly, or not at all. The purpose of this study was to investigate the effects that the new weir will have on lake volume, area and vegetation in the entire Crooked Lake system and make tentative recommendations about water level management in the future of this system.

43 ***Estimating the Societal Cost of Domestic Terrorism: The Case of the Oklahoma City Bombing***
Adam Hallett
Under the direction of Dr. Bernard Finifter, Sociology
10:00 AM - 11:45 AM, Lake Huron

The Oklahoma City bombing is the most devastating terrorist attack perpetrated by an American citizen. The attack took the lives of 168 people and injured many hundreds more. In addition to the incalculable human losses caused by this singular terrorist act there were also considerable material costs that have not previously been taken into account comprehensively. My research attempted to fill-in this gap in order to provide a fuller appreciation of the enormity of this attack by estimating its monetary cost to society. This presentation describes the process and problems involved in locating and documenting cost data for this tragedy.

44 ***Evaluating siRNA-mediated Gene Knockdown to Study Angiotensin-Converting Enzyme 2 Function in Mouse Lung Epithelial Cells***
Dionisia Quiroga
Under the direction of Dr. Bruce Uhal, Physiology
12:15 PM - 2:45 PM Lake Huron

Previous research has shown that angiotensin II (ANG II) causes lung epithelial cell apoptosis, which is linked to lung fibrosis diseases. In addition, it has been found that angiotensin-converting enzyme 2 (ACE 2) degrades ANG II in the respiratory system in cases of severe acute lung damage. Given this information, we hypothesized that ACE 2 would have a similar role in disabling ANG II in mouse lung

epithelial cells (MLEs). Cultures of MLE-12 cells had ACE 2 gene expression inhibited by using 80 nM siRNA-mediated knockdown transfection agents. After 40 hours of incubation post-transfection, the cells were found to have a 54% knockout rate when measured via ACE 2 assay and BCA (bicinchoninic acid) protein assay. Using an ELISA, ANG II levels in the MLE-12 cell medium were found to be 14% greater in the 40 hour transfected samples than in the control samples. These results suggest that ACE 2 siRNA-mediated gene knockdown works well; however, there are other factors regulating ANG II levels, such as its short half-life, to consider when measuring this peptide.

45 ***Evaluation of Adipogenic Differentiation of Canine Mesencymal Stem Cells***

Megan Goodall
Under the direction of Dr. Vilma Yuzbasiyan-Gurkan, Small Animal Clinical Sciences
12:15 PM - 2:45 PM, Lake Huron

Mesenchymal stem cells (MSCs) isolated from dogs in our laboratory offer a unique experimental model for better understanding of diseases related to adipogenesis and energy metabolism. Our earlier studies have shown that rosglitazone, rabbit serum (RS), and a high glucose medium are required for efficient adipogenesis of canine MSCs. We hypothesized that linoelic acid, a key component of rabbit serum and a PPARg ligand, is the critical factor in the differentiation of cAD-MSCs into adipocytes. To test this hypothesis, MSCs were isolated from canine subcutaneous adipose tissue and expanded in culture and evaluated in the following treatment groups: 1) modified MEM and 5% FBS, 2) modified MEM, rosiglitazone, dexamethasone, and insulin (RDI) supplemented with 5% RS, 3) modified MEM supplemented with RDI, linoelic acid, and 5% FBS, 4) modified MEM, linoelic acid, and 5% FBS, and 5) modified MEM, RDI, and 5% FBS. Preliminary evidence based on morphological examination and Oil Red O staining showed that linoelic acid treatment alone was able to induce the appearance of tiny lipid droplets but not sufficient to differentiate cells into mature adipocytes. Expression of a set of genes critical in adipogenesis is being evaluated in these groups. The findings will elucidate the role of different treatments on gene expression and differentiation.

46 ***Growth and Development of Potato Tissue Culture Plants on Long-Term Media***

Serina Mazzoni
Under the direction of Dr. David Douches, Crop And Soil Sciences
12:15 PM - 2:45 PM, Lake Superior

The potato is the fourth most important food crop in the world, following only rice, wheat, and maize. The aim of the MSU Potato Breeding and Genetics Program is to develop improved potato varieties through conventional breeding and genetic enhancement. The Potato Lab maintains almost 400 clones in its tissue bank, each of which must be propagated every 6-8 weeks to retain viability. The tissue culture system allows these breeding lines and stock clones to be kept in a sterile, virus-free environment. I am testing the effect of the growth retardant, D-Mannitol, on potato tissue culture plants by employing a Long-Term Media with variable amounts of D-Mannitol (10, 20, or 30 mg/L). Growth and development of different breeding lines on the Long-Term Media will be compared to the standard media. It is hoped that the Long-Term Media will prolong the time between propagations without affecting the quality of the tissue culture plants, allowing us to save time and resources.

47 ***Escorts, Attack Dogs or Style Setters - How Magazine Reporters Covered the 2004 Presidential Candidates' Wives***

Brittany Foley
Under the direction of Dr. Geri Alumit Zeldes, Journalism
12:15 PM - 2:30 PM Gold A

This paper extends a study that examined media coverage of the candidate’s wives in the 2004 presidential election. This study examines magazine coverage of the candidate’s wives during campaign

by analyzing articles about these women in the top 50 U.S. magazines in circulation. There are seven different frames that the First and Second Ladies fulfilled: “advocate or defender,” “escort,” “mother and wife,” “noblesse oblige,” “policy adviser,” “style setter,” and “surrogate.” Two new frames emerged in this study that were not noted in the previous study, which are “advocate or defender,” and “mother and wife.”

49 ***Girl Talk; Boy Talk: Gender and Classroom Discourse***

Cary Middlebush
Under the direction of Dr. Dennis Preston, English
10:00 AM - 11:30 AM, Tower

This study will focus on the correlation between gender and specific linguistic behavior within the sphere of classroom discourse. Using the methodology of Sinclair and Coulthard and other discourse analysts, as well as a theoretical grounding in studies of language practices according to gender identity by such scholars as Maltz and Borker and Robin Lakoff, I will attempt to show that not just biological sex, but gender has an influence on the communicative practices of teachers and students as they relate to each other in the classroom. I will study the linguistic differences in male and female student and teacher interaction in a Middle School and classify their verbal moves according to these methodological instructions. On top of the observation of differences between the sexes in classroom discourse, I will be administering gender indicator tests to all the participants. However to prevent the skewing of results, it will be approached as a simple personality test. This will be pivotal in determining the correlation between gender and the specific linguistic tendencies described above. For example, if a male’s scores on the test indicate that he leans more towards the feminine, and his linguistic results are the same, it would prove that female traits, regardless of sex, correlate with the powerlessness of female language. I will present the findings of the classroom observation study correlated with the gender test results to see how sex identity plays a role in classroom interaction.

50 ***Haplotype Analysis of GJB2 Regulatory Region***

Lauren Broske
Under the direction of Dr. Karen Friderici, Microbiology and Molecular Genetics
12:15 PM - 2:45 PM, Lake Huron

The leading cause of nonsyndromic, genetic hearing loss in humans is mutation in GJB2, a gene encoding gap junction protein Connexin 26 (Cx26). Cx26 is involved, along with Cx30, in maintaining K+ balance in the cochlea which is essential for proper hearing. In several profoundly deaf members of an extended mid-Michigan family a novel 131 kb deletion has been found and shown to segregate with reduced expression of Cx26 and Cx30 mRNAs despite the location of those genes 150 kb away. In order to characterize the number and distribution of haplotypes and investigate the possibility of recombination between the genes and this 131kb region within the family, PCR and restriction digest assays were designed to genotype selected single nucleotide polymorphisms to construct a comprehensive haplotype map. We also wished to investigate the possibility of allelic differences within a Cx30 regulatory element that would modify the degree of hearing loss in individuals who are homozygous for the common null mutation of GJB2, 35delG. Two siblings in the family are homozygous for 35delG but have different degrees of hearing loss. We searched for recombination between the gene and assumed regulatory region in these siblings; preliminary results indicate the siblings have inherited identical haplotypes in this region without evidence of recombination, leading us to conclude that the major modifier of hearing loss in this case is either environmental or resides somewhere else in the genome.

51 ***Hypergravity Exposure Affects Lipid Synthesis in Rat Mammary Gland during Pregnancy and Lactation***

Monica VanKlompenberg
Under the direction of Dr. Karen Plaut, Animal Science
12:15 PM - 2:45 PM, Lake Superior

Lipids are an essential component of the milk needed by neonates. They are synthesized in the mammary gland by enzymes. Three key enzymes in lipid synthesis are fatty acid synthase (FAS), acetyl-coA carboxylase (ACC) and lipoprotein lipase (LPL). Previous reports have shown that hypergravity (HG) exposure reduces mammary metabolism. Therefore, this study's objective was to measure the effect of HG exposure on LPL, ACC and FAS mRNA abundance in the rat mammary gland during pregnancy and lactation. Rats were placed on a centrifuge at 2g (HG) starting at gestation day 11 (G11) until 1 day after parturition (P1). Stationary control (SC) rats were housed at 1g. On G20 (n=5/g-level) or P1 (n=4/g-level) rats were anesthetized, mammary tissue was collected and stored at -80 C prior to RNA extraction and qPCR. All 3 genes decreased in response to HG ($P<.005$) and increased from pregnancy to lactation ($P<.001$). These results indicate that changes in gene expression due to HG exposure may account for observed differences in lipid synthesis.

52 ***I Missed My First Child's Birth: Technology and Soldiers' Communications Home***

Kelli Foy
Under the direction of Dr. Danielle DeVoss, Writing, Rhetoric and American Culture
12:15 PM - 2:30 PM, Gold A

The rise of the Internet has revolutionized the ways in which people communicate. Through email, instant messages, and blogs, it has become easier to keep up with the lives of friends and family members. This change is especially apparent in the lives of active duty service members during deployments overseas. The ability to communicate with friends and family members at home through more immediate means allows for stronger relationships. Through these communications, members of the armed forces are able to poignantly display their experiences and to keep up-to-date on events happening on the home front. In this presentation, I will discuss the results of a survey of active duty military members, and also present research gathered through the analysis of collections of letters, emails, and blog posts. I will share the information I gathered about relationships, and analyze how military members discuss their wartime experiences.

53 ***Imaginings of Biological Eschatology: Post Human Sentience in Fiction***

Ryan Shannon
Under the direction of Dr. Scott Juengel, English
12:15 PM - 3:30 PM, Gold B

There is anxiety over the apocalypse that generates literature about the post-apocalyptic world. Mankind is imperiled with a new set of "existential risks" arising from technological advances since the mid 20th century. The nature of these existential risks has changed the nature of the post-apocalyptic literature in no small way. In natural history, mass extinctions due to near-apocalyptic events show new species rising to fill the ecological niches left by the death of a dominant life form. Literary envisionings of post-human civilizations logically replace mankind as the dominant thinking animal with an animal presently lower on the taxonomic scale. There is anxiety over this replacement, and the envisioned replacement animal responds to changes in this anxiety. We examine themes of shame, gender, information bottlenecks and informational death, as well as tropes common to post-human fictions. We trace the arc of these fictions from Gulliver's visit to the Island of the Houyhnhnm, through the imaginings of evolutionary science in various works of H.G. Wells, through the present anxieties of civilization death in Huxley's Apes and Essence and Vonnegut's Galapagos. To supply context for these works, our examination includes a history of biological catastrophism and evolution theory.

54 ***In Vitro Exercise Affects the Response of Articular Cartilage to Blunt Impact Loading***
Marc Schlaud
Under the direction of Dr. Roger Haut, Osteopathic Medicine Research and Advanced Study Programs
9:45 AM - 11:45, AM Green

Participation in sports, recreation and exercise (SRE) is increasingly popular and widespread in American culture, but there is an enhanced risk of musculoskeletal injury. The purpose of this study was to quantitatively assess the affect of pre-impact exercise on the response of articular cartilage to blunt force trauma. It was hypothesized that moderate exercise would cause a change in chondrocyte metabolism, altering the tissues response to injurious impact. This potential effect was hypothesized due to enhanced production of cartilage proteoglycans(PGs). Bovine chondral explants were subjected to cyclic loading while bathed in DMEM: F12 media. After 0, 7, 14, and 21 days, the explants were exposed to a 25MPa compressive impact load. Mechanical indentation tests evaluated the mechanical properties of the cartilage with a fibril-reinforced, biphasic computational model, and the PG content of the tissue was assessed. Cartilage trauma was quantified by the degree of surface fissuring and cell death. The results indicated that moderate exercise helps protect cartilage from an acute traumatic injury, such as which occurs from a fall. This chondral-inductive effect could help mitigate the potential development of a chronic joint disease, such as osteoarthritis. These in vitro results may have direct relevance to athletes and the general population in a "Healthy America."

55 ***Individual Differences in Memory in Relation to Emotional Stimuli***
Katherine Morabito
Under the direction of Dr. Christine Larson, Psychology
12:15 PM - 3:45, PM Tower

Although research has been done showing that dysphoria correlates with an increased amount of mood congruent false memories in both dysphoric participants and negative mood induced participants, no research prior to this study has examined how inducing a negative mood in dysphoric participants affects mood congruent false memories. One hundred undergraduate participants viewed lists of depression-relevant, neutral and positive words that they were asked to recognize later among lure words. Participants were grouped as dysphoric, mid-dysphoric, or non-dysphoric as determined by BDI-II scores. This study hypothesized that dysphoric participants induced into a negative mood would have a greater number of mood congruent false memories than all of the other groups. A 2 x2 x3 x 3 – way mixed-model analysis of variance (ANOVA) with Mood Induction (positive, negative), Gender (male, female), and Group (dysphoric, mid-dysphoric, non-dysphoric control participants) as between-subject variables and Word Type (depression-relevant, neutral, positive) as a within-subject variable and correlation analyses were used to examine the depression relevant false memory results. Correlation analyses revealed that dysphoria is related to an increased amount of mood congruent false memories ($r = .22$; $p < .04$). The results of this study add to previous research in the field of depression and memory on a small scale. Further research in the area is needed for a more complete understanding of how memory functions in dysphoric individuals, and may be used to augment or create treatment techniques.

56 ***Influence of Polish on English***
Megan Firestone, Emma Giese
Under the direction of Dr. Dennis Preston, English
10:00 AM - 11:30 AM, Tower

We are studying Polish heritage speakers of English from Hamtramck, MI, and will eventually look at any lingering influence of Polish. We will first investigate the vowel systems of native speakers of Polish in Hamtramck speaking English. There will most likely be evidence of Polish language influence in the English of such speakers; for example, Polish has no vowel like that of English "late," and the vowel of "let," which has a Polish equivalent, may be substituted. We will make a complete inventory of such

Polish-English mismatches. Since these speakers have learned English, we will focus on how that system has been formed outside Polish language influence. They may have acquired the older Detroit area vowel system or that which has developed there in the last fifty years, known as the "Northern Cities Chain Shift." If the latter, we expect to find that the vowel of a) "cat" will be pronounced like that of "pet" or even "pit" b) "cot" will be pronounced like that of "cat" c) "caught" will be pronounced like that of "cot" and similar changes in the vowels of "pet," "cut," and "pit." We will study the acoustic characteristics of these speakers' vowels by using a Linear Predictive Coding analysis. We will plot the vowel system of each speaker in acoustic space and show how a retained Polish influence, older regional Detroit influence, or newer Detroit-area (Northern Cities Shift) influence has been a factor in the arrangement of the speaker's English vowels.

57 ***Informal Discourse Patterns in the Classroom***

Jackie Canan
Under the direction of Dr. Marilyn Wilson, Writing, Rhetoric and American Culture
12:15 PM - 3:30 PM, Gold B

This research study considers the discourse patterns of students in secondary classrooms with a particular focus on the patterns of interaction among students and between students and teachers as the situations and contexts for discourse change and evolve. Of particular interest is the use of what some sociolinguists would refer to as informal discourse patterns that include the varying uses of slang and informal syntactic and phonological patterns. The portion of the study being reported on here discusses the discourse patterns of two groups of students—AP English students and students in a general English class, all seniors in a local high school. The discussion will include three aspects of the study: the results of classroom observations of discourse patterns, results of a survey/questionnaire regarding students' uses of language and their implicit attitudes toward particular linguistic features and patterns, and an analysis of the source of these terms (for example, the influence of African American Language features on student language patterns).

58 ***Internet Abstinence***

Kristin Key
Under the direction of Dr. Danielle DeVoss, Writing, Rhetoric and American Culture
12:15 PM - 2:30 PM, Gold A

The Internet is a vast and valuable resource, able to provide countless users with instant access to information. At the same time, the Internet can act as a distraction, much like television and other forms of media. Users are swept up in the entertainment aspect of the Internet and as a result spend less time on other necessary tasks. This study researches the effects on the productivity of avid Internet users who are forced to abstain from going online for 24 hours. I am interested in whether or not student participants accomplish more or less when banned from using the Internet; is it easier to accomplish tasks without the option of spending time online, or does the Internet's absence act as a barrier, preventing them from completing otherwise simple duties? My presentation will discuss the actual study conducted, share the data collected, and discuss both my findings and their implications.

60 ***Investigation of LRRK2 Homodimerization***

Steffany Kerkstra
Under the direction of Dr. Kathleen Gallo, Physiology
3:00 PM - 4:15 PM, Gold A

Parkinson's disease (PD) is the second most common neurodegenerative disorder in the US and Europe. Recently, several mutations in leucine rich repeat kinase (LRRK) 2 have been associated with dominant, inherited familial Parkinson's disease. Thus LRRK2 must play a key role in Parkinson's disease but very little is known about the biochemical structure or physiological function of LRRK2. This studying was

designed to investigate the homodimerzation of LRRK2 and the specific domains and mutations which could possibly affect this protein-protein interaction. A better understanding of LRRK2 homodimerization gives us better insight of the overall mechanism of the LRRK2 protein, which is still mostly unknown. Varying amounts of expression plasmids contained the cDNA for LRRK2 tagged with two different epitopes, V5-LRRK2 and GFP-LRRK2, were transfected into HEK293T cells. The V5-Lrrk2 and GFP-Lrrk2 constructs both expressed well in HEK293T cells. The full length V5-LRRK2 protein was found to interact with full length GFP-LRRK2 based on co-immunoprecipitation experiment, but more stringent washing conditions disrupted the interaction. Future experiments will investigate possible mutations that affect the homodimerization of LRRK2.

61 ***Is Pork Partisan?***
Charles Szafir
Under the direction of Dr. Nathan Monroe, Political Science
9:45 AM - 11:45 AM, Gold B

The conventional wisdom among political scientists has been that members of Congress cooperate to allocate pork universally as a means for future electoral benefits. However, recent studies argue that the majority party receives a disproportionate share of pork dollars in order to protect their established majority. We seek to extend this debate by being the first to look into the aspect of how Senators take credit for pork projects. Unlike the House of Representatives, the Senate represents a unique study as two Senators share the same home district. Therefore, anonymous pork projects from Washington must be claimed by Senators through the media in some systematic pattern. After analyzing the credit claiming patterns in states with two Republicans, two Democrats and split delegations, we expect the patterns to differ dramatically. This would lead us to conclude that the process of pork allocation is partisan in nature.

62 ***Is There a Gubernatorial Exception to Red and Blue?***
Thomas Knezek
Under the direction of Dr. Charles Ostrom, Political Science
9:45 AM - 11:45 AM, Gold B

After the 2000 presidential election, maps dividing the country into "red" states (which voted Republican) and "blue" states (which voted Democratic) became ubiquitous. However, over the next several years, many of the "bluest" states elected Republican governors (Massachusetts, New York, Hawaii), while several of the "reddest" states elected Democratic governors (Wyoming, Oklahoma, Kansas). A cursory statistical analysis suggests there was little correlation between how a state voted for president and how it voted for governor. The main purpose of this research project is to determine what variables are responsible for the outcome of state gubernatorial and presidential elections, and, more importantly, to investigate how and why their impact differs. It is hoped the results of this study will shed new light on the meaning and role of partisanship and political parties in modern U.S. politics.

63 ***KAPWA in BHARA: A Preliminary Report on the Lexical Manifestation of Pakikipagkapwa Psyche in Bhara of Ternate, Cavite***
Aidel Paul Garcia Belamide
Under the direction of Dr. Milagros Blauta, University of the Philippines- Los Banos
12:15 PM - 3:30 PM, Gold B

Founded on Edward Sapirs' statement that language "does not as a matter of fact stand apart from or run parallel to direct experience but completely interpenetrates with it," this study used the descriptive-survey design to initially report the lexical manifestation of Pakikipagkapwa psyche in Bhara of Ternate, Cavite in the Philippines. Pakikipagkapwa Psyche, the core of Philippine Psychology Value System, refers to an awareness of the relationship of "self" and "others." A persons starts to have a kapwa through a consciousness of shared identity, that he is related to everybody and everything. Bhara is a colloquial

Spanish pidgin used in Ternate, Cavite, Philippines. A result of Spanish- Portuguese-Malay interaction in Ternate,Indonesia, this was brought by the Spaniards to the Philippines in 1600's. From the analysis and interpretation of Bhara translations of psyche related Filipino words and sentences, the study found out that Bhara manifests the Pakikipagkapwa through language switching, particularly borrowing. By means of diffusion and accommodation, the dialect was used by Ternatenos for social approval, positive self-presentation, attaining communicational efficiency, and expressing something with more feeling and meaning. Many loanwords acquired a new meaning as they assumed the Filipino standards.Bhara translation of panghalip panao manifests the concepts of inclusiveness, shared identity, respect, honor and gender-neutrality.

64 ***Kinetic Analysis of Walking Gait with and without Orthotics: A Case Study***
Megan Black
Under the direction of Dr. Dianne Ulibarri, Kinesiology; Adam Bruenger, Doctoral Student, Kinesiology
12:15 PM - 3:45 PM, Tower

Walking gait is a part of daily life for most individuals and factors such as the forces created during gait can affect a person on a daily basis. Orthotics are often prescribed to correct/alleviate problems affecting gait. The purpose of this study was to perform a bilateral analysis of forces during walking with and without the use of orthotics. The participant was a 22 year old female, using a ¾ length soft orthotic and a 3mm lift in her left shoe. The Arial Performance Analysis System (APAS) was used to collect both kinetic and kinematic data and an AMTI forceplate was used to collect forces and moments. A total of 12 trials were taken; six left foot and six right foot strikes; three trials with and three without orthotics per side. The findings in the vertical ground reaction forces provided evidence that the subject vaulted over her left knee during the no orthotic condition, and a greater unloading of forces than typical was exhibited during midstance. It was found that in the anterior/posterior forces the participant delayed getting into acceleration on the left foot and delayed starting acceleration on the right foot. Several changes in direction of forces during deceleration on the left foot no orthotic condition were also found. In conclusion, a biodynamic study should be done to determine the cause of the abnormalities seen. Moreover, it is important that instrumentation be used whenever analyzing gait to detect occurrences that can not be seen by the naked eye.

65 ***Kinetics of Thermally-Induced Shrinkage of Beef Muscle During Isothermal Heating***
Gail Bornhorst
Under the direction of Dr. Brad Marks, Biosystems and Agricultural Engineering
9:45 AM - 11:45 AM, Green

Meat products change shape and lose mass during thermal processing. These changes have been studied, but there is no direct quantitative model relating the shrinkage to both cooking temperature and time. The objective of this study was to develop a quantitative model to describe the dimensional changes in beef muscle during isothermal heating. Beef round muscle samples (2x10x40 mm) were heated isothermally in temperature-controlled baths of mineral oil at 55, 60, 65, or 70 °C for 0.25 to 4 min (234 total measurements). The length, width, thickness, mass, moisture and fat contents were measured before and after heating. Sample length decreased with time (ANOVA $P < 0.0001$). The fat content changes during cooking were negligible (maximum change of 1.30%). The shrinkage in length was modeled via an n^{th}-order kinetic model with an asymptote. The average n-values were found to be 0.7757, 0.7568, 49.9887, and 4.1892; the k-values were found to be 0.3947, 0.486, 98.8300, and 98.0003 for the four respective cooking temperatures (55, 60, 65, and 70°C). These values show that both the n- and k-values vary with temperature. The root mean squared error of the models ranged from 0.0238 to 0.0461 for the normalized dimensions. This model can be used to improve cooking simulations and thereafter optimize commercial thermal processing for improved product yield.

66 ***Majority Party Power in the U.S. Senate***

Charles Szafir
Under the direction of Dr. Nathan Monroe, Political Science
9:45 AM - 11:45 AM, Gold B

Conventional wisdom shows that the majority party in the United States Senate has a difficult time controlling the agenda of what bills get on the floor because the Senate procedures, unlike the House of Representatives, create an atmosphere where Senators can pursue their own interests and goals. We seek to challenge this theory by testing the degree of partisanship in unanimous consent agreements, one of the aforementioned procedures. Unanimous consent agreements are formed to expedite business on the floor by placing limitations and rules on bills and amendments. Through collecting and analyzing characteristics of unanimous consent agreements in the Senate from 1989-2005, we argue that the majority party uses this procedure to help them set the agenda, and in doing so, pass favorable legislation.

69 ***Memoirs of Genocide: From Poland to Sudan***

Jasmine Angelini-Knoll
Under the direction of Dr. Kenneth Waltzer, Jewish Studies Program
12:15 PM - 3:15 PM, Green

For this project, related to my research assistance for Dr. Kenneth Waltzer in his work on "The Rescue of Children and Youth in Buchenwald," I will look at several different memoirs rooted in experiences of mass violence undergone by children and youth. I want to draw parallels between memoirs of youthful survivors who lived through the Nazi Holocaust in Europe, and the “Lost Boys,” who survived recent violent conflict in Sudan. My sample of memoirs includes works in French by Polish Jewish boys who survived the Holocaust in ghettos and work camps, finally winding up in Buchenwald. The Sudanese memoirs trace the paths of boys as they fled from destroyed homes to refugee camps. They are written in English, often involving the collaboration of American authors. Besides engaging each story individually, the exploration of these works urges broader questions about memory of horrific violence. How is memory presented and organized in memoir? What is emphasized and why? What are the motivations for speaking as witnesses of horror and survivors of violence? What are the implications of personal memoir for the larger task of preventing violence and genocide? These stories are diverse—they take place in worlds and times apart, they involve different actors and contexts. Yet they are also connected, involving experiences by youth of mass violence, survival, and finally efforts to represent memory years later as warning, as remembrance, and as an effort to help others understand.

71 ***Mexican and Chicano Views on Immigration Policy***

Tom Nehil
Under the direction of Dr. Anna Pegler Gordon, James Madison College
12:15 PM - 3:15 PM, Green

Despite the increased political rancor focused on the issue of late, issues of immigration at the Mexican border have been contentious for well over one hundred years. The voices and points of view offered over the years on immigration policy on the border have been various but almost all from the perspective of the United States. In my research, I seek to present the less-heard Mexican and Chicano voices on the issue of immigration and border policy. To get this perspective I analyze Mexican and Chicano newspapers at crucial times of immigration policy changes from the early 20th century through the depression. I am also look at correspondence between Mexican diplomats and the US government. From analyzing these sources it is possible to show the other side of the historical immigration debate.

72 ***Modeling the Inertial Movement of the Head and Neck in the Trotting Horse***

Britt Larson

Under the direction of Dr. Hilary Clayton, Large Animal Clinical Sciences

12:15 PM - 2:45 PM, Lake Superior

Previous studies of horseback riding (Clayton, 2003) have shown that rein tension spikes twice in each trot stride in rhythm with the synchronous motion of the limbs. This study seeks to determine whether these spikes can be attributed to the inertial properties of the horse's head and neck during motion. A mathematical model will be developed based on measured forces and inertial properties of the head and neck. The model will be verified using experimental data based on kinematic analysis of head and neck motion and the association tension in the reins. Model development and data collection are in progress.

73 ***MSU and U: Connecting Students and College Life Producers***

Sherry Bagnall, Lauren Schroeder

Under the direction of Dr. Robert Albers, Telecommunication, Information Studies and Media

12:15 PM - 2:30 PM, Gold A

MSU and U is one of four shows in Telecasters, a non-profit student run video production organization at Michigan State University. MSU and U has four segments with four different hosts: Hot Spot (local places to visit near campus), Man On Street (MOS) Report (interview from the student's voice), Groupie Report (student groups), and an Entertainment Report. In its first season, MSU and U received a state Emmy from the Michigan Association of Broadcasters for Episode 2. This Episode featured Jay Leno, the MSU Water Ski Team, MSU President Lou Anna Simon, and Lou and Harry's Grill.

75 ***Naked Hooves: The Effects of the Physiological Trim***

Sarah Gray

Under the direction of Dr. Hilary Clayton, Large Animal Clinical Sciences; Robert Bowker, Pathobiology and Diagnostic Investigation

12:15 PM - 2:45 PM Lake, Superior

Horses often wear metal shoes to protect their hooves from excessive wear and exfoliation. These shoes interfere with proprioception, shock absorption, and hoof expansion during weight bearing. This study on the physiological trimming technique is part of a larger initiative to understand and examine the effects of keeping horses "barefoot". The physiological trim is designed to enhance the health of the internal hoof structures. After implementing this protocol, hoof morphology was measured by photographs and radiographs. Gait analysis was performed at the trot, which allows examination of the three-dimensional movement of the distal limb. The goals of this particular study were to evaluate the changes that occurred during after an 8-week cycle of hoof growth and the trim that followed to remove excess hoof growth.

76 ***Negative Affect and Cortisol as Mediators of the Relationship between Teasing and Binge Eating in Adolescent Girls***

Jessica Suisman

Under the direction of Dr. Kelly Klump, Psychology

12:15 PM - 3:45 PM, Tower

This study investigated two mediation models that may link weight-based teasing to binge eating in adolescent girls. The first model proposed negative affect as a mediator, theorizing that teasing leads to negative affect which then leads to binge eating. The second model proposes cortisol as a mediator, suggesting that teasing may be a chronic stressor that leads to increased cortisol levels which then leads to binge eating. Participants were 110 (cortisol model) and 198 (negative affect model) adolescent girls ranging in age from 10 to 14 years. The Minnesota Eating Behavior Survey was used to measure binge eating. The Perception of Teasing Scale was used to assess weight-based teasing, and the Early

Adolescent Temperament Questionnaire was used to measure negative affect. Cortisol levels were obtained from an afternoon serum sample. Relationships between teasing binge eating, and the mediators were examined via pearson correlations and regression analyses. Significant positive correlations were found between teasing, binge eating, and negative affect. Cortisol was not significantly associated with teasing or bingeing. Thus, regression analyses were conducted for negative affect only. In these analyses, negative affect was found to partially mediate associations between weight-based teasing and binge eating. Findings indicate that increases in negative affect are one way in which weight-based teasing may lead to binge eating in adolescent girls.

77 ***Nietzsche, Dostoevsky, and the Modern World***
Matthew Messerschmidt
Under the direction of Dr. Sherman Garnett, James Madison College
12:15 PM - 3:15 PM, Green

Mid 1800s Russian author Fyodor Dostoevsky and late 1800s German existentialist philosopher Friedrich Nietzsche grappled with many of the same themes in their work. Much has been written studying the thinkers' shared notions about will, God, values, good and evil, reason, and social structure. Focusing mostly on Dostoevsky's Crime and Punishment, I have analyzed the approaches these thinkers take to such diverse topics as these in order to reveal a shared underlying concern that modern society affronts the subjectivity of individuals and forces people to experience themselves as unwilling objects.

78 ***Non-Destructive Firmness Analysis on Apple Fruit***
Adam Dietrich
Under the direction of Dr. Randy Beaudry, Horticulture
9:45 AM - 11:45 AM, Green

A bioyield tester for measuring fruit firmness and its measurement variability within individual fruit has recently been developed by researchers in the USDA and Agricultural and Biosystems Engineering at MSU. Until now, there has been no means to determine changes in fruit firmness for single fruit. Our objective is to evaluate the newly developed Bioyield Tester for improving the efficiency of testing treatments to improve apple fruit firmness. We propose to evaluate 1-MCP, a growth regulator with a known and dramatic impact on fruit firmness retention.

79 ***Out/In Sound: A Piece on my Compositional Process***
Nathaniel Bliton
Under the direction of Dr. Mark Sullivan, Music
12:15 PM - 3:30 PM, Gold B

In this piece, I tried to depict my compositional process as literally as I could. All of the sounds are taken from objects and recordings I have in my writing space, and some of the sounds are actually recordings of myself recording a different piece. It starts with the playing of some samples and gets more rhythmically and texturally complex and intense as the piece progresses, ending in with a manipulation of the first sound in the piece. This describes the process I used to write the piece, starting with the basic sounds and a simple outline, and manipulating and changing the piece as a whole. It was still a similar piece to what I started with, but when I completed it, it meant something very different to me.

80 ***Oxidative Stress Induced Endothelial Progenitor Cell Dysfunction in Diabetes***

Jeff Hakim
Under the direction of Dr. Alex Chen, Pharmacology and Toxicology
12:15 PM - 2:45 PM, Lake Huron

Oxidative Stress Induced Endothelial Progenitor Cell Dysfunction in Diabetes Jeffrey S. Hakim, under the direction of Dr. Alex Chen, Department of Pharmacology/Toxicology Endothelial progenitor cells (EPC) are a circulating, bone marrow derived cell population that participate in both vasculogenesis and vascular homeostasis. These cells migrate to sites of tissue injury and aid in the healing process both by differentiating into mature cell types and by releasing cytokines. However, EPC exhibit impaired function and are found in lower numbers in diabetics. This impaired EPC number and function could play a role in impaired diabetic wound healing, which can make amputation of the affected limb necessary. We hypothesize that the environment of high oxidative stress characteristic of diabetes is a cause for this observed EPC dysfunction. We further propose that this EPC dysfunction could be corrected in vitro by adenoviral mediated gene therapy with MnSOD, an antioxidant enzyme, resulting in autologous cell therapy for healing diabetic wounds.

81 ***Parliamentary Labour Party Division on the Eve of the Iraq War***

Ryan Etzcorn
Under the direction of Dr. Willaim Schoenl, History
10:00 AM - 11:45 AM, Lake Huron

By September of 2002, Prime Minister Tony Blair and the Bristish executive had made a strong stand of support on the trans-atlantic call for the invasion of Iraq. Throughout the next six months a debate quickly ignited within the majority Labour Party of the House of Commons between loyalists and dissenters over such delicate issues as WMD evidence, the need for multilateral action through the UN, and the potential aftermath of war with Saddam Hussein. For the first time, spiraling doubt and division placed control of the decision for war into the palm of the legislative - much to the frantic dismay of executives reliant on its support. Prominent Labour politicians allied with party whips to begin the frantic conquest for the minds of Labour's moderates with anti-French propaganda and the potential resignation of Blair himself. Rumors began to circulate that the pressure of significant ministerial resignations in the days before the vote had led Blair to write his own resignation letter in advance just in case he lost a final vote of confidence. With such whisperings of the prospective demise of the most decorated and respected party leader in decades, Labour MPs found themselves confronted by party whips with the question: "Do you support regime change in Baghdad or Downing Street?" This presentation will analyze a short period of British politics profoundly unique to history.

82 ***Perceptions and Use of Dark Literature in the Secondary English Classroom***

Leah Rudolph
Under the direction of Dr. Reade Dornan, English
12:15 PM - 3:15 PM, Green

A common complaint from students, parents, and educators alike is that we read too much dark literature in high school English, yet dark literature has, until this point, been an ambiguous term, and the specifics of the complaint have rarely been addressed. This study defines the elusive term "dark literature" and suggests a framework to incorporate various forms of dark literature in the classroom. Research is based on extensive reading in issues of adolescent reading, censorship, moral education, and values clarification, as well as a survey of respondents in a literature circle study group composed of parents and students reading Robert Cormier's I Am the Cheese.

83 ***Photographic Truth and Image Appropriation***

Dyana Males

Under the direction of Dr. Danielle Devoss, Writing, Rhetoric and American Culture

12:15 PM - 2:30 PM, Gold A

The purpose of this research is to read the underlying messages of images by Barbara Kruger, while showing a connection to photographic truth and appropriation. Kruger alters her images and makes them readily available to vast audiences. The reader's ability to understand the image while maintaining a hesitation about the truth to its message is essential. An altered image is the falsification of the image and when a cultural message is applied it is difficult to take away a trusted and valued comprehension of that piece. Understanding the use of photographs and the advanced editing ability is crucial for people to recognize. Reading the message behind an edited picture can be immeasurably different from the real image. Kruger's images aide in the deconstruction of photographic truth and dissecting this interpretation can open the door to a hidden world of design and editing truths.

84 ***Prudes and Perverts: The Role of the Dichotomous 'Other' in Sex Advice Literature***

Erin Biebuyck

Under the direction of Dr. Aminda Smith, History

10:00 AM - 11:30 AM, Tower

The authors of sex manuals from the 1950s to the present often establish their authority by claiming to be sexual revolutionaries. Sex experts purportedly challenge the repression that has kept us from having good sex since the Victorian Era and holds out to their readers the promise that "Tomorrow sex will be good again." Yet at the same time, the "sexpert" defines the acceptable range of sexual expression by approving of "some techniques and stigmatiz[ing] others." Experts of different time periods and with differing philosophies establish sexual boundaries to include and exclude different acts, but they nonetheless maintain that certain practices are out of bounds. While the sexpert places herself to the left of those she defines 'prudes,' she also positions herself to the right of the 'perverts.' By examining practices that sex experts accept and stigmatize as well as where they locates sexuality (in the individual, the married couple, the heterosexual pair, etc.), I document shifts and continuities over time in the location and formation of boundaries in sex advice literature. In doing this, I hope to shed some light on the role of the dichotomous "other"-- the prude and the pervert-- in the construction of sexual norms.

85 ***Racialization and the Effects on Identity and Educational Attainment of the Asian American Experience in the Midwest***

Ging Cee Ng

Under the direction of Dr. Steven Gold, Sociology

12:15 PM - 3:30 PM, Tower

Past research on Asian Americans in areas of large population concentration stresses the ethnic community as a source of support that eases the social/cultural adaptation of both parents and their 1.5 and second generation children. Yet, few studies have addressed the Asian American experience in regions of the country that lack a critical mass of Asians. In such locations, the co-ethnic community is geographically dispersed and networks are primarily maintained through social institutions such as churches or culture schools that act to mobilize and unify the isolated Asian population. In contrast to their counterparts living in explicit ethnic enclaves, Asian Americans in majority-white areas more often confront racialization. Consequently, they find themselves acting as the 'representative minority' to majority white peers and struggle to create a personal identity in the face of orientalizing stereotypes like the model minority myth. This study uses a survey and in-depth interviews to learn about the childhood, adolescence and adulthood of Asian American youth in Midwestern locations. It seeks to determine what effects, if any, the absence of an explicit Asian community has on the identity and educational attainment

of Asian Americans growing up in majority-white populations. In addition, the study explores the effects, if any, of affirmative action policies on the educational attainment and achievement of Asian Americans.

86 ***Raskolnikov's Inherent Personality in Dostoevsky's Crime and Punishment***
Alex Davis
Under the direction of Dr. Sherman Garnett, James Madison College
12:15 PM - 3:15 PM, Green

Throughout Dostoevsky's Crime and Punishment, we are presented with a compelling picture of a man with dual personalities and conflicting actions. Raskolnikov, the main character of the novel, commits a murder and is ridden with guilt for the rest of the story. I will argue that this murder was not Raskolnikov's true person showing through his actions, but rather an attempt to break free from poverty and merely a projection of a Napoleonic type complex that he thinks will help him achieve this goal. Raskolnikov's true self is the empathetic humanist that Dosoevsky shows us at other points in the novel.

87 ***Regional Destabilization and Post-Apartheid Reconciliation in Southern Africa***
Kathleen Watson
Under the direction of Dr. Charles Ostrom, Political Science; Peter Alegi, History
10:00 AM - 11:45 AM, Lake Huron

The apartheid government sought to maintain regional dominance in the 1980s by destabilizing newly independent neighboring countries. The destabilization campaign, brainchild of P.W. Botha and the State Security Council, embodied three major components meant to propagate apartheid ideals and dissolve attempts at regional stability. This study focuses on military destabilization. Through dissident groups such as RENAMO in Mozambique, and UNITA in Angola, as well as through direct attacks, the destruction caused by the South African Defense Force (SADF) in the name of apartheid significantly altered regional relations and the distribution of regional power throughout the 1980s and into the 1990s. Despite geopolitical limitations, the inclusion of Angola, Mozambique, and Namibia in the process of achieving truth through reconciliation is necessary given the purposeful destruction caused by destabilization. Using the South African Truth and Reconciliation Commission (TRC) as a model of Restorative Justice, this study proposes the commission of a body of Transnational Restorative Justice in southern Africa to facilitate transnational restorative justice and reconcile regional stability. The structure and jurisdiction of the hypothetical organ of regional restorative justice will be based on a modified structure of the South African TRC and will incorporate aspects of retributive organs of justice such as the International Criminal Court and the International Court of Justice.

89 ***Rhetoric, Technology and the American President: Adaptation to Radio, Television, and the Internet***
Luke Capizzo
Under the direction of Dr. M. Richard Zinman, James Madison College
10:00 AM - 11:30 AM, Tower

When Franklin Delano Roosevelt ascended to the presidency in 1933, he needed a tool for pulling the nation out of the largest economic crisis in its history. When John F. Kennedy won a narrow election over Richard Nixon, he had to find a way to communicate his positive vision to a worried nation. When Howard Dean began his unlikely presidential campaign, he needed to build name recognition, a web of donors, and a coalition of political support. These politicians each found emerging technologies to accomplish their goals—in the process, they redefined normal political discourse. Yet, what are the ramifications of their success? How did their achievements change the playing field for the rest of our leaders? Does technological change have a positive or negative impact on our Democracy? Drawing on the work of Jeffrey Tulis, Paul Starr, and James Ceaser as well as primary sources including Roosevelt’s Fireside Chats and Kennedy’s press conferences, this research aims at a way to understand the evolution of communications technology in the American political context.

91 ***Serious Game on Training Proper Hygiene Practices in Child Care Centers***
Aaron Berton, Jason Conley, Joe Fitzgerald, Addam Pushman, David Sahlin, Tom Stark, Eric Vogel
Under the direction of Dr. Brian Magerko, Telecommunication, Information Studies and Media
12:15 PM - 2:30 PM, Gold A

The Michigan State University's National Food Safety and Toxicology center has undergone continuous research involving hygiene practices and the spread of disease at child care centers. Our goal is to educate care center employees through an interactive medium, different from the traditional oral or video training. Serious Games such as this are attracting more and more attention with the more interactive way of learning. Our goal is to provide a more efficient and entertaining way of teaching employees about hygiene and disease prevention. Our game allows the player to step into the shoes of a daycare worker and experience a full day on the job. During the course of the day the player is taught how to manage and maintain a safe and healthy workplace. This is accomplished through interactions between the player, environment, and children in the simulation. Throughout the game the player is given positive and negative feedback depending on how healthy the children are in the daycare. In addition several sub-games further instruct the player on how to practice proper hygiene and safety measures. These mini-games provide a more focused method of learning. Once the player completes the game they are presented with an overall assessment report to be presented to a supervisor.

92 ***Slaughter of an Innocent: The Pawnbroker's Sister in Crime and Punishment***
Tanya Rodriguez
Under the direction of Dr. Sherman Garnett, James Madison College
12:15 PM - 3:15 PM, Green

Fyodor Dostoyevsky's novel Crime and Punishment raises several questions about the ethics of murder as well as other criminal activities. Are certain people allowed to commit murder with impunity? Would their conscience permit them to feel no guilt in such an act? Can the commitment of a murder intended to further serve humanity not be a crime? Is crime merely a subjective concept? This presentation explores the role of the pawnbroker's sister in the novel and how she complicates Raskolnikov's motivations and justifications for murder.

93 ***Spartan Security: The MSU Police Group in South Vietnam 1955-1961***
Adam Wagner
Under the direction of Dr. Rod Phillips, James Madison College
10:00 AM - 11:45 AM, Lake Huron

In the late 1950s, Michigan State university embarked on an adventure in foreign technical assistance that no university has rivaled before or since. Michigan State pumped millions of dollars and dozens of advisors into South Vietnam to run the MSU Vietnam advisory group. The most unique and important aspect of the program was the MSUG Police Division, which trained and equipped Vietnamese security forces-this program marked the only time that an American university trained the police forces of a foreign nation. The MSUG Police program, shrouded in obscurity and largely forgotten, was a one of a kind even in American foreign policy and the history of Michigan State University.

94 ***Sprouty-2 Sustains Expression of the EGFR MAP Kinase Pathway Which is Required for Cancer Formation by Human Fibroblasts***

Bryan Mets

Under the direction of Dr. J. Justin McCormick, Osteopathic Medicine Research and Advanced Study Programs

3:00 PM - 4:15 PM, Gold A

Sprouty-2 (Spry2) has emerged as a signal specific regulator of receptor tyrosine kinase (RTK) signaling. Spry2 expression has been shown to have an antagonistic function in FGF, PDGF and VEGF signaling. In human fibroblasts, however, Spry2 has an agonistic role in EGF-induced signaling. In human fibroblastic cells malignantly transformed by expression of the HRas oncogene, levels of Spry2 were increased 30 fold compared to parental cells. Down-regulation of Spry2 resulted in a complete loss of tumorigenicity by these cells. A similar effect was found in patient derived tumor cell lines. When Spry2 was over expressed in normal human fibroblast lines by transfection of a spry2 gene encoding plasmid. These cells do not form tumors in athymic mouse models. After UV stimulation, clones expressing high levels of Spry2 (MSU-1.1 S41 and S62) showed reduced levels of apoptosis compared to cells transfected with an empty vector (MSU-1.1 VCA6) indicating that Spry2 plays pre-oncogenic role in the malignant transformation of these cells. EGF stimulation and UV stimulation assays were performed on these cells and the changes in expression of MAP kinase proteins compared to parental cells by Western blotting showed that Spry2 sustains the activity of the MAP kinase pathway. These results indicate that the antagonistic role of Spry2 in human fibroblasts is not Ras dependent. It suggests that additional oncogenic mutations must occur before the cells become malignant.

95 ***Stigmatization of Eating Disorders: A Controlled Study of the Effects of the Television Show Starved***

Shawn Katterman

Under the direction of Dr. Kely Klump, Psychology

12:15 PM - 3:30 PM, Tower

When the sitcom Starved premiered, it was feared to cause increased stigma of eating disorders (EDs) due to the graphic way ED sufferers were portrayed. The current study examined the effects of Starved on stigma and normalization (NORM) of EDs. Eighty-nine college females were randomly assigned to the experimental group (EXP) (n = 48) who watched Starved, or the control group (CON) (n = 41) who watched The Comeback. Before and after viewing the sitcoms, subjects completed the Eating Disordered Persons Trait Survey to assess positive (POS) and negative stereotypes (NEG) of people with EDs, and a revised version of the Perceived Prevalence of Eating Disorder Symptoms Scale to measure NORM of ED pathology. Repeated measures ANOVA revealed no significant effects of viewing Starved on stigma or NORM of EDs. In post-hoc analyses, subjects in the EXP with low levels of POS at pre-test showed increases in POS at post-test. In addition, subjects in the EXP who rated EDs as relatively rare at pre-test showed increases in prevalence ratings at post-test. Starved did not have the expected effects on stigma and NORM of EDs and instead showed an opposite effect (i.e., increased POS and increased perceived prevalence). Results suggest that short-term exposure to negative media portrayals of ED sufferers does not result in anticipated negative effects. Future research should examine the effects of repeated exposure to determine if sustained viewing increases stigma.

96 ***Subsidiarity: Religion in the Public Square***

Kimberly Beaubien

Under the direction of Dr. Ross Emmett, James Madison College

9:45 AM - 11:45 AM, Lake Superior

Max Weber’s Protestant work ethic and the individualism of American sectarianism both are often identified closely with the tradition of American political thought. But how does Catholic thought relate to the American political tradition? One of the principles of Catholic social thought is the principle of

subsidiarity: functions that can be served by a lower community should not be interfered with by a higher one. This principle is actually quite compatible with American political thought as reflected by Tocqueville, Madison, and others. However, subsidiarity is threatened by current movements in America that seek to increase separation of church and state and take private religious actors out of the public square altogether. The application of the principle of subsidiarity to the role of religion in society is explored in this thesis by reference to a court case dealing with religious organizations in prison rehabilitative services. Subsidiarity has important implications for this and all such cases; implications that Tocqueville, Madison, and others might agree with as well.

97 ***The Cytochrome P450 Inhibitor Ketoconazole Potentiates Serotonin-induced Contraction in Rat Aorta: Who is the Culprit?***

Kevin Ogden
Under the direction of Dr. Stephanie Watts, Pharmacology and Toxicology
12:15 PM - 2:45 PM, Lake Huron

Serotonin (5-HT) causes vasoconstriction in arteries through its effects on 5-HT_2 receptors. 5-HT is primarily metabolized by monoamine oxidase A into 5-hydroxyindole acetic acid. However, recent evidence suggests 5-HT can also be metabolized by cytochrome P450, producing hydroxylamine, which is converted to nitric oxide (NO) in the presence of catalase. NO quickly scavenges superoxide (O2-). We hypothesized that inhibition of cytochrome P450 by ketoconazole (KTZ) would decrease production of NO, increase O2- and thus potentiate 5-HT-induced contraction. In isolated tissue bath experiments using endothelium-intact rat aorta, KTZ (1 - 50 μM) caused a concentration-dependent leftward shift in the 5-HT concentration response curve. Removal of endothelium did not alter the effects of KTZ (10 μM; -log EC50 KTZ + endothelium = 6.77±0.01, KTZ – endothelium = 6.70±0.01). KTZ (50 μM) did not potentiate contraction to phenylephrine (1 nM – 10 μM) or KCl (10 – 100 mM). Acetylcholine-induced relaxation was not significantly inhibited by KTZ (50 μM; -log EC50 control = 6.87±0.02, KTZ 6.73±0.03). The catalase inhibitor 3-aminotriazole (3-AT; 50 mM) inhibited the maximal 5-HT-induced contraction (79.6±0.5% control), but did not significantly potentiate arterial contraction to 5-HT (-log EC50 control = 5.63±0.01, 3-AT = 5.53±0.01). Thus, KTZ potentiated 5-HT-induced contraction in rat aorta in a concentration-dependent manner but this effect was independent of endothelium and NO.

98 ***The Effect of Various Redistricting Methods on Voter Turnout***

Frank Orlando
Under the direction of Dr. Charles Ostrom, Political Science
9:45 AM - 11:45 AM, Gold B

There are many people who complain that the redistricting process hurts democracy. Some say it increases incumbency advantage, decreases turnout and makes a mockery of the one man one vote system in the United States. But once our system of first past the post single member districts is in place, we have to deal with who gets to draw the districts and how those districts are drawn. Starting with Massachusetts Governor Elbridge Gerry, politicians have grappled with how to draw lines that benefit themselves and their party. Many states have decided that their congressional districts would be drawn by commissions. Other states' congressional districts are drawn by the courts or justice department. However, states which use a legislative based system are still in the majority. The research question asks which systems of redistricting lead to higher voter turnout. have significantly higher turnout? The hypothesis would be that states which have non legislative systems would have higher turnout. To test this hypothesis, we can first divide up congressional districts by how they were drawn. Once this is accomplished, and after utilizing several control variables, we can use multivariate regression to answer the research question. Research is still underway, and no definitive answer can be made yet.

99 ***The Effects of Felon Disenfranchisement Laws on American Politics: An Analysis of Race and Age Discrimination***

Aaron King
Under the direction of Dr. Charles Ostrom, Political Science
9:45 AM - 11:45 AM, Gold B

Voting is an essential part of a strong democracy, yet the United States government has not always granted this fundamental right to all citizens. To a political novice, despite a history of discrimination, America has finally achieved equality in suffrage. However, five million "Americans" are denied the right to vote because they have been convicted of a felony. Of this sum, just over one quarter are actually incarcerated in prison or jail, slightly over a third are parolees or probationers and nearly 40%, or two million people, have already completed their sentence and are classified as ex-felons. While this group of people represents less than two percent of the electorate, this sum could have significant ramifications on electoral politics throughout all levels of government. Individual states have the right to decide on the presence and severity of felon disenfranchisement legislation. This paper will examine the effects of barring past and present felons from voting by testing for inequality based on age and race. Furthermore, it will test for a relationship between the severity in legislation and age and race discrimination. After incarceration, felons are expected to by fully rehabilitated and return to society as productive citizens, yet many are not given the fundamental right that defines that concept. This paper will make strides to better understand the effect that such legislation has on Americans, especially younger citizens and those of color.

100 ***The Effects of Feminist Beliefs on the Internalization of Media Images and Body Dissatisfaction***

Hannah Nuckols
Under the direction of Dr. Kelly Klump, Psychology
12:15 PM - 3:45 PM, Tower

Previous research suggests that women who identify with feminist ideology are less likely to feel dissatisfied with their bodies or internalize the thin ideal. However, findings have been mixed and limited to correlational studies. This project extends previous research by examining associations between thin ideal internalization, body dissatisfaction, and feminist beliefs using an experimental design. Method: Female undergraduate students (N = 117) reported their levels of feminist ideology, body dissatisfaction, and thin-ideal internalization using self-report questionnaires. Three weeks later, subjects viewed 40 photographs of thin models and immediately thereafter reported on their levels of body dissatisfaction and internalization. Results: Feminist gender role ideologies were significantly and negatively associated with post-test levels of body dissatisfaction and thin-ideal internalization. Despite these significant associations, feminism was not a significant moderator of relationships between internalization and body dissatisfaction. Discussion: Women who refuse to accept prescribed gender roles are less likely to experience body dissatisfaction and internalize the thin ideal. Nonetheless, associations between internalization and body dissatisfaction are not influenced by levels of feminism. These findings suggest a need to explore other moderators and mediators of associations between internalization and disordered eating.

101 ***The Effects of Induced Rumination on Working Memory Performance in Dysphoric Individuals***

James Sorenson
Under the direction of Dr. Christine Larson, Psychology
12:15 PM - 3:45 PM, Tower

Rumination, a coping style marked by persistent, negative, self-directed thoughts is a coping style strongly linked to depression. Previous research has indicated an interaction between the construct of rumination and performance on cognitive tasks. However, little research has focused directly on the relationship between rumination and working memory. In order to learn more about the interaction

between rumination and working memory and about rumination itself, the current study examines the effects of induced rumination on a task testing both spatial and verbal working memory in subjects pre-screened for dysphoria. It is expected that those subjects who both tend towards dysphoria and are induced to ruminate will perform markedly worse on measures of working memory.

102 ***The Effects of Mating Systems on Genetic Diversity in Populations of the Blanding's Turtle (Emydoidea blandingii): A Species of Regional Conservation Concern***

Rachel Komosinski
Under the direction of Dr. Kim Scribner, Fisheries and Wildlife
12:15 PM - 2:45 PM, Lake Superior

Population viability for turtles is a growing concern, particularly for small populations inhabiting fragmented landscapes altered by human activities. Probability of population persistence is tied to future adaptive potential, as determined by population levels of genetic diversity. Understanding the species' mating system can be extremely informative to predict how genetic variation will be retained over time. Genetic diversity can be lost due to skew in reproductive success among adults. Our objective was to document the importance of skew in reproductive success of males and females to levels of genetic diversity in offspring. Our study was conducted on the E. S. George Reserve, in Livingston County, MI, using a well-studied population of Blanding's turtles (Emydoidea blandingii), a species of conservation concern in Michigan. We sampled adults from 1997 through 2006 and offspring from clutches from known mothers (1997-2000). We used six polymorphic microsatellite loci, to quantify levels of heterozygosity in the adult population and in offspring. Paternity of offspring was determined from multilocus genotypes using likelihood ratio tests. Identification of males allowed tests of additional hypotheses relating importance of male age and phenotype to reproductive success. Effects of the mating system on genetic diversity will be discussed. Results from this study have important implications for investigating other fragmented populations of freshwater turtles.

103 ***The Error of Political Manifestos in Dostoevsky's Crime and Punishment***

Felix Popescu
Under the direction of Dr. Sherman Garnett, James Madison College
12:15 PM - 3:15 PM, Green

Dostoevsky's Crime and Punishment is regarded by many as a critique of Russian ideological manifestos of the solely rationalistic political theories of the late 19th century. His novel focuses on this line of philosophies, and how they begin to take shape in the mind of a young idealist through the protagonist, Raskolnikov. Although this is the case, the argument he poses still has meaning for us in the 21st century: political manifestos taken to the extremes arrive at odds with the simple doctrines that human nature coexists by. Through my paper I will discuss how rationalistic solutions to society's problems are doomed to fail if they neglect to understand the spiritual and emotional needs of society.

104 ***The History of Arab Americans in Metro Detroit***

Andrew Sobotka
Under the direction of Dr. Geri Alumit Zeldes, Journalism
12:15 PM - 2:30 PM, Gold A

This is a portion of a feature length documentary which will cover the history of Arab Americans in Metro Detroit. Topics will include the forces that attracted immigrants from the Middle East to Detroit, local political, economic and cultural contributions. This portion will be 15-20 minutes in length and will include an interview with Ismael Ahmed, the curator of the Arab American Museum in Dearborn.

105 ***The Impact of Overloading on Pavement Life: A Focus on the Influence of Truck Weight Regulation Efforts in the Philippines***

Paul John Ross Narciso
Under the direction of Dr. Syed Waqar Haide, Civil and Environmental Engineering
9:45 AM - 11:45 AM, Green

The study examines the axle loads of trucks from three different Philippine highways with the purpose of finding out whether the level of effort of enforcement of the anti-overloading law affects vehicle loadings, and analyzes their effects on the shortening of a pavement's useful life and the corresponding increase in rehabilitation cost. Truck weights were gathered and the Equivalent Single Axle Loads (ESALs) of vehicles in each road were computed by the fourth power rule. Then, the reduction in pavement's useful life was obtained by applying the AASHTO equation for flexible pavement design while the present worth method was employed in analyzing the increase in the cost of rehabilitation. The results reveal that the heaviest loads were obtained from the road with the most stringent enforcement of the anti-overloading law while lighter loads were nevertheless measured in areas where there is relatively more laxity in enforcement. Furthermore, the observed gravity of overloading will cause a substantial decrease in a typical pavement's useful life increasing the cost of rehabilitation by as much as 30%. It is therefore concluded that the intensity in enforcing the anti-overloading law in the Philippines does not automatically cause a decrease in axle loads. Moreover, overloading, on a certain extent, will warrant pavement rehabilitation ahead of schedule that significantly affects the cost of maintenance.

106 ***The Impacts of Michigan's NCLB English Language Proficiency Testing on ESL Teachers and Students***

Ashley Romanowski
Under the direction of Dr. Paula Winke, Linguistics and Germanic, Slavic, Asian and African Languages
12:15 PM - 3:15 PM, Green

This qualitative study investigates current No Child Left Behind testing and how it effects English Language Learners in local public elementary schools. Michigan's Department of Education will administer the English Language Proficiency Assessment (ELPA) this spring for the second time. There are two phases to this research project. After being trained by the Lansing Public School District on the administration of the ELPA, the researcher will administer the ELPA in two different school districts (East Lansing and Lansing) alongside the students' current English as a Second Language (ESL) teachers. Second, the researcher will work with a team to create a questionnaire to be distributed through the Michigan Teachers of English as a Second Language (MITESOL) listserv, which will query the teachers on their beliefs about this year's administration of the ELPA and how it impacted their classrooms and the students in them. The survey will use both Likert-scale and open-ended question formats to elicit data about the teachers' beliefs and about the perceived reliability and validity of the test. Discussed during this "work-in-progress" presentation will be background information on the ELPA used in Michigan as part of NCLB testing, information on how the test is administered, and a draft of the questionnaire to be sent to Michigan ESL teachers after the ELPA test administration window closes at the end of April, 2007.

107 ***The Influence of Vocal Characteristics on Securing Compliance in Telephone Interviewing***

Marissa Baca, Heather Bick, Hiu-Lam Lau
Under the direction of Dr. Larry Hembroff, Institute for Public Policy and Social Research; Dr. Nathaniel Ehrlich, Institute for Public Policy and Social Research
12:15 PM - 3:45 PM, Tower

In survey research, a large portion of data is collected through telephone interviews. Productivity is defined as the number of successful interviews completed per hour. We examined various interviewers' vocal characteristics. We rated each characteristic on a numerical scale, and also observed the

demographics of each interviewer. We found that vocal characteristics, when taken singly and in combination, are related to productivity. In addition, we found that there was a positive correlation between the voice quality in demographic groups and the over- and under-representation, relative to the Census, of those groups in the respondent population.

108 ***The Limits of Freedom***

Brett Staron
Under the direction of Dr. Ross Emmett, James Madison College
9:45 AM - 11:45 AM, Lake Superior

We all realize at some point in life that our freedom is limited by the society to which we are born. Economists Amartya Sen and Frank H. Knight explain that the exercise of absolute freedom of action has effectively been "traded" for the ability to exercise societal freedom. This more practical definition of freedom manifests itself as the capability to fulfill needs and desires within an implicitly agreed-upon set of rules: in this case, within economic liberalism. The problem arises for both economists when it comes to the tendency of the liberal system to delimit individual freedom by solidifying existing trends of economic and social inequality. While both authors argue that the key to solving the existing unfreedoms created by liberalism rest upon voluntary discussion between individuals, the goal of this discussion is hotly contested. In Development as Freedom, the solution for Sen is the universal expansion of freedoms to individuals (both the freedom "from" and "to" certain things) in order to promote better lives. However, in a collection of essays entitled Freedom and Reform, Knight argues that freedom by discussion is absolutely subservient to freedom of discussion. In fact, a consensus to eliminate certain freedoms may be an essential and positive movement towards making life better for future generations. Sen's argument, augmented by Knight's, inevitably becomes a moral one: individuals are forced to ethically "rank" and agree upon which freedoms and unfreedoms are most important for themselves. The synthesis between the two authors' arguments reveals that economic liberalism – in its current state – is simply "not enough" to elevate the human condition.

109 ***The Poetry of Horace and the Economy of the Roman Principate***

John Breen
Under the direction of Dr. John Rauk, French, Classics, and Italian
12:15 PM - 3:15 PM, Green

The Roman poet Horace is an important figure not only in the literary realm, but also in the social and political life of Rome in the first century B.C. His works, especially his satires, can be viewed as commentaries on the aristocracy, the common people, and the merchant classes in their roles as social and economic actors. This project attempts to contextualize Horace's works from this perspective, with special attention to values, politics, and economic forces that prevailed during the early Principate. This study accordingly will attempt to ascertain the economic realities of the time and to determine the formative influence of Horace's satires in the potentially competing arenas of Augustan economic policy and philosophical individualism.

110 ***The Young Blasian Experience: Socio-Political Investments and Motivations in the 21st Century***

Nayantara Sen
Under the direction of Dr. Lynn Makau, English
12:15 PM - 3:15 PM, Green

Why do young Asian Americans today engage in an active co-option of African American cultural signifiers? In particular, why is there so much evidence, in terms of music, dance, language, style, fashion and lifestyle, that points to the hybridization of black and Asian culture in a postmodern setting, on American terrain? This paper posits that Asian-American youth choose to ape blackness not just because they are partaking in white America's fetishism of black culture, but because they also have

underlying political investments in such a co-option or mimicry. It attempts to explore in depth the cultural and political investments of Asian-American youth with respect to black America. It concerns itself with the young 'blasian' experience.

111 ***Transitions: African Influence of 17th and 18th Century Curacao***

Blair Starnes
Under the direction of Dr. Gloria Smith, Counseling, Educational Psychology and Special Education; Harry Nii Koney Odamtten, Doctoral Student, African American Studies
10:00 AM - 11:45 AM, Lake Huron

My research examines cultural contributions of people of African descent in the Dutch Caribbean colony of Curacao between 1650 and 1750. This era is significant because these initial populations of people produced the first large-scale rebellion on the island. In particular, I explore colonial or colonial-based texts that discuss languages and religions of African descendants in order to understand their cultural expressions. I wish to explore materials that contain reports, descriptions, and accounts of linguistic patterns and religious behaviors of African descendants. The information found in these resources will inform the African influences that helped the enslaved persons creatively adapt to conditions of their bondage in Curacao, from which they produced new cultural realities e.g. Papiamento language. This exploratory research sheds light on African descendants in eighteenth century Curacao and their intentional actions for collective self-representation.

112 ***TRIM22: A New Player in the Feline Host-Pathogen "Arms Race?"***

Zachary Zalewski
Under the direction of Dr. Patrick Venta, Microbiology and Molecular Genetics
3:00 PM - 4:15 PM, Gold A

Proteins belonging to the TRIM (tripartite motif) multigene family have recently been shown to be important factors in resistance to retroviruses. Specifically, TRIM5α (one of a cluster of four human TRIM genes) has been identified as a key player in the host-pathogen "arms race" between humans and HIV. A related virus called FIV is an important pathogen of cats. Homologous cat TRIM genes play a role in retroviral resistance similar to their human counterparts. Our lab previously assembled a draft version of a cat TRIM gene with strong similarity to the human TRIM5α. Surprisingly, this gene has become inactivated in the cat population by fixation of a premature stop codon. In order to verify the draft assembly of this gene I assembled the gene structures of the four genes in the cat cluster from two BAC clone sequences from GenBank. Due to the rapid evolution of these genes, it was necessary to do much of this assembly by hand. Phylogenetic analysis of the inferred protein sequences for these genes supported the hypothesis that the knocked-out cat gene was the closest homolog to human TRM5α, but the true human ortholog is probably TRIM22, another anti-retroviral gene in the cluster. Using the new assembly of cat TRIM22, it will now be possible to "reactivate" this gene by genetic engineering, and test that the intact protein has anti-FIV activity in vitro. This system may serve as a model for understanding host-pathogen interactions, for the benefit of both cats and humans.

113 ***Underlying Effects of Authority: Past To Present***

Jennifer Patros
Under the direction of Dr. Teresa Barry, Writing, Rhetoric and American Culture
9:45 AM - 11:45 AM, Lake Superior

Social psychologists have been studying for years why people follow orders from authority that may be considered unethical. Studies such as Dr. Philip Zimbardo's Stanford Prison Study and Dr. Stanley Milgram's "Shock" Experiment showed that people will go to such extremes in order to please authority. These experiments are now considered unethical, and they are not to be replicated. However, reality

shows such as Survivor, the actions of doctors, and the recent scandal at Abu Ghraib seem to replicate these experiments to a certain extent.

114 ***UnLockeing Liberalism: A New Morality of Individual Rights***

Kyle Steele
Under the direction of Dr. Ross Emmett, James Madison College
9:45 AM - 11:45 AM, Lake Superior

In order to revive the moral strength of individual rights in the secular present we must fully understand how Locke, the progenitor of individual rights, used God to promote his individualistic politics. John Locke's political philosophy is best known for the modern notion of individual rights. His entire political philosophy can be described as individual focused. What are the individual's needs in society? How do individuals interact politically? How does government serve the ends of the individual? However, the morality of his time was predominantly altruistic with the moral focus being on the king, the state, the poor, or God. Indeed, Locke's individual rights are not defended morally on the basis of the individual, but by reference to God. According to Locke, God's will is both hard to know yet controls our life. God has left no superior on earth to command us yet has left us a clear command to "preserve" life. God has given us reason yet the basic premise of morality is a dogmatic command from Him. By understanding the complications of using God as the foundation of an individual focused politics and why Locke chose to take this approach, the task of the modern defender of individual rights becomes clearer. Locke used God to affirm the moral primacy of individual human life. This is the moral premise that must be defended in order for individual rights to endure and it is the premise that modern defenders of individual rights must secure.

115 ***Youth Sense of Place and Environmental Stewardship***

Kristen Pratt
Under the direction of Dr. Shari Dann, Community, Agriculture, Recreation and Resource Studies
12:15 PM - 2:45 PM, Lake Superior

This project is focused on understanding how Michigan youth develop a sense of attachment to their natural surroundings (a "sense of place"), and grow to be informed, active citizens who care about land use and the environment. We are using an action research model to foster youth engagement in program design and to observe how and why they want to learn about the outdoors. We have completed ten open-ended, semi-structured interviews exploring these youths' preferred outdoor activities, learning needs, and attitudes towards nature and their role in conservation. The analysis from these interviews will inform the development of a curriculum framework for the Michigan 4-H Naturalist Program. The findings from these interviews have suggested a relationship between positive youth experiences in the outdoors and both personal interaction and psychological "ownership." The interviews also revealed some age-based perceptions of "caring for the environment." By considering youths' passions and previous positive learning experiences regarding the environment, curriculum developers are creating an active voice for youth to design their own learning, thus making it more likely that outreach programs will positively impact youth attitudes toward the environment. This research is one step in the direction of recognizing youths' passions, positive experiences, and engagement in environmental stewardship.

116 ***Effects of Nutrients on the Genetic Structure of M. Aeruginosa***

RajReni Kaul
Under the direction of Dr. Orlando Sarnelle, Fisheries and Wildlife
12:15 PM - 2:45 PM, Lake Superior

Microcystis aeruginosa is a public health hazard in freshwaters due to production of the hepatotoxin, microcystin. Variation in water toxicity has been related to nutrient concentration in the environment; this relationship is not yet fully understood. To advance our understanding of the factors driving the

relationship between nutrients and toxin concentrations, we focused on two cellular mechanisms in the context of a field manipulation of nutrients. Replicate enclosures, in Gull Lake, were treated with varying concentrations of nitrogen and phosphorous. Samples for genetic analysis of the toxin gene cluster, mcy, were taken bi-weekly. The mcy gene cluster encodes for six multienzymes that synthesize microcystin. These multienzymes use amino acids to form the cyclic peptide toxin nonribosomally. We hope to understand the impact of gene copy number on toxin concentrations by measuring the mcyB copy number and toxin concentration under varying environmental nutrient conditions. Results from Q-PCR will be presented.

117 ***Freud and Crime and Punishment***

Abigail Brengle
Under the direction of Dr. Sherman Garnett, James Madison College
12:15 PM - 3:15 PM, Green

In Dostoevsky's masterpiece Crime and Punishment, he crafts his characters deeply and organically, rich in moments of personal thought which poignantly offer a glimpse into the human psyche. He writes the human mind so honestly that the theories of Sigmund Freud can be applied to the psychology of the novel to help explain the development of the characters. Freud's theories have been accepted as among the most influential in the development of psychology and the study of human behavior and have been used as well in the analysis of literature. My research analyzes Freud's most renowned theories in relation to their relevance in Dostoevsky's Crime and Punishment.

118 ***The Children of the Sun: A Comparative Study of Race as Seen by the Children of Afro-Caribbean Immigrants and Indigenous Blacks***

Chinell McCarthy
Under the direction of Dr. Gloria Smith, Counseling, Educational Psychology, and Special Education
9:45 AM - 11:45 AM, Lake Superior

Afro-Caribbeans and indigenous blacks (blacks who can trace their ancestry in the United States back at least 2 generations) come very different racial traditions. Afro-Caribbeans very often grow up in societies where privileges may be conferred based on the shade of one's skin tone or one's economic status. Many also grow up in predominantly mixed or black societies. They also come from countries that lack the racially dichotomous and tumultuous history that pervades the history of the United States. As a result, the children of Afro-Caribbeans and indigenous blacks may interpret and respond to racially motivated situations differently. Statistics about education, incarceration, and other measures of racial success are different for the children of Afro-Caribbean immigrants in that they tend to show more success for these children than children of indigenous blacks. However, I would expect that subsequent generations would more closely resemble their American counterparts. I intend to look at data and studies about Afro-Caribbean immigrant children and their parents to see just how much difference exists, what the reasons for those differences are, and just how the immigrant's children reconcile what they may be getting from home and their environment and peers about race and what it means in America.

119 ***The Shape of Threat: Simple Geometric Forms Evoke Rapid and Sustained Capture of Attention***

Jeffrey Stearns
Under the direction of Dr. Christine Larson, Psychology
12:15 PM - 3:45 PM, Tower

Previous research has sought to identify the basic features that convey threat or happiness in facial expressions. A series of studies found that "V-shaped" images (similar to the angles found in eyebrows, cheeks, chins, and jaws of angry expressions) and rounded images (similar to curves seen in the eyes and mouths of happy expressions) conveyed angry and happy meanings, respectively. Following up on these findings, it was important to discover whether the simplest visual configuration of threat, a downward-

pointing V outside of a facial context, would capture attention more readily than neutral or happy comparison figures. Taken together with other studies, which show that a downward-pointing V is subjectively rated as more threatening, our current data suggest that minimal, non-representational stimulus detail can in fact convey the essence of threat.

121 ***The Re-Enactor***

Jeffrey Allen, Mike James, Mike Kelly
Under the direction of Dr. Robert Albers, Telecommunication, Information Studies, and Media
12:15 PM - 2:30 PM, Gold A

The video focuses on the lifestyle changes and time commitment required to be a re-enactor. Step into the world of re-enacting, the art of recreating history. Featuring an interview with the Commander of the British Forces during the French and Indian War re-enactments. Experience the thrill of shooting a musket during battle, see how to march in rank!

122 ***Widget: The Making of an Independent Film***

Jeffrey Allen, Mike James, Mike Kelly
Under the direction of Dr. Robert Albers, Telecommunication, Information Studies and Media
12:15 PM - 2:30 PM, Gold A

Any film is a magic trick and this is no different. The gamble of making the first film class at MSU, a collaboration between the English and Telecommunications departments, is brought to life by this vivid and captivating documentary. Experience the entire process, from script writing to shooting, and witness the drama, excitement, and frenzy of making an independent film!

300 ***A Deeper Look at Sonya***

Jena Donlin
Under the direction of Dr. Sherman Garnett, James Madison College
9:30 AM - 11:30 AM, Ballroom

In the last half decade, the emergence of "feminist" thought has spawned an interest in the role of women in literature. Feminist have challenged the view that men "embody the transcendent human norm," which they viewed as unjust to women. However, upon closer consideration, looking at "gender" as the basic problem and an important category in cultural and historical analysis, feminists "have recast the issue of women's relative identity as equally an issue for men, who, upon ceasing to be mankind, become, precisely, men." So gender is implicit in any work, by its presence or by its lack thereof. Thus the writing that has been done specifically or with an emphasis on the women characters, most specifically Sonya, from Fyodor Dostoevsky's Crime and Punishment is somewhat limited to the last fifty years.

301 ***A Focus on the Native American and African American Religious Belief System***

Sarah Losinski
Under the direction of Dr. Suzanne Cross, Social Work
2:00 PM - 4:00 PM, Ballroom

The Impact of Religion and Spirituality on the Lives of American Indian and African American Women Ages 55-70 Years Old Religion, morals, and beliefs are essential to the human race. They have sprouted out of every facet of human life, every crevice of our planet, every cycle of time. Some followings have been related; some have been created totally independent of one another. No matter, they all have two main components in common: all have a higher being that is worshiped and respected, and all are designed to increase the goodness and quality of humanity. The concept of having a higher power is essentially the same in every religion; only the practice and specific customs differ in each denomination of worship. For the purpose of our specific research, concentration will be put on the depths of common

Native American and African American religions. Traditions, culture, beliefs, holidays, and other subjects of relevance will be focused on and examined.

302 ***A Guerrilla Girl Analysis of Midwestern Art Museums***

Martha Garces
Under the direction of Dr. Anna Pegler Gordon, James Madison College
9:30 AM - 11:30 AM, Ballroom

Rising out of the growing frustration with the underrepresentation of women and minorities in New York City's art world in the 1970s, the Guerrilla Girls joined together to examine via their own brand of radical tactics combined with statistical analysis just how bad the situation was. As some of them were "members" of the art world themselves with reputations to look out for, wherever they went (and still go) they donned gorilla masks and high heels and fishnets, concealing and revealing at once. An extension of their work of the 1980s and 90s, this project takes Guerrilla Girl tactics (as they are presented in publications like the Guerrilla Girls' Art Museum Activity Book) out of the limited realm of New York City. With data from the Art Institute of Chicago and the Detroit Institute of Arts, this analysis reveals the extent of underrepresentation of women artists in the 21st century here in the Midwest. While I have no qualms about revealing my own identity, I will present like a true Guerrilla Girl concealed behind a gorilla mask.

303 ***A History of Morrill Hall and the Effects of Salt Weathering on Decay***

Alyssa Schwartz
Under the direction of Dr. Micheal Velbel, Geological Sciences
2:00 PM - 4:00 PM, Ballroom

Morrill Hall is a beautiful example of one of the older buildings (it was built in 1899, dedicated in 1900) on Michigan State University's campus. It has a long history of use as a women's dormitory, followed by use as academic offices and classrooms, and many stories to tell. One look at the building, however, shows that some of the external surfaces have not held up well. Because of a price increase in building materials whilst Morrill Hall was being constructed, a cheaper stone was substituted. In places, much of the original stone (Lake Superior Red Sandstone) has been replaced due to extensive decay; in other places, decayed stone remains in place. In an effort to understand what, exactly, has caused such severe decay of the external surfaces, we began testing the salt-weathering effects of several de-icing compounds on Lake Superior Red Sandstone. Results will be discussed.

304 ***A New Magnetic Polymer for use in the Electrochemical Biosensor for Bacillus Cereus***

Emma Hummel,
Under the direction of Dr. Evangelyn Alocilja, Biosystems and Agricultural Engineering
2:00 PM - 4:00 PM, Ballroom

In today's world the threat of bioterrorism is demanding new and faster methods for identification and elimination of harmful microbes. The biosensor is a compact device which quickly detects a pathogen and translates its presence into an electrical output. This research has combined aniline and iron (III) oxide nanoparticles to create an organic conductive polymer which displays magnetization at room temperature. This compound, Pani-Fe2O3, has been employed as the electrochemical transducer molecule in a biosensor for the detection of Bacillus cereus. The magnetic property allows Pani-Fe2O3 to be concentrated for improved transducer-antigen binding and for removal of unbound antigen, resulting in a more definitive electrical output from the biosensor.

305 ***A Role for the Mg-Chelatase Complex in Chloroplast Biogenesis in Arabidopsis Thaliana***
Andrea Stavoe
Under the direction of Dr. Rob Larkin, Plant Research Laboratory
9:30 AM - 11:30 AM, Ballroom

Proper chloroplast biogenesis is essential for the transition from heterotrophic to autotrophic growth during photomorphogenesis. The rapid changes that occur during photmorphogenesis are coordinated by both endogenous and exogenous signals. Plants grown for extended periods in far-red light are subsequently unable to develop functional chloroplasts when placed in white light. This far-red block of greening phenomenon is thought to be caused by photooxidative damage caused by protochlorophyllide, an intermediate in chlorophyll biosynthesis. The singlet oxygen that is formed by this event is then thought to lead to the arrest of chloroplast biogenesis. We found that in the Arabidopsis thaliana plastid-to-nucleus signaling mutants, gun5 and gun4 (genomes uncoupled), chloroplast biogenesis is more severely impaired than wild type by extended growth in far-red light. This phenotype is counterintuitive because the gun5 and gun4 mutants are chlorophyll biosynthetic mutants, should accumulate less protochlorophyllide than wildtype and subsequently should suffer less singlet oxygen stress than wildtype during the transition to white light. This inconsistency could be explained by a more complex model of chloroplast biogenesis when chlorophyll precursors like protoporphyrin IX and Mg-protoporphyrin IX regulate chloroplast development. Another possibility is that the phytohormone, absisic acid, regulates chloroplast biogenesis because GUN5 has recently been shown to be an ABA receptor.

306 ***Adult Use of Future Tense Markers***
Joseph Jalbert
Under the direction of Dr. Cristina Schmitt, Linguistics and Germanic, Slavic, Asian and African Languages
2:00 PM - 4:00 PM, Ballroom

Competence and performance are core concepts of Linguistics. Competence is associated to our knowledge of a language, which allows us to interpret and produce sentences we never heard before. Performance is to be associated to our use of a language. When we use language, we choose certain words because they best convey the meaning we are trying to express. For example, while "will" and "gonna" share a future tense meaning, we know they are not identical and we don't use them interchangeably in some situations. Copley (2004) argues that "gonna", besides a future meaning, takes on a progressive aspect, while "will" does not. This explains why "will" is used for simple assertions about the future, whereas "gonna" is associated to something that has already begun the process of happening. For example, while it is acceptable to write in a billboard ad "we will check your breaks in the next service station", it would be odd to say “we are going to check your breaks in the next service station". In this project we use a magnitude scaling task to test whether adult English speakers’ performance matches Copley's competence theory. Furthermore we examine whether any mismatch between competence and performance can be associated to particular linguistic variables manipulated in the experiment. The results will be the first magnitude scaling task ever done to future tense markers in English and will expand our understanding of modality, aspect and future reference in language.

307 ***Alternatively Owned Enterprise in Michigan***
Eric O'Shaughnessy
Under the direction of Dr. Rene Rosenbaum, Community, Agriculture, Recreation and Resource Studies
2:00 PM - 4:00 PM, Ballroom

Studies of alternatively owned enterprises have proven that ownership of a business in the hands of employees is beneficial to the business, to the employees, and to the community. Our study is to identify alternatively owned firms in the state, and evaluate them in terms of the various benefits they provide in

the forms of: improved labor relations, increased productivity, better employee benefits, environmental policies, community relations, etc. This study aims to bring to light the underutilized opportunity of employee ownership. Similiar studies have lead to the creation of assistance to employee owned firms leading to increased employee ownership. Our goals are to identify barriers to alternative ownership, and identify policies that will make Michigan an attractive business environment for employee ownership. In a state looking for answers to local economic problems, we need look no further than our own laborforce. In 1990, a special center in the Governor's office for job training, found that eighty-five percent of employee owned firms, that participated in the study, found their ownership decision had a positive impact on their business. We hope to revive these feelings, and further the possibilities of alternative ownership, and their benefits for our local economies.

308 ***An Exploratory Study Of Newspapers' Elder Abuse Coverage***

Jenna Brown, Kristen Daum, Brittany Greenleaf, YiQing Shao, Andrea Zagata,
Under the direction of Dr. Teresa Mastin, Advertising, Public Relations and Retailing; Stephen Lacy, Journalism
9:30 AM - 11:30 AM, Ballroom

This study provides a view of newspapers' coverage of elder abuse for the six month period of July through December 2006. The purpose of this study was to determine how the issue is being addressed in the print media. This study is important because the manner in which the media cover elder abuse affects readers' awareness, understanding, and knowledge of the issue, which could in turn influence related public policy. Variables that were examined included: form of abuse, commission or omission; types of abuse, material exploration, physical, psychological, and sexual; gender and race of the abused and the abusers; relationship between the abused and the abusers; abuse settings; and sources of attribution.

309 ***An Exploratory Study of the Effects of Sports Participation***

Katie Scott
Under the direction of Dr. Dan Gould, Youth Sports
2:00 PM - 4:00 PM, Ballroom

Much research has examined the effects of sport participation on youth in the development of psychological well-being, cognitive ability, and interpersonal skills. Further, these developmental gains can be linked to learning experiences in sport participation. The proposed study will investigate how these learning experiences and the developmental gains provided by them continue to affect participants later in life. Eight to ten former female collegiate athletes will take part in an interview concerning their participation in sport. An inductive content analysis will be utilized to examine the data.

310 ***Analysis of Fragments that Stimulate PilA GTPase Activity in Neisseria Gonorrhoeae***

Alexia Karanikas
Under the direction of Dr. Cindy Arvidson, Microbiology and Molecular Genetics
9:30 AM - 11:30 AM, Ballroom

Neisseria gonorrhoeae, the causative agent of the sexually transmitted disease gonorrhea, uses the Signal Recognition Particle (SRP) pathway to target proteins outside the cytosol to the inner membrane. PilA, the gonococci SRP receptor, has previously been shown to bind DNA fragments in a sequence specific manner, and this binding enhances the PilA GTPase activity required for its role in protein targeting. The mtrCDE operon of N. gonorrhoeae encodes three components of a multi-drug efflux pump that removes harmful hydrophobic agents from the cell. The genes of this operon encode proteins that are targeted out of the cytosol via the SRP pathway. Two specific regions within this operon have been shown to stimulate GTPase activity of PilA; 1) 5' mtrC, a 537 bp fragment from –451 to +86 with respect to the mtrC start codon, which includes the mtr promoter and associated cis-acting regulatory regions; and 2) mtrCD intergenic (IG) region, a 529 bp fragment from –402 to +127 with respect to the mtrD start codon.

Deletion derivatives of the 5' mtrC and mtrCD IG fragments were generated by PCR and tested for their ability to stimulate PilA GTP hydrolysis. The results of these experiments have more specifically defined the sequence important for PilA binding, stimulation of GTPase activity, and presumably protein targeting via the SRP pathway.

311 ***Analysis of Metal Binding to the ISL of U6 snRNA Using Electron Paramagnetic Resonance and Calorimetry***

Heather Born
Under the direction of Dr. Charles Hoogstraten, Biochemistry and Molecular Biology
9:30 AM - 11:30 AM, Ballroom

The interactions of metal ions with RNA are critical to understanding the structure and function of RNA. The Lin group has identified a metal ion site required for function in the internal stem-loop (ISL) of the spliceosomal U6 snRNA, and the structure of this region of U6 has been determined by the Butcher group. Our goal is to characterize the specificity of this metal site as a step toward spectroscopic analysis of its structure. As an initial step, we have performed Mn(II) titrations against the U6-ISL RNA using both Electron Paramagnetic Resonance (EPR) and Isothermal Titration Calorimetry (ITC). We have varied salt concentrations and pH levels in an effort to find optimal conditions for structural studies and to establish the binding curve for this site. Potentially intriguing combinations of endothermic and exothermic ion binding to RNA have been encountered. Results on the stoichiometry, specificity, and thermodynamics of Mn(II) binding to various U6-ISL constructs will be presented.

312 ***Analysis of Putative Nickel Binding Residues in Klebsiella Aerogenes UreG***

Kimberly Anderson
Under the direction of Dr. Robert Hausinger, Microbiology and Molecular Genetics; Soledad Quiroz, Biochemistry and Moelecular Biology
9:30 AM - 11:30 AM, Ballroom

Urease is a nickel-containing enzyme that plays an important role in agriculture and as a virulence factor. Enzyme activation occurs through the use of several accessory proteins, one of which is UreG. Sequence alignment between UreG and its hydrogenase-related homolog HypB, along with the recently published crystal structure of HypB, suggested residues of potential importance in coordinating Ni(II) ions. These are Cys72, Ser111, Ser115, and His74. Previous work added a biotin tag to UreG for purification purposes, and mutated the gene encoding UreGb to change His74 to Ala, Asn, and Cys. When expressed with the other urease genes, the His74 variants almost completely eliminated enzyme activity. In this study, Cys72, Ser111, and Ser115 were mutated to Ala to determine their importance in urease activation. The variants were tested for their ability to activate urease when expressed with the rest of the operon in Escherichia coli. The variants were also expressed separately for purification, and the purified proteins will be used for equilibrium dialysis to determine their ability to bind Ni(II).

313 ***Analysis of the Csn5 Subunit of the COP9 Signalosome; A Complex Required for Retinoblastoma Protein Stability in Drosophila***

Jacqueline Brosius
Under the direction of Dr. David Arnosti, Biochemistry and Molecular Biology
9:30 AM - 11:30 AM, Ballroom

In certain organisms, the COP9 complex regulates signaling pathways and protein degradation, and our laboratory has identified a role of this complex in controlling the levels of the retinoblastoma tumor suppressor protein. However, the biochemical function of this complex in Drosophila is unclear. My work consists of analyzing the function of the CSN5 gene, which encodes a subunit of the COP9 complex. To accomplish this, I PCR amplify two exons of this gene, and engineer in an epitope tag. I then modify these gene segments and return them back into the genome of Drosophila organisms in order

to study the modified protein that results, that will lead to clues about this gene's function. This protein will be used for biochemical purification of the entire COP9 complex and in-vitro studies of its action.

314 ***Analyzing the Properties of the Non-covalent Bond Networks in Proteins***

Joshua Mackaluso
Under the direction of Dr. Maria Zavodzsky, Biochemistry and Molecular Biology
9:30 AM - 11:30 AM, Ballroom

Though the concept of allostery is familiar to many scientists, the details of how allosteric changes are transmitted between remote binding sites of a protein are not explained by any of the existing models. The crystal structures of many allosteric proteins have been solved and deposited in the Protein Data Bank. This allows us to reexamine the problem and try to explain the mechanistic details of how these proteins function. Proteins are conformationally dynamic, so it is not enough to observe and draw conclusions based on one single structure. Instead, multiple x-ray structures of the same protein solved under slightly different conditions or snapshots taken from molecular dynamic simulations can be used to generate an ensemble of structures that characterizes the protein at any given time as its structure undergoes fluctuations in solution. Though the ensemble view is very useful, obtaining them is a time-consuming process. Our goal is to develop a rule-based method that will allow for the quick creation of an ensemble for any protein and study how proteins behave at the ensemble level. We will then analyze various protein behaviors such as the conformational changes that occur during allostery. To establish the rules for the ensemble generation, we examined how hydrogen bonds and hydrophobic tethers are conserved across different structures of the same protein and what are the physical properties that determine what interactions are more or less stable.

315 ***Antioxidant Activity in Relation to Packaging, Temperature and Age***

Danielle Habitz
Under the direction of Dr. Kirk Dolan, Biosystems and Agricultural Engineering
2:00 PM - 4:00 PM, Ballroom

The purpose of this research project was to gain insight into producing maximum antioxidant levels over time though packaging and temperature differentials, to make educated packaging and storage decisions for fresh asparagus. This was accomplished by taking antioxidant levels of two packaging types Dupont® and Cryovac®. Dupont® trays are sealed with plastic heat-sealed film in passive a modified atmosphere. Cryovac® trays use a vacuum skin package technique prepared with plastic film. The asparagus was tested every three days at two temperatures (1 degree C, 8 degree C). This was done using a process called ORAC that uses fluorescent readings to calculate antioxidant levels. The mole/g. Through testing no□readings were taken in dry weight and calculated to conclusive evidence was produced that supported which packaging was superior due to biological variability and the different harvest periods used for each packaging. In one specific packaging type Dupont®, results show a temperature of 8 degree C producing greater antioxidant levels. Overall more research should be done to test if harvest periods and maturity levels of asparagus play a role in antioxidant levels contained in fresh asparagus.

316 ***Assessing Food Web Effects of Lake Residential Development: Assessing the Efficacy of Stable Isotope Baselines***

Emily Jacobson
Under the direction of Dr. Mary Bremigan, Wildlife and Fisheries
9:30 AM - 11:30 AM, Ballroom

Energy flow has long been a parameter of study within ecosystems, particularly when observing their food webs. Our overall project is examining the effects of residential lakeshore development on energy flow in lake systems. We are testing the hypothesis that the contribution of benthic primary production to

fish production declines with increasing residential development. To test this we gathered fish and invertebrate samples from eight naturally similar lakes in southwest Michigan that ranged from four to 44 houses per kilometer. My specific project is assessing whether isotopic signatures of snails and mussels can be used to discern between benthic and pelagic sources of primary production. To prepare invertebrate samples for isotopic analysis, I isolated, dried, and homogenized tissues, which were then analyzed using a European 3000 EA connected to an Isoprime mass spectrometer. Because of the uncertainty if lipid removal could affect the isotopic signatures, multiple samples were analyzed with and without lipids for a comparison. Preliminary results indicate that lipid extraction had negligible effect on C and N isotope signatures. In the project, I will be comparing isotope signatures for the invertebrates across the eight lakes. Ultimately, we are trying to see how development affects an ecosystem. Because these aspects have not been assessed in the past, they may become an indicator if regulation is needed to control development and its impact on the environment.

317 ***Assessing Genotoxicity of Fullerene Nanoparticles Using Single Cell Gel Electrophoresis (Comet Assay)***

Farid Nossoni
Under the direction of Dr. Syed Hashsham, Civil and Environmental Engineering
9:30 AM - 11:30 AM, Ballroom

Nanoparticles have generated great excitement in the scientific community because of their commercial and medical usages such as drug delivery, water treatment, and personal products. However the genotoxic and cytotoxic consequences of these products on the environment and humans' health are not well. We have used single cell gel electrophoresis assay, widely known as Comet Assay to assess the genotoxicity of C60 fullerenes. C60 fullerenes are a family of carbon allotropes that are composed of entirely carbon molecules. We have selected Comet Assay because of its better sensitively. In our studies we are more interested in low dosage exposure of nanoparticles. The main focus of my research is to detect possible DNA damages in blood lymphocytes that contain fullerenes at concentrations of 0.2mM, 2mM, 10mM, 20mM, and 50mM. Therefore, we could then conclude at what concentrations fullerene nanoparticles are genotoxic in blood lymphocytes. In my poster, I will present background information about fullrenes and Comet Assay. We will also share some of the preliminary results that will support that certain preparations of fullrernes are genotoxic and therefore require more attention in applications resulting to exposure to human and perhaps other organisms.

318 ***Assessment of Chloroplast Gene Function through Open Reading Frame Variability***

Allison Blaine
Under the direction of Dr. Barbara Sears, Plant Biology
2:00 PM - 4:00 PM, Ballroom

Genomic sequence data have provided volumes of information about gene functions, yet many conserved open reading frames have eluded identification. This is true for the highly conserved chloroplast genome, which is composed of only about 150,000 bp, yet contains 5-10 open reading frames (ORFs). In an attempt to learn the function of these putative genes, I am testing for mutations in those ORFs in two chloroplast mutant lines of Oenothera elata, named pm7 and pm45. Since these mutants were isolated from the Oenothera plastome mutator line, which has an elevated level of replication slippage, they were probably caused by insertions or deletions at short, direct repeats. PCR primers were designed to amplify seven genes and open reading frames. DNA was extracted from several wild type lines and the two mutant lines, and PCR was performed. If the PCR products varied in size, they were purified and sequenced. The sequences were aligned and analyzed to find any mutations that would cause a change in the reading frame, and therefore a change in the putative gene product, and most likely the phenotype. Since the ORFs all contain some short, direct repeats, which are known to undergo length variations, I have been able to observe natural variation, which does not seem to disrupt the function of the putative gene, since the wild-type plants are all green and vigorous.

319 ***Assessment of the Learning of Less Commonly Taught Languages***

Kerry Litwinski
Under the direction of Dr. Daniel Reed, English Language Center
9:30 AM - 11:30 AM, Ballroom

As the call for learning less commonly taught languages (LCTL) increases due to worldly events, it is becoming imperative to develop a unified framework for developing tests and testing procedures for these languages, which include Chinese, Korean, Arabic, Indonesian, Hausa, Hebrew and many others. To create this unified model of testing practices for those who teach less commonly taught languages, it is pertinent to survey programs that teach these languages, as well as programs that certify teachers to teach these programs. The valuable knowledge that will be supplied to us by these programs will allow us to locate the current and best assessment practices, develop a theoretically sound assessment framework to unify them, and provide guidance on assessment practices to language educators throughout the US.

320 ***Attachment Classification at 12 Months as a Predictive Factor for Frequency of Self-Stimulatory Behaviors at Age Four in a Heterogeneous for Risk Sample***

Kristen Smith
Under the direction of Dr. William Davidson, Psychology
2:00 PM - 4:00 PM, Ballroom

Have you ever wondered by people engage in certain behaviors during a conversation or task that they are not actively paying attention to, such as touching objects or fidgeting with their clothes or parts of their bodies? These behaviors (referred to as self-stimulatory behaviors) are often seen when a person is experiencing some sort of negative emotionality, such as stress or sadness. Famous Psychologist Mary Ainsworth and her colleagues invented an experiment called the Strange Situation Paradigm which has been used by researchers to elicit negative emotions in the laboratory by exposing children to several separation and reunion segments with his or her mother. It can also be a tool for assessing attachment style classification which separates children into four categories based on how well the child is able to explore the new environment and at the same time, use the mother as a "secure base" in times of stress or novelty. The two purposes of this study are to: 1) examine if boys or girls are more likely to exhibit these behaviors, and 2) if attachment style classification determined at age 1 can predict what type of child is more likely to demonstrate these behaviors at age four. The implications of the results found in this study can be important in recognizing and addressing these behaviors in the classroom and at home, preventing these behavioral indicators of distress from escalating to more severe behavioral and emotional problems.

321 ***Big and Beautiful Beaumont: A Brief Guide to MSU's Landmark***

Denise Martaus, Kristen Wolfe
Under the direction of Dr. Michael Velbel, Geological Sciences
9:30 AM - 11:30 AM, Ballroom

Beaumont Tower has been a prominent landmark on the Michigan State University campus since its construction in 1928. A brief glimpse into its history reveals that its symbolism transcends time, both literally and figuratively. As a marker to the former site of Old College Hall at the edge of the "sacred space" (a park-like area that has been unchanged since the campus' beginnings), Beaumont Tower also stands as a symbol of MSU's past, present, and future as a leading land grant university. Our goal is to create a brochure that will inform the general public and perhaps current/prospective members of the MSU community about what makes Beaumont Tower so "big and beautiful".

322 ***Biodiesel Improvement by Ozone Chemistry***

Elizabeth Brown

Under the direction of Dr. Ramani Narayan, Chemical Engineering and Materials Science

2:00 PM - 4:00 PM, Ballroom

An urgent demand for alternative energy sources and fuels is now generally recognized. A promising alternative fuel, biodiesel, is made by reacting oil found in plants and animal fats with an alcohol to form alkyl esters. Biodiesel has many advantages as an alternative fuel source. It is biodegradable and nontoxic, it comes from an annually renewable resource, and it can be used in existing diesel engines. When burned it emits less NOx and other pollutants than petroleum-based diesel. Despite biodiesel's numerous benefits, it needs much improvement before it can be used on a larger scale. Researchers are seeking to improve the oxidative stability, viscosity, volatility, cloud point, and cost efficiency of biodiesel. One possible way to improve the oxidative stability and viscosity of biodiesel is by reacting biodiesel with ozone and methanol under a novel catalytic process to form smaller, more stable alkyl esters. The biodiesel is reacted at room temperature in a reactor using calcium carbonate as a catalyst. Characterization of the new fuel properties can be made using HPLC (high performance liquid chromatography) analysis, FTIR (Fourier Transform Infra Red) spectroscopy analysis, viscosity measurement, acid number determination, cetane number determination, and cloud point determination. Work is still in progress, and no conclusions can be made yet.

323 ***Bioluminescent Bacteria as Biological Sensors for Toxic Agents in Food***

Michael DelBene, Trevor McLean

Under the direction of Dr. Evangelyn Alocilja, Biosystems and Agricultural Engineering

2:00 PM - 4:00 PM, Ballroom

Our project focuses on developing a non-specific biological based sensor to quickly detect toxic contaminants in milk, water and juice. Current analytical approaches to detection methods for toxic contaminants are costly, specific and time-consuming. Our approach uses the bioluminescence of Vibrio fischeri measured with a luminometer to detect change in light production with the addition of a contaminant. By comparing the luminescence of a pure culture, uncontaminated matrix and contaminated matrix, we are able to quantitatively measure contamination quickly and cheaply. To increase the specificity and cost-efficiency of the sensor, we are working on developing a luminometer that uses bacteriorhodopsin as its photodiode. By coupling the new luminometer with luminescent bacteria we would develop the prototype for a new more efficient method for commercial detection of contaminants in food.

324 ***Bovalve Synthesizer Controller***

Nathaniel Bliton

Under the direction of Dr. Dan Marsh, Telecommunication, Information Studies and Media

9:30 AM - 11:30 AM, Ballroom

Musicians have criticized electronic tone generators and synthesizers for many years for being inexpressive and difficult to use. With this project, I set out to build a tonal synthesizer that would have the dynamic capabilities of well-established acoustic instruments and be more intuitive than any normal synthesizer. The Bovalve Synthesizer Controller, or "Bovalve" for short, is the synthesis of the expressive possibilities of a violin bow and the tonal range and ease of navigation of the trumpet's valve system. This controller was fabricated using a couple of microcontrollers, some potentiometers and buttons, and wood and aluminum, arranged for two-handed operation. This all controls software written in "Pure Data," a graphical programming environment for musical and visual applications.

325 ***Brazilian Work on Kant***

William Levine
Under the direction of Dr. Frederick Rauscher, Philosophy
9:30 AM - 11:30 AM, Ballroom

The project stems from the work Dr. Rauscher has done to promote Brazil-US interaction since the 2005 International Kant Congress in Sao Paulo. There, he met many Brazilian Kant scholars whose work in Portuguese was inaccessible to native English speakers. Conversations with Brazilian professors were encouraging, and he soon proposed a volume of translations of the best Brazilian articles on Kant. The authors of these articles have provided us with their own translations in English and a copy of the original in Portuguese. Dr. Rauscher, his Brazilian co-editor, and an undergraduate assistant with a strong background in Portuguese have been collaborating to fine tune the English in these Brazilian essays.

326 ***Cameo in the Costume Shop***

Valerie Vanderkolk
Under the direction of Dr. Karen Kangas-Preston, Theatre
9:30 AM - 11:30 AM, Ballroom

At MSU, the Theatre department's costume shop makes most of the costumes used in all of the departments productions. With a small staff consisting of mostly undergraduate and graduate students, the costume shop is always pressed with time to complete each show. For a couple of years now, the theatre department has had software which aids in pattern drafting. However, no one has known how to use it. With the use of the software, it is possible to cut down the time used to draft patterns for costumes. The software has the capabilities to keep a library of patterns for future use. After learning the program, we plan to teach the entire costume shop staff how to use the software.

327 ***Can Fin Tissue be Used Instead of Muscle Tissue for Stable Isotopic Analysis?***

Jan-Michael Hessenauer
Under the direction of Dr. Mary Bremigan, Fisheries and Wildlife
2:00 PM - 4:00 PM, Ballroom

The overall purpose of this research is to determine the effects of residential lakeshore development on fish populations as well as the effects of this development on food web dynamics. We will use stable isotope analysis for both carbon and nitrogen to compare food chain length and the relative contribution of benthic and pelagic primary production to fish diets across eight lakes ranging from four to forty-four dwellings per shoreline kilometer. My specific niche in this research is to work out some of the fine points of the procedure by determining the best tissue (muscle or fin) isotopic analysis in fish. Historically muscle tissue has been used; however, muscle tissue is somewhat difficult to collect, and is more likely to cause harm to the animal. On the other hand fin samples are used less frequently, and not only easier to collect, but they also cause much less harm to the animal. My hope is that based on my findings all of the future fish analysis for this research can rely solely on fin samples. Additionally I will be looking to see whether or not lipids must be removed from our samples in order to obtain accurate stable isotope readings. We are currently analyzing our initial results and will have more extensive results to report in April.

328 ***Canine Influenza: An Emerging Viral Disease of Dogs***

Jaime Heissler
Under the direction of Dr. Roger Maes, Microbiology and Molecular Genetics
9:30 AM - 11:30 AM, Ballroom

Canine Influenza is caused by an enveloped RNA virus, classified under the family of Orthomyxoviridae, genus Influenzavirus A. All members of this genus have immunological cross-reactivity in the

nucleocapsid (N) gene. The characteristics of two surface viral glycoproteins, the hemagglutinin (H) and the neuraminidase (N), form the basis for viral subtyping. Currently there are 16 different H and 9 different N subtypes, combining in various combinations. The disease was first described in greyhounds in Florida. Clinical signs in affected dogs overlap those of a syndrome termed kennel cough and include high fever and coughing. Most affected dogs show clinical signs but recover from the infection. Genetic and immunological analysis have shown conclusively that canine influenza virus is very closely related to the H3N8 subtype of equine influenza and it considered to have recently crossed the species barrier around 2004. Canine influenza virus is spreading and is currently considered to be present in at least 22 states. Thus far, canine influenza virus infection has not been confirmed in Michigan dogs. Our goal is to develop diagnostic tests suitable for detection of viral components and antibodies induced by this virus. Assays being implemented for virus detection are RT-PCR and antigen detection ELISA. Assays under development for antibody detection are the hemagglutination inhibition (HI) and antibody detection ELISA tests.

329 ***Capturing a Free Negatively Charged Hydrogen Atom***

Andrew Potere
Under the direction of Dr. James Jackson, Chemistry
9:30 AM - 11:30 AM, Ballroom

The negatively charged hydrogen atom is a state of hydrogen that is known to exist but exists for only an instance due to its extremely high reactivity. Our project looked at capturing a free negatively charged atom in a specially designed molecule shaped like a box or basket. These molecules are called crown molecules and have an extremely positively charged center that would lock in the negative hydrogen.

330 ***Cardiac Sympathetic Norepinephrine Transporter Protein Content has an Inverse Relationship to the Norepinephrine Content in the Heart***

Carmen Affonso
Under the direction of Dr. David Kreulen, Physiology
2:00 PM - 4:00 PM, Ballroom

Norepinephrine (NE) transporter (NET) protein is found in sympathetic nerve terminals to remove NE from the neuroeffector junction. The heart has an efficient reuptake system in which 90% of released NE is cleared by NET. There is evidence of reduced NE uptake via NET and elevated plasma NE levels in cardiovascular disease. The purpose of this study is to determine whether NET protein correlates with sympathetic innervation density in the heart. We hypothesized the atria to have the highest concentration of NET due to the high density of nerve terminals as compared to the ventricles. Adult, male Sprague-Dawley (4 weeks) rats were used in the study. Hearts were removed and separated by chambers. Frozen tissue was processed and isolated heart chambers were analyzed with western blotting for NET or with capillary electrophoresis with electrochemical detection after solid phase extraction for NE. Three molecular weight variants of NET protein were detected (~80 kD, 54 kD, and 46 kD) in all chambers. NET protein concentration showed left ventricle(LV)> ventricular septum(VS)>right ventricle(RV)>left atria(LA)>right atria(RA) ($p.<0.05$, n=5). NE content showed RA>LA>RV>VS>LV ($p.<0.05$, n=3). Contrary to our hypothesis the NE content per chamber showed an inverse correlation to NET ($p.<0.0001$, $r2=0.64$). Although NET protein is found to be in cardiac sympathetic nerve fibers the amount of NET is inversely related to the amount of NE content per chamber.

331 ***Children and the Future: The Acquistion of Comprehension of Will and Gonna by Children***
Erin O'Connor
Under the direction of Dr. Cristina Schmitt, Linguistics and Germanic, Slavic, Asian and African Languages
9:30 AM - 11:30 AM, Ballroom

There are very few studies on the acquisition of tense interpretation by children. This study aims at understanding children's comprehension of will and gonna. Beside the obvious formality difference, they have a different semantics. Gonna has a progressive component that will does not have. This difference is exceedingly interesting because children are shown to use gonna first even as the adults do not put emphasis on one form of the future or the other. In a recent comprehension study, Valian 2006 finds that children seem to distinguish past 'did' from future 'will' by 2.5, although they are only correct about 50% of the time for 'will' at this age. In this project we modify Valian's task and we test both 'will' and 'gonna' in various linguistic contexts to determine children's ability to interpret these two ways of conveying future in different contexts. Furthermore we will track the amount of time they take to respond to the two different types of future. Given that the progressive is the first morpheme to become productive in children's language, we predict that gonna may be acquired earlier and used more efficiently earlier. The results will be the first to examine comprehension of both will and gonna and will help to show how children acquire forms that only partially overlap in meaning and the reason why certain tenses and/or forms are so quickly obtained.

332 ***Chimera Plan for Analysis of Tumor Suppressor Protein p53***
Jaclyn Peraino
Under the direction of Dr. R. William Henry, Biochemistry and Molecular Biology
9:30 AM - 11:30 AM, Ballroom

The transcription of certain target genes, which manipulate cell development and death, is activated upon the detection of DNA damage in an effort to prevent the parent cell from potentially passing on any resulting mutations. The transcription of these crucial target genes is activated by the tumor suppressor protein p53, which, in turn is activated upon the recognition of DNA damage. The activated p53 protein kinase then stimulates the transcription of the necessary target genes, forcing them to either inhibit the growth of the infected cell or, more preferably, cause the cell to undergo apoptosis. Unfortunately, exactly how p53 “chooses” one pathway over another is still unknown. Ultimately, the goal of this project is to become more familiar with the affects that cause p53 to decide the fate of a damaged cell. We have designed a chimera and are currently in the second of a two-step mutagenesis involving a thrombin sequence insertion and two restriction sites. When the chimera is successfully sequenced, we intend to analyze p53 activity upon the induction of cellular DNA damage. The chimera plan and strategy for mutagenesis will be the focus of this presentation.

333 ***Collaboration for the Theatre: A Practical Guide for Designers and Directors***
Jillian Blakkan-Strauss
Under the direction of Dr. Rob Roznowski, Theatre
9:30 AM - 11:30 AM, Ballroom

When creating theatre, a healthy collaborative process between director and designers is paramount to arriving at the best possible final production. The development of a believable, worthwhile show that meets the ultimate goals of the production is directly dependent on the quality of the interactions, cooperation, and shared creativity of those involved. "Collaboration for the Theatre: A Practical Guide for Designers and Directors" is the final product a study investigating how to best achieve the collaborative process in theory, practice, and the educational setting. It is a text that, for the first time, delves into the specifics of a healthy collaboration between designers and directors, explores the implementation of these theories, and describes how to translate theatrical collaboration to the classroom.

334 ***Common Markers of Sympathetic Neurons are Unchanged Following Functional Chemical Denervation by 6-Hydroxydopamine***

Mohammad Esfahanian
Under the direction of Dr. David Kreulen, Physiology; Dr. Greg Swain, Chemistry
2:00 PM - 4:00 PM, Ballroom

6-hydroxydopamine (6-OHDA) is used to "chemically denervate" tissues innervated by nerves containing catecholamine transporters. Treatment reduces the norepinephrine (NE) content of the heart but little is known about other markers of sympathetic nerves. The purpose of this study was to examine the effects of 6-OHDA on cardiac sympathetic neurons innervating the right atrium. 6-OHDA (250 mg/kg, sub.q, 3 doses over 7 days) was administered to adult rats and on day 7 hearts were removed. There was a significant decrease in NE levels determined by capillary electrophoresis with electrochemical detection ($p<0.001$, $n=3$) confirming that the treatment was effective. However, immunocytochemical staining showed tyrosine hydroxylase was still visible in neurons after denervation ($n=3$). Western blotting revealed no differences in protein expression for the neuronal marker Protein Gene Product 9.5 ($p>0.05$, $n=4$) in the right atria ($p>0.05$, $n=3$-4). In addition, qPCR showed no change in the levels of mRNA for NET compared to untreated controls ($p>0.05$, $n=6$). Similar results were seen in all other heart chambers. Therefore, 6-OHDA does not destroy cardiac sympathetic nerve fibers; its action appears limited to the depletion of NE.

335 ***Comparative Adjectives within an Adjectival Stack***

David Hunter
Under the direction of Dr. Marcin Morzycki, Linguistics and Germanic, Slavic, Asian and African Languages
9:30 AM - 11:30 AM, Ballroom

Since at least Sweet (1898), it has been known to academia that the relative order of adjectives is not entirely free in English. For instance, most speakers have a decided preference for the big red dog over the red big dog. However, most if not all of the studies on English adjective order (AO) have ignored the status of comparative adjectives (CA's), i.e., adjectives with the suffix -er or with the adverb more. One goal of the present paper is to remedy this by examining the position that CA's occur within an adjectival stack. However, I also use judgments about the semantics of such constructions to argue against several claims made by the Cinque-an analysis (Cinque 1994; Scott 2002), for instance that AO results from a syntactic rule, rather than from the meaning of the adjectives. Using a framework developed by Kennedy (1997), I provide a semantic account of some of the facts concerning the AO of adjectival stacks with comparative adjectives.

336 ***Comparative Analysis of Brain Activity between Reading Stories and Solving Math Problems: An fMRI Study***

Alexander Brown, Timothy Clark, Elyssa Fielder, Amrita Jaswa, Allison Pianosi, Kevin Shrestha
Under the direction of Dr. Jie Huang, Radiology
2:00 PM - 4:00 PM, Ballroom

Every activity our body does - from thinking to muscle movement - is controlled by neural activity of the brain. Cortical neuronal activation consumes energy, resulting in local blood flow and energy metabolism changes. The corresponding hemodynamic response yields changes to oxyhemoglobin and deoxyhemoglobin in the area of the neuronal activation. Since oxyhemoglobin and deoxyhemoglobin have different magnetic properties, the former is diamagnetic and the latter paramagnetic, this hemodynamic response induces a local magnetic field change which can be measured by magnetic resonance imaging (MRI). This technique is known as blood oxygenation level dependent (BOLD) functional MRI (fMRI). BOLD-fMRI was used to determine cortical activations when a person is reading stories and solving math problems. Cortical areas involved in these two cognitive tasks and the

difference of cortical activation between these two tasks were compared using AFNI (Analysis of Functional Neuroimages).

337 ***Comprehension of Anything in Children: Anything or Nothing***

Melissa Alsobrooks
Under the direction of Dr. Cristina Schmitt, Linguistics and Germanic, Slavic, Asian and African Languages
2:00 PM - 4:00 PM, Ballroom

This project investigates the comprehension of the Negative Polarity Item (NPI) anything in children. The project wants to evaluate whether children interpret anything as an NPI (he didn't do anything) in all circumstances or if they have access to the free choice (FC) interpretation of anything (he can do anything). We will test a group of 10 - 15 English-speaking children with a mean age of 3- 4 in a modified truth value judgement task. The question we address is the following: do children interpret anything as nothing, as in the NPI construction, or do they have access to FC anything. From informal observation and some data from CHILDES, there is evidence that suggest they produce anything as a negative quantifier (nothing).This may be related to the fact that anything appears more frequently in the NPI construction or downward entailing environment, giving it a "nothing" reading, than in the FC form. This project investigates if the anything in children's developing grammar also has a FC meaning, or if the anything as "nothing" interpretation is the only interpretation that children have.

338 ***Conformational Changes at Protein-Proteininterfaces***

Noah Choi
Under the direction of Dr. Maria Zavodszky, Biochemistry and Molecular Biology
9:30 AM - 11:30 AM, Ballroom

As part of their functions, many proteins have to recognize and bind other proteins. In order for this to happen, the binding partners often have to undergo conformational changes to create good chemical and shape complementarity at the binding interface. The objective of our study was to learn from nature and determine how much side chains have to move when two proteins bind to each other to form a complex. We approached this problem by carefully analyzing 50 structures of protein-protein complexes that were chosen from the Protein-Protein Docking Benchmark 2.0 (http://zlab.bu.edu) and compared them to the crystal structures of the unbound proteins. We calculated how much side chains located at the interface moved upon complex formation, and compared the changes to rotations observed for side chains buried inside and for those on the solvent accessible surface of the complex. We observed that most side chains undergo small rotations, only as much as it is needed to avoid colliding into atoms of the binding partner. More specifically, we have found that amino acids with long aliphatic side chains are more mobile than amino acids with bulky aromatic side chains. Also, polar amino acids tend to move to participate in hydrogen bonds. Many programs sample low-energy rotameric side chain conformations to resolve van der Waals overlaps when modeling protein conformational changes. Our results indicate that is not necessarily the way nature solves the problem.

339 ***Construction of an Ad5 Vaccine Vector Expressing a Profilin-Like Protein***

William DePas
Under the direction of Dr. Andrea Amalfitano, Microbiology and Molecular Genetics; Dr. Daniel Appledorn, Microbiology and Molecular Genetics
9:30 AM - 11:30 AM, Ballroom

Recently it has been shown that a protozoan protein, initially isolated from the small intestine of bovine, is a strong immunostimulant. It has been suggested that this profilin-like protein (PLP) could be partly responsible for the low cancer rates in the small intestine by stimulating the immune system to attack abnormal cells. A possible use for this protein would be administering it in conjunction with a vaccine, in

an attempt to boost the immune system's response to a specific antigen. In this study, we describe a technique used to transfer genetic material into the adenoviral serotype 5 vector by homologous recombination. Specifically, we illustrate the cloning of PLP into a shuttle vector for recombination into the E3 region of the Ad5 backbone that already contains a cassette for expression of Carcinoembryonic Antigen (CEA), a protein highly expressed by colon cancer cells. In the near future, we plan to purify Ad5-CMV-CEA/PLP virions and use them to determine whether this virus induces an adaptive immune response directed towards CEA greater than that of AD5-CMV-CEA virions, thereby making a more effective colon cancer vaccine.

340 ***Correlations Between White Dwarf Supernovae and Their Host Galaxy***
Michele Berry
Under the direction of Dr. Edward Brown, Physics and Astronomy
2:00 PM - 4:00 PM, Ballroom

Type Ia supernovae are thermonuclear explosions of white dwarf stars. These explosions are used to measure the geometry of the Universe because their intrinsic brightness can be well-calibrated. Observations of these supernovae led to the astonishing discovery that the universe is expanding at an accelerating rate. An interesting question is whether the calibration of these supernovae are reliable as researchers look farther out into the Universe and further back in time. Do the luminosities of these supernovae evolve with cosmological time, and are there differences in the explosion that might produce systematic errors when using the supernovae as 'standard candles'? One difference that might cause a change in the peak brightness is the enrichment of the white dwarf star with elements, such as neon, which is produced from oxygen present in the progenitor star. Calculations predict that this enrichment leads to dimmer supernovae. I am testing this prediction by looking for correlations between the peak brightness of observed supernovae and the oxygen abundance of the host galaxy. Previous studies have not accounted for more than one population of progenitor white dwarf. Because of this, my search focuses on correlations that can be observed when supernovae are divided into different populations of progenitors.

341 ***Coverage of Arabs in Metro Detroit Post 9/11***
Aisha Howard
Under the direction of Dr. Geri Alumit Zeldes, Journalism
9:30 AM - 11:30 AM, Ballroom

Media coverage is extremely important as it relates to stereotypes and generalizing a group of people within certain areas. In an effort to learn more about how Arabs and Arab Americans are stigmatized I have begun analyzing newspaper articles throughout metro Detroit. This web based research has allowed me to look at newspaper coverage before September 11 until now. We then look closely at the terms and images used and how Arabs are portrayed in general after 9/11. As a result we find how this coverage has shaped the perception of an entire group of people following a tragic event in our time.

342 ***Crime and Punishment: The Projections of Raskolnikov***
Garrett Warnell
Under the direction of Dr. Sherman Garnett, James Madison College
9:30 AM - 11:30 AM, Ballroom

The character Raskolnikov in Dostoevsky's Crime and Punishment is an extremely complicated individual. In order to reach a full understanding of him, it is extremely useful to look at the characters of Svidrigailov and Sonya, and how they parallel and mirror him. These two characters emerge as leaders of two different versions of Raskolnikov: the ruthless and the self-effacing.

343 ***Crime Heinousness and Juror Decision Making***

Richard Chasney, Elizabeth Huber, Christopher Irby, Jennifer Krohn, Elizabeth Rabidoux, Noel Schroeder
Under the direction of Dr. Norbert Kerr, Psychology
2:00 PM - 4:00 PM, Ballroom

In theory, criminal jurors attend only to the evidence bearing on a defendant's guilt, but not to how brutal or heinous the criminal act was. A number of past studies, however, have suggested that jurors tend to find defendants charged with committing a heinous criminal act as more guilty than a defendant charged with committing a less heinous version of the same crime, even though the evidence against the defendants is otherwise identical. A juror simulation study is reported which compares the verdicts of mock jurors exposed to three levels of heinousness—low, high/photo (with photographs of crime-scene evidence), and high/video (with the same crime-scene images presented via a video projection system). The photographic evidence of heinousness affected juror verdicts, but in opposite ways for male and female mock jurors. The video images did not affect juror verdicts, however. Additional analyses will be reported that explore the role of such factors as juror emotion, juror perception of defendant mental illness, and juror concern about acquitting a possibly-guilty defendant for explaining these verdict results.

344 ***Cultural Geology Guidebook to the North Campus of Michigan State University***

Marianne Tritten
Under the direction of Dr. Michael Velbel, Geological Sciences
9:30 AM - 11:30 AM, Ballroom

The northern campus of Michigan State University is graced with not only an impressive history, but also stunning "ivy covered halls." There are few who know the background of these historical buildings and even fewer who know about the stone exteriors that made this history possible. This project aims to inform the public (via the MSU Grandparents University program) about the cultural geology of the buildings on campus and the effects of nature and time on these historic structures. The buildings researched were the MSU Union, Human Ecology building, Morrill Hall, Linton Hall, Old Botany, and Old Horticulture. The result of research into the history and geology of these buildings will be displayed as a guidebook in two forms: one, an in-depth booklet designed for leading a guided cultural geology tour of East and West Circle buildings, and the other, a brochure with key information to complement the tour.

345 ***Deleting the p33 Gene from the AcNPV Baculovirus***

Martha McCoy
Under the direction of Dr. Suzanne Thiem, Entomology
9:30 AM - 11:30 AM, Ballroom

Autographica californica Nucleopolyhedrovirus (AcNPV) is the type species of the Lepidopteran (moths and butterflies) Nucleopolyhedrosis genus of the family Baculoviridae., large, rod-shaped, DNA viruses that mainly infect insects. To date nearly three dozen baculovirus genomes have been sequenced. The gene encoding P33 (AcNPV ORF92) is conserved among all sequenced baculovirus genomes. In addition, AcNPV P33 was previously shown to physically interact with human p53. To determine the role of p33, the goal of this project is to delete its gene from the AcNPV genome and analyze the phenotype of the mutant virus. To delete the gene we are using the lambda-red recombinase system. This system induces a state of high recombination in bacterial cells containing the Baculovirus genome, maintained as a large plasmid. Cells that have successfully undergone homologous recombination and, therefore, deletion of the p33 gene are selected as resistant colonies on antibiotic plates. In summation, this presentation demonstrates an efficient method for deleting the p33 gene from the Baculovirus genome. This is an important method of determining the function of a gene. Establishment of the

lambda-red system of baculovirus gene deletion in our laboratory will also contribute toward the goal of deleting none-essential AcNPV genes to create a fundamental, simplified genome for use in the Baculovirus Expression Vector System (BEVS).

346 ***Designing for Disability: Filling the Gap between Services and Solutions***
Emily Battista
Under the direction of Dr. Carol Beard, Apparel and Textile Design
2:00 PM - 4:00 PM, Ballroom

This presentation reveals the first step in an ongoing process to discover where there are gaps of design for the disability community. To find these gaps, we have been researching what is available for disability clients and creating a database of what services and design solutions are currently available. Our poster shows only a few of these unique adaptations available for people with disabilities. However, our database contains thousands of resources to help our future clients find assistive technology, advocacy organizations, independent living assistance, employment opportunities, education, and recreation.

347 ***Development of a New Automated Genotyping System to Find the Canine Scotty Jaw Gene***
Megan Duffy
Under the direction of Dr. Patrick Venta, Microbiology and Molecular Genetics
9:30 AM - 11:30 AM, Ballroom

Scotty jaw, or craniomandibular osteopathy (CMO), is an autosomal recessive disease in dogs and commonly affects several terrier breeds, most notably the West Highland white terrier, Scottish terrier, and Cairn terrier. CMO causes noncancerous bone growths, typically found on the jaws of affected animals. As searching for the cause of CMO via the candidate gene approach has proven unsuccessful, a whole genome linkage scan has been implemented. For this study, bimorphic SINEs (short interspersed nuclear elements) were chosen for use as potential markers as they show variability through presence or absence of the SINE sequence at specific loci throughout the dog genome, and they are inexpensive and simple to genotype. We have developed a new microtiter-based automated SINE genotyping assay to expedite the whole genome scanning process. To make optimal use of this new development, it was necessary to develop a system to transfer the data directly into the linkage analysis program SuperLink, a part of the easyLINKAGE package, to minimize user intervention. An Excel spreadsheet-based method has been developed to convert raw fluorescence values given by the automated system into inference of individual genotypes. Combined with the completed input for 16 pedigrees (94 dogs, including 25 affected), this system is now available for completing whole genome scans for the CMO gene.

348 ***Development of a Selective Growth Medium for Actinobacillus Pleuropneumoniae***
Molly Peebles
Under the direction of Dr. Martha Mulks, Microbiology and Molecular Genetics
9:30 AM - 11:30 AM, Ballroom

Actinobacillus pleuropneumoniae (APP) is a bacterial pathogen that can be carried asymptomatically in the tonsils and nasal cavities of pigs, causing severe pleuropneumoniae. APP contains genes, including tehB and tehA, which confer resistance to tellurite, or tellurium dioxide. Tellurite-resistance is shown by black colonies on tellurite-containing agar media. The objective of the present study was to develop a selective media to isolate APP from other bacteria present in the throat and tonsils of pigs, such as staphylococci and streptococci. First, 15 APP serotypes and 19 other Pasteurellaceae were tested for tellurite-resistance on brain heart infusion plates containing tellurite, βNAD+ and hemin. All 15 APP strains, plus most other Pasteurellaceae, but not P. multocida or M. haemolytica, were tellurite resistant. Next, crystal violet, lincomycin and/or bacitracin were added in various combinations/concentrations to develop a medium that allowed growth of most strains of APP but not Escherichia coli or Staphylococcus

aureus. The optimum formula included crystal violet, lincomycin and bacitracin. Finally, the 15 APP strains and 19 other Pasteurellaceae were tested for growth on the optimized medium. This medium allowed growth of all 15 APP strains, plus H. influenzae and A. suis, but not most other Pasteurellaceae, S. aureus or E. coli. These results indicate that the selective medium may provide an improved method for isolation of APP from the swine upper respiratory tract.

349 ***Diffusion of Responsibility: The Influence of a Personal, Direct Request on Helping Behavior***
Sameer Bhagwan, Adrienne Kischnick, Justin Lockwood, Jason Thomas
Under the direction of Dr. Franklin Boster, Communication
2:00 PM - 4:00 PM, Ballroom

The purpose of this study was to determine whether or not a message intended to make individuals feel responsible would promote helping behavior. Previous research has shown that when others are present people diffuse responsibility onto them, unless their help is directly requested, in which case they feel personally responsible and are more likely to give help. In order to test this hypothesis, 60 college age students were approached on a large Midwestern university campus. The results confirmed this hypothesis: making a direct request for help produced significantly greater helping behavior than both making a general request and making no request when help was needed.

350 ***Divalent Metal Coordination Polymers with Flexible Chain Dicarboxylic Acids and 4,4'-Dipyridylamine***
Matthew Montney
Under the direction of Dr. Robert LaDuca, Chemistry
2:00 PM - 4:00 PM, Ballroom

Through the use of metal chlorides, aliphatic dicarboxylate linkers, and 4,4’-dipyridylamine, many crystalline coordination polymers were obtained using the process of hydrothermal synthesis. The length of the aliphatic chains in the succinic, glutaric and adipic acids and the metal can cause drastic changes in the structure and physical properties of the crystals. Changing the metal between cobalt, copper and nickel, can cause the crystal to display different structural patterns, from 1-D chains and 2-D sheets, up to a quadruply interpenetrated 3-D network. The crystals are put through a battery of tests including single crystal x-ray diffraction, thermogravimetric analysis, elemental analysis, infrared spectroscopy, and, if paramagnetic ions are in close contact, magnetic susceptibility studies.

351 ***Do Plants Contain a ZipA Functional Analog?***
Charmaine Lo
Under the direction of Dr. Katherine Osteryoung, Plant Biology
2:00 PM - 4:00 PM, Ballroom

Chloroplast division is mediated by two types of FtsZ, FtsZ1 and FtsZ2, which are homologues of the tubulin-like bacterial division protein FtsZ. In bacteria, FtsZ encircles the division site and is one of the first proteins to appear at the division site. Similar to tubulin, FtsZ binds proteins at its C-terminus and these proteins are required for proper cell division as either loss of the FtsZ C-terminus, or loss of these proteins impairs cell division. One of these proteins, ZipA, binds a conserved amino acid sequence of the FtsZ C-terminus and this motif is found in plant FtsZ2 proteins but absent in FtsZ1 proteins. Due to the presence of a conserved ZipA binding motif in plant FtsZ2 proteins, we have been searching for a homologue to bacterial ZipA in plants. Sequence similarity searches have not yielded an obvious candidate, however, Ssz1, has been identified as being structurally similar to ZipA despite having limited sequence similarity. Ssz1 appears to bind to AtFtsZ2, in a yeast two-hybrid assay. In order to see if Ssz1 could possibly be functionally similar to ZipA we tested Ssz1 by complementing it with an E. coli temperature sensitive zipA mutant. Despite being an FtsZ2 binding protein, Ssz1 does not appear to

complement temperature sensitive zipA suggesting that Ssz1 and ZipA may not have similar functional roles in vivo.

352 ***Does Chronic Endurance Training Influence the Magnitude of the Post-Contractile Blood Flow Increase***

Jeffrey Ambrose
Under the direction of Dr. Ronald Meyer, Physiology
2:00 PM - 4:00 PM, Ballroom

Following a single, brief muscle contraction, blood flow to the activated muscle can increase by 500%. This flow increase to a single contraction is regulated by vascular tone of the terminal arterioles and research suggests that these vessels become more responsive as a result of chronic endurance training. Therefore, the purpose of this study was to compare the magnitude of the post-contractile blood flow increase - to a single, brief isometric contraction of the ankle dorsiflexors muscles - in chronically endurance trained (TR) versus sedentary (SED) individuals. We hypothesized that the blood flow increase to a single muscle contraction would be greater in the TR group. Subjects (n = 6, TR = 4, SED = 2, 2 females) gave written informed consent. Subjects lay supine on a patient table, with legs extended and right foot strapped to the footplate of a custom built foot device. The foot device was fitted with a strain gauge, which allowed us to measure the force produced by the ankle dorsiflexor muscles. Subjects performed a series of 1 sec, maximal contractions and blood flow was measured at rest and following each contraction using Doppler Ultrasound. The blood flow response to a single brief muscle contraction shows a trend towards being greater in chronically endurance trained (870.6 „b 119 vs. 673 „b 78.8 % increase) versus sedentary individuals.

353 ***Does Lipid Ingestion Reduce the Brain Functional Imaging Response?***

Jacob Harold Chan Co, Nathan Davis, Jessica DiMarzio, Sean Dyer, Amanda Harris, Julianne Kalmar, Kara Mannor, Laura Pressprich, Shannon Rossio, Katrina Weirauch, Julie Yam
Under the direction of Dr. Ronald Meyer, Physiology; Dr. Jill Slade, Radiology
9:30 AM - 11:30 AM, Ballroom

Brain functional magnetic resonance imaging (fMRI) is a widely used research method for studying the relationship between behavior and localized brain activity. One drawback to fMRI is that the measured brain activity varies widely between different people, and even between different study days in the same person. A recent paper suggests that lipid ingestion profoundly decreases the brain fMRI response, and that this may account for some of the variability in fMRI results. This project examines the effect of lipid ingestion on the fMRI response to 3 standard tasks: visual stimulation, finger tapping (motor), and serial number addition (cognitive). The results will increase our understanding of factors which alter brain fMRI measurements.

354 ***Dominant Negative HrpA Mutants with Changes of Amino Acid Residues Critical to Hrp Pilus Assembly and Function in Type III Secretion***

David Stepien
Under the direction of Dr. Dennis Arvidson, Microbiology and Molecular Genetics
9:30 AM - 11:30 AM, Ballroom

Pseudomonas syringae pv. tomato strain DC3000 is a host-specific bacterial pathogen of tomato and Arabidopsis. It causes necrotic lesions on the fruits or leaves of these susceptible plants. P. syringae also triggers the hypersensitive response (HR), a localized “programmed cell death” defensive mechanism, in resistant plants such as tobacco. The hrp (hypersensitive response and pathogenicity) gene cluster is responsible for the interaction between P. syringae and eukaryotic cells. It encodes a type III secretion system (TTSS), named the Hrp system that injects bacterial virulence proteins into plant cells. HrpA is the structural subunit of the Hrp pilus, the secretion conduit of the TTSS. To characterize HrpA protein

assembly and function we generated a series of point mutants using putative surface scanning (PSS) mutagenesis, a novel site-directed mutagenesis strategy. Residues critical to HrpA function were identified by their dominant negative phenotypes for HR in tobacco leaves. Transmission electron microscopy has been used to analyze assembly of pili in wild-type and mutant HrpA showing defective assembly by dominant negative mutant HrpA. Quantitative assays for HrpA function are underway using a fusion of the AvrPto effector protein with a reporter of translocation, Bordetella pertussis Cya adenylyl cyclase toxin.

355 ***Dura-Europos House Church***

Lauren Gallinger
Under the direction of Dr. Chris Frilingos, Religious Studies
9:30 AM - 11:30 AM, Ballroom

Syria is the location of one of the most interesting early Christian archaeological sites. The site consists of the earliest known Christian 'church'. Often referred to as a house-church, the building is known as early Christian due to the frescos on the walls, and some of the architectual differences between this church and other religious or cultic buildings of the time. In supporting evidence, the architectual layout within this building can logically be traced to the later known Christian basilica. All these Christian connotations are amazing considering it's all before Christianity was officially announced a religion.

356 ***Dynamic Background Subtraction***

Bryan Reemmer
Under the direction of Dr. Pradeep Ramuhalli, Electrical and Computer Engineering
2:00 PM - 4:00 PM, Ballroom

Programs that can reliably separate foreground images are in high demand due to their flexibility and usefulness is several applications such as object tracking, people counting, dynamic face recognition, and numerous surveillance applications. Therefore, it is the purpose of this study to develop an adaptive algorithm to separate foreground and background data from video frames that is robust to: lighting changes (daylight and shadows), movement through cluttered areas, slow moving objects, and objects being introduced/removed from the scene. This is realized by considering each pixel individually for each frame. Rather than explicitly modeling the values of all the pixels, the values of a particular pixel is modeled as a mixture of Gaussians.

357 ***Dynamically Generated, Contextually-Linked Goals in Persistent Systems***

James Pita
Under the direction of Dr. Brian Magerko, Telecommunication, Information Studies, and Media
9:30 AM - 11:30 AM, Ballroom

A common goal of interactive entertainment designers has been to attempt to tap into the rich language of storytelling that has been developed by creators in other linear mediums. However, it is becoming increasingly apparent that this language does not transfer well when combined with interactive systems. If balanced improperly, idiosyncrasies occur because the goals of the two mediums are inherently different. Whereas a movie or novel relies on relating an experience to a user, the power of an interactive system lies in its ability to present spaces and/or frameworks for the user to experience events for themselves. The system architecture we designed addresses the stated issues with current implementations of storytelling in persistent systems. We use a game model to demonstrate a dynamic goal generation system built to present users with unique and compelling experiences linked by context to past goals and/or experiences. We focus on defining and architecture that determines how and what goals should be offered to a player. Thus, the purpose of the system is to empower persistent system designers by offering a truly systematic module for presenting compelling content that result in story related player experiences.

358 ***Dynamics of the Tent Map: Chaos, Fixed Orbits, and Fractals***

Zachary Beamer, Erica Manoppo, Dan Shaffer, Phillip Studans
Under the direction of Dr. Aklilu Zeleke, Statistics and Probability
2:00 PM - 4:00 PM, Ballroom

In this project we investigate the dynamical behavior of the tent function $f(x) = \begin{cases} \lambda x, & [0, \frac{1}{2}) \\ \lambda - \lambda x, & [\frac{1}{2}, 1) \end{cases}$ through iterations. Here, λ is a parameter. Different results occur for various ranges of λ, including chaotic behavior and fractal structures. We will characterize these behaviors for different λ values and provide graphical representations to illustrate these ideas.

359 ***Eating What We Teach: Evolving Relationships with Food at a Land Grant University***

Mitra Sticklen
Under the direction of Dr. David Wright, Community, Agriculture, Recreation and Resource Studies
9:30 AM - 11:30 AM, Ballroom

Research and education at Michigan State University, along with the other land grant agricultural colleges, helped shape the modern food system through the scientific pursuit of increased food supplies and efficiency in food production. The food served to students at the college has changed over time and acts as a microcosm for the national food system. As food supply chains became industrialized, lengthened, streamlined and outsourced, more choices of food and dining options became available, especially those that are easily prepared and conveniently consumed. In the dining halls of the premier land grant university, what should be the role of food in each student's educational experience?

360 ***Differentiating the Effects of Soil Fertility and Microbial Communities on Corn Yield in Diverse Crop Rotations***

Liana Nichols
Under the direction of Dr. Katherine Gross, Plant Biology
9:30 AM - 11:30 AM, Ballroom

The importance of diversity in natural ecosystems has been studied extensively, while that of agroecosystems has not. In a recent study, field corn grown in rotation with up to six species over three years showed higher yields than corn grown in monocultures or two-species rotations. However, the mechanism for this phenomenon is not clearly understood. In that study higher yields were positively correlated with soil nitrogen levels and number of legume species in the rotation, suggesting the nitrogen-fixing plants were a driving force behind the higher yield in diverse rotations. An alternative explanation is that soil microbial communities are the driving force. The goal of this greenhouse experiment was to determine the contribution of soil nitrogen levels and soil microbial communities to the productivity differences observed in the field study. Six treatments were established by crossing two soil nitrogen levels with three different soil compositions—live soil from corn monoculture fields, live soil from rotational fields, and sterilized soil. Corn height, stem diameter, and number of leaves, were monitored over eight weeks. Aboveground biomass was harvested and final soil nitrogen levels were determined. The results from this study suggest that variation in soil microbial communities does not account for the observed variation in grain yield. Thus, plant-driven variation in soil nitrogen levels appears to be responsible for higher yields in rotational cropping systems.

361 ***Effects of Glucocorticoids on the Composition of Mouse Bone Marrow: Granulocyte Survival and Proliferation***

Megan Harding
Under the direction of Dr. Pamela Fraker, Biochemistry and Molecular Biology
2:00 PM - 4:00 PM, Ballroom

Natural Glucocorticoids (Gc) are steroid hormones produced under stresses such as nutritional deficiency, burns, and other traumas. The murine immune system is affected greatly by the presence of Gc. Apoptosis of precursor T and B cells has been known to occur, altering lymphopoesis in the bone marrow. An increase in murine myeloid cell populations has also been seen, in both number and proportion. To further examine the effects of Gc on the bone marrow, mice were implanted with a corticosterone tablet (20mg) or a sham tablet (cholesterol). Three (3) days after implantation, myeloid cell populations increased by up to 43%, and lymphocyte cell populations decreased by up to 48% upon cell flow cytometric analysis. The number and proportion of neutrophils dramatically increased, indicating that there may be some change in neutrophil function. A purification scheme was established to obtain neutrophils for future experiments on neutrophil function, and up to 99% pure mature neutrophils was obtained.

363 ***Endogenous Serotonin Potentiates Norepinephrine-Induced Contraction in the Superior Mesenteric Artery***

Jessica Priestley
Under the direction of Dr. Stephanie Watts, Pharmacology and Toxicology
2:00 PM - 4:00 PM, Ballroom

5-Hydroxytryptamine (5-HT) is known to potentiate endothelin-1 and norepinephrine (NE) induced arterial contraction. We tested the hypothesis that fenfluramine releases 5-HT from the superior mesenteric artery (SMA) and thus potentiates NE-induced contraction. The 5-HT2A receptor subtype mediates 5-HT-induced contraction in SMA. 5-HT uptake assays measured serotonin levels. Extracellular 5-HT concentration increased from 0.198±0.044 to 0.39±0.087 ng/mg protein while intracellular 5-HT concentration decreased from 1.190±0.120 to 0.730±0.150 ng/mg protein in the presence of a subcontractile concentration of (+)-fenfluramine (10 μM). Isolated tissue bath experiments showed that contraction to NE (3 nM) was potentiated from 1.18±0.51% phenylephrine (PE) (10μM) contraction to 32.76±3.45% PE contraction in the presence of fenfluramine in SMA from pargyline-treated rats. Contraction to NE (3 nM) was potentiated from 8.60±1.80% to 17.60±3.6% PE contraction in the presence of 5-HT (10 nM) itself in rat SMA. These results indicate that fenfluramine releases 5-HT into the extracellular environment. Release of 5-HT can then potentiate contraction to NE. Alternately, direct fenfluramine activation of the 5-HT2A receptor may be sufficient to enable potentiation. As arterial contraction plays an important role in the pathogenesis of hypertension, the role that 5-HT may play becomes important as well.

364 ***Energy Conservation on Small- and Medium-Scale Dairy Farms***

Katie Gu, Elizabeth Kersjes, Igor Levit
Under the direction of Dr. Steven Safferman, Biosystems and Agricultural Engineering; Dr. Terry Link, Office of Campus Sustainability
2:00 PM - 4:00 PM, Ballroom

In order to make small- to medium-scale dairy farms more sustainable in terms of electricity use, we have discerned what areas on the farms use the most electricity in the most wasteful ways and established more conservation-friendly processes and technology. We have used the MSU Dairy Farm as a model for change and potential change. We then used our research to create a report that any dairy farmer in the northern United States can use as guides for the conservation of energy in their own facility. Upon review of the MSU Dairy Farm, we found some positive, energy-saving changes. We also found some

negative, energy-inefficient problems that can be remedied. Using the information we researched we have calculated the potential costs and savings, and we are presenting the information by poster and by a pamphlet to hand out to anyone interested.

365 ***Epidemiology and Characterization of Group B Streptococcus (GBS) Isolated from Non-pregnant Female College Students***

Erica Lehotzky
Under the direction of Dr. Thomas Whittam, Food Science and Human Nutrition
9:30 AM - 11:30 AM, Ballroom

GBS causes neonatal disease and complications in pregnant women and non-pregnant adults. Vertical transmission occurs in neonates, whereas transmission among adults is primarily via direct contact. While many studies have identified factors associated with invasive GBS disease, few have assessed factors associated with colonization in otherwise healthy adults. Here we describe the prevalence of GBS in female college students, and determine bacterial and host factors associated with colonization. Between September and December 2006 we enrolled 197 women seeking medical care at the student health center. All subjects collected vaginal and rectal specimens and completed a questionnaire. Specimens were inoculated in Lim broth and subcultured, and GBS presence was confirmed via latex agglutination and CAMP tests. The distribution of capsular (cps) genotypes and alleles for the surface immunogenic protein (Sip), a putative virulence factor, was examined by PCR-based RFLP. Among the 189 eligible women, 78 (41%) were colonized with GBS; 14 (7%) had rectal colonization only, 11 (6%) had vaginal colonization only, and 53 (28%) had both. Most women were colonized with cps genotypes II (28%), Ia (23%), and V (20%). In short, we found that the GBS prevalence is high compared to other similar populations, and the distribution of cps types and sip alleles differs from other populations studied (e.g., pregnant women, invasive newborns).

366 ***Examining Sequences of Barley and Cereal Yellow Dwarf Viruses Found in Michigan Wild Grasses***

Donna Bozgan
Under the direction of Dr. Carolyn Malmstrom, Plant Biology
9:30 AM - 11:30 AM, Ballroom

Barley and cereal yellow dwarf viruses (Luteoviridae: BYDVs, CYDVs) are aphid-vectored RNA viruses that cause stunting and mortality in many Poaceae species worldwide, including cereals and wild grasses. One important question about the ecology of these viruses is the extent of their movement over short distances (i.e., between crops and nearby grasses) and longer ones (viruliferous aphids can fly or be blown many kilometers). I used molecular methods to examine the characteristics of B/CYDVs found in wild grasses growing near six agricultural fields at the Kellogg Biological Station on Gull Lake in Southwestern Michigan. On June 29, 2006, I collected foliar tissue from symptomatic Bromus and Lolium species bordering the fields. I extracted total RNA with TriReagent, and used a multiplexed reverse-transcription polymerase chain reaction assay to amplify viral sequences. PCR products were sequenced at the Research Technology Support Facility and compared with GenBank sequences. The viruses I found were primarily CYDV-RPVs, consistent with other Midwest findings that this species is relatively common in wild grasses, although proportionately less so in crops. The reason for this difference merits further investigation. In sequencing, the viruses I found were similar to others collected in the Great Lake Region but dissimilar from CYDV-RPVs found in the Western United States, indicating a need to identify factors controlling this broad-scale distribution pattern.

367 ***Examining the Use of Diadochokinetic Rate Measures in Speech-Language Pathology Graduate Programs***

Tracy Tuyn
Under the direction of Dr. Jill Elfenbein, Communicative Sciences and Disorders
9:30 AM - 11:30 AM, Ballroom

Diadochokinetic (DDK) measurements involve assessing how quickly a person can produce verbal and non-verbal repetitive tasks, by asking the individual to repeat the series /puh-tuh-kuh/, or to protrude and retract his/her lips rapidly. There are a number of different methods and tools used to collect the data, for instance, a wrist watch/clock, computer software program, penciled hatch marks on paper, and the clinician's fingers or memory. There are also differences of opinion regarding when to use these measures (i.e., with all patients or with patients demonstrating certain speech characteristics). In order to determine how DDK measures are being taught to speech-language pathologists, 242 graduate programs across the United States were surveyed. The response rate was 55.8% (135/242). Data were obtained concerning when DDK measurements are made, the types of recording techniques used, and the reasons graduate programs include DDK measures in their curricula. These data indicate that although 93.3% of programs view DDK measures as an important tool, only one quarter instruct students in the use of computer technology to make those measures. This session will address the issue of whether graduate programs need to change the way speech-language pathologists are taught to make DDK measurements.

368 ***Exploring Galaxy Environments with Characteristic Field Mapping***

Shannon Snider
Under the direction of Dr. Timothy Beers, Physics and Astronomy
2:00 PM - 4:00 PM, Ballroom

The connection between characteristic properties of galaxies and their local environments is an important tool in understanding the life history of galaxies, their formation, and their effects on the large-scale structure of the universe. However, while there has been significant progress in understanding galaxy properties with relation to local densities and nearby cluster distances, fundamental questions still remain unanswered. Three-dimensional field mapping techniques are explored as a means of investigating the environmental dependence of characteristic properties of galaxies in large data sets. Field maps are applied to the Millenium Run semi-analytic galaxy catalog to create a baseline of methodology against a simulated data set. The field maps are then extended for application to the Data Release 5 of the Sloan Digital Sky Survey. An open architecture is presented as a framework for further studies of the correlational dependence of arbitrary characteristics. In particular, the techniques are being applied in current investigation towards an understanding of the relationships of metallicity, densities, star formation, mass, and luminosities in local environments in the DR5 of the SDSS.

369 ***Exploring Interpersonal Communication Motives and its Effects on Face-to-Face and Computer Mediated Communication Among College Students***

VaNessa Thompson
Under the direction of Dr. Kelly Morrison, Communication
9:30 AM - 11:30 AM, Ballroom

The purpose of my research is to explore the interpersonal communication motives and their particular effects on face-to-face (F2F) and computer mediated communication (CMC) among college students. As a result of this research, I want to predict based on communication motives whether or not an electronic communication device would be used and if there is one being used, which one is it and why. The interpersonal communication motives will be measured by the interpersonal communication motives scale which is scale that was created as a result of Rubin's research in 1988. These motives – inclusion, affection, control (Flaherty, Pearce, and Rubin, 1998, p. 254), pleasure, relaxation, and escape (1988; Flaherty et al, p. 254) – create a scale that consists of 28-items that measure communication needs. Based

on the motives we are going to predict which communication medium one will choose. F2F is "[communication with] few people (typically two)..." (Hargie, Sanders, and Dickson, 1994, p. 10). Instant messaging "is a text-based tool that allows users to hold an on line conversation by exchanging short messages in near synchronicity with others over the Internet" (Lenhart, 2003, Generation IM: Teens and Technology). Text messaging "is a service that allows a user to send [messages] of no more than 160 characters…" (Lenhart et al, p. 27). Hopefully, we will be able to predict whether or not F2F, instant, messaging, or text messaging will be the communication medium choice.

370 ***Expression and Purification of Neisseria Gonorrhea Protein NG1684 for Structural Studies***

Erica Travis
Under the direction of Dr. Dennis Arvidson, Microbiology and Molecular Genetics
2:00 PM - 4:00 PM, Ballroom

Neisseria gonorrhoeae is the causative agent of gonorrhea, a common sexually transmitted disease. It is problematic because a first infection does not give immunity to subsequent infections and antibiotic-resistance remains a continuing challenge. Studies done in the laboratory of Cindy Arvidson have shown that expression of the gene is induced upon contact with host cells. In addition, a strain containing a disruption of the NG1684 locus is impaired for invasion of host cells in tissue culture. Our goal is to solve the x-ray crystal structure of NG1684 in order to increase our understanding of its structure and function. We aim to express and purify the NG1684 protein and to grow data-quality crystals. A His-tagged NG1684 protein was expressed from pDEST17 by inducing BL21 E. coli cells with IPTG. Then metal-affinity and anion exchange columns were used to purify the protein. As an alternative approach, NG1684 was sub-cloned into pET24a using NdeI and XhoI restriction sites. This transfer switches the His-tag from the N-terminus to the C-terminus and hence may improve crystal growth.

373 ***Functional Characteristics of Extruded Pinto and Navy Bean Flours***

Nicole Goldman
Under the direction of Dr. Janice Harte, Food Science and Human Nutrition
9:30 AM - 11:30 AM, Ballroom

Functional Characteristics of Extruded Pinto and Navy Bean Flours Nicole R. Goldman, under the direction of Dr. Janice Harte, Department of Food Science and Human Nutrition Bean flour is an excellent alternative to flours that contain gluten, a protein that is not tolerated by those who have Celiac disease. The objective of this study was to obtain a method for producing navy and pinto bean flour that reduced off flavors that are commonly associated with bean flours. This flour could be used to produce quality baked-goods. An experimental flour was developed using extrusion and compared to the control flour, a commercially produced flour made by a company devoted to gluten-free products. Extrusion was performed at three temperatures (120, 100, and 85 degrees Celsius) to determine the effects of heat on the properties of the bean flour. Through evaluation of flour functionality and sensory analysis, it was determined that flour extruded at 85 degrees Celsius most closely matched the characteristics of the control flour. The desirable qualities associated with this experimental flour prove that a new method for producing bean flour can be achieved through extrusion.

374 ***Future Reference in Spontaneous Child Language***

Peter Klecha
Under the direction of Dr. Cristina Schmitt, Linguistics and Germanic, Slavic, Asian and African Languages
2:00 PM - 4:00 PM, Ballroom

The onset of particular functional words in child grammar can illuminate constraints on theoretical claims about adult grammar. Copley (2004) provides a formal semantic account for the English future function words "will" and "be going to", (or "gonna"). This account establishes a future-modal

characteristic for both auxiliaries. To differentiate the two, however, Copley establishes that there is a progressive operator scoping over the modal component in "gonna". Our question is how children acquire these two forms, and whether their acquisition of them can strengthen or modify Copley's claims. In this project, we examine the use of "will" and "gonna" by children and adults using the Child Language Data Exchange System (CHILDES). The goal is two-fold: first to determine the changing frequencies with which children at various stages of development use the two forms to talk about the future, as well as analyzing the potentially related variables within their future sentences, such as illocutionary force, grammatical person, lexical aspect, co-occurrence of temporal adverbials, and morphological variation with certain future forms (i.e., "going" vs. "going to" vs. "gonna"). Second, we examine parental input to determine for each child what impact the adult language being spoken around the child has on his/her acquisition of future forms.

375 ***God and Corruption in Polish Politics***

Marc Allen, Piotr Pasik
Under the direction of Dr. Louise Jezierski, James Madison College
2:00 PM - 4:00 PM, Ballroom

Poland is an extremely interesting case study for any student of political science. In the last few decades, it has gone from a communist state to a member of the European Union. It is also a country whose population is over 90% Catholic. Over the years, the Church has moved in and out of power. It has shaped policy, and been shaped by it. Just as pervasive as religion is corruption. Corruption in Poland is widespread and commonplace. Using public opinion polls, the researchers look at how the Polish people feel about corruption and religion in modern Poland, and what that means for the future of the country.

376 ***Going with the Flow? Attitudes about Water Diversions in the Great Lakes***

Brittany Blankenship, Katherine Chumack, Dani Giles, Elizabeth Hoxie, Lauren Jones
Under the direction of Dr. Michael Kaplowitz, Community, Agriculture, Recreation and Resource Studies; Dr. Frank Lupi, Agricultural Economics;
9:30 AM - 11:30 AM, Ballroom

The Great Lakes hold vast amounts of freshwater, but rising demand for water in other regions has sparked concern about potential water diversions from the Great Lakes basin. To address this, the eight Great Lakes states and two Canadian provinces have worked together to develop a framework for making consensus decisions about water diversions. Despite the increased attention by governmental leaders and interest groups, little is known about what the public thinks. We conducted an internet survey of Michigan households to measure the public’s knowledge and concerns about diversions. We also examined attitudes toward different types of Great Lakes water diversions (e.g., bottled water exports, pipelines). The survey results provide new information for policies and protection of the Great Lakes.

377 ***Growth Studies and Development of a Gene-Knockout System in the Succinate-Producing Bacterium Actinobacillus Succinogenes***

Adam Edmunds
Under the direction of Dr. J. Gregory Zeikus, Biochemistry and Molecular Biology; Dr. Claire Vielle, Biochemistry and Molecular Biology
9:30 AM - 11:30 AM, Ballroom

Succinate is a 4-carbon dicarboxylic acid and an industrially-useful organic precursor for solvents, detergents, and plastics. Presently, biologically-produced succinate is too expensive to be competitive with malic anhydride in those markets. Genetic manipulation of a novel organism may provide a cheap biocatalyst for succinate production. A. succinogenes naturally produces a large amount of succinate as a metabolic byproduct. Genetic manipulations were proposed to create a homo-succinate producer that produces little or no other metabolic byproducts such as acetate and formate. Growth studies were

performed with this facultative anaerobe to develop a functional medium, termed medium B. In liquid medium B supplied with 50 mM glucose and 10 *f*Ýg/mL kanamycin, 130Z showed a doubling time of 1.14 hours and a growth rate of 0.608 hr-1. A. succinogenes was found to metabolize sucrose on solid media up to 100 g/L. Attempts were made at knocking out three genes: pyruvate kinase (pykA), oxaloacetate decarboxylase (oad), and pyruvate formate lyase (pflB). Knockouts were attempted using sucrose counter-selection. The pykA gene was successfully interrupted with a chloramphenicol resistance cassette and ligated into plasmid pGP704SK. The oad gene was interrupted with a chloramphenicol resistance cassette. All attempts at interrupting pflB were unsuccessful. Gene knockouts were never obtained due to the large frequency of spontaneous chloramphenicol resistant A. succinogenes.

378 ***Health Attributes of Members of the National Academy of Sciences (USA), 1900-2005***

Justin Fast, Benjamin Kremkow
Under the direction of Dr. Robert Root-Bernstein, Physiology
2:00 PM - 4:00 PM, Ballroom

As part of a larger study of the relationship of avocations to scientific success, we are characterizing the health attributes of members of the National Academy of Sciences (USA) whose obituaries have been published in the Biographical Memoirs of the National Academy between 1900 and 2005. Previous studies of scientists have suggested that successful scientists may be more physically vigorous and long-lived than their less successful colleagues. On the other hand, contrary to what is found among artists and poets, various psychological studies of scientists report that the incidence of mental illness is somewhat less than that found among the general population. We have therefore collected data on longevity, physical activities, and reports of mental illness among National Academy members and compared them with several data bases: 1) data from a 1936 survey of physical activities of Sigma Xi (The National Research Organization) members, which represents a group of average scientists; and 2) tables of average longevity among the US population; and 3) Arnold Ludwig's data on mental illness among eminent scientists in The Price of Greatness.

379 ***Helicase-dependent Isothermal Amplification for Hand-held Diagnostic Devices***

Fatima Foflonker
Under the direction of Dr. Syed Hashsham, Civil and Environmental Engineering
2:00 PM - 4:00 PM, Ballroom

DNA amplification using the polymerase chain reaction (PCR) is generally the preferred molecular tool utilized to detect microbial pathogens in the environment. For field applications, however, isothermal amplification schemes may be favored to eliminate the need for hardware for temperature cycling in conventional PCR. To this end, we systematically evaluated the the effectiveness and plausibility of the use of an isothermal variant of PCR, known as helicase-dependent isothermal amplification (HDA), in microbial detection. This technique exploits the DNA unwinding property of helicases rather than thermocycling to produce single stranded DNA, and can be performed at constant temperature. The effect of pre-denaturation of the double-stranded DNA targets, and the potentially inhibitory effect of fluorescent dyes (EvaGreenTM and SYBR® Green I) on the HDA performance were evaluated. The possible adaptation of HDA in a real-time format to quantify target DNA was also evaluated. Overall, this set of initial experiments indicated that HDA is a plausible alternative to PCR for DNA amplification, and offers great potential for hand-held diagnostic devices. The use of HDA instead of PCR could aid detection of pathogens with hand-held diagnostic devices by eliminating the bulky hardware needed for thermocycling.

380 ***History of Mason-Abbot Hall***

Daniel Young
Under the direction of Dr. Michael Velbel, Geological Sciences
2:00 PM - 4:00 PM, Ballroom

Mason-Abbot hall is one of the oldest dormitories at Michigan State University. Since it was built in 1938, the dorm has been a landmark in the Red Cedar Zone of the campus. This study is focused on the history of Mason-Abbot hall. Specifically, the study focuses on the geologic aspects of the original building and the geologic aspects of the building renovations.

381 ***Home Sweet Home-or is it? The Impact of Housing Systems on Chicken Welfare and Behavior***

Victoria Hekman, Andrea Minella, Leslie Warner
Under the direction of Dr. Janice Siegford, Animal Science
9:30 AM - 11:30 AM, Ballroom

A positive public perception is integral to the success of agricultural industries. With increasing consumer and industry concern over the treatment of animals in production, it is critically important to study the welfare of animals in agricultural systems. Currently, there are 341 million egg-laying hens in the U.S., and over 90% of these birds are housed in cages which may restrict their behaviors and lead to decreased welfare. There is, therefore, a need for definitive measures of chicken welfare. To this end, this study aims to correlate specific behaviors with the welfare of laying hens housed in different confinement systems. Twenty-five hens and one rooster were examined in each of three housing systems: 1) indoor, individually caged, 2) indoor, open floor, and 3) hoop housed, free-range. An ethogram of chicken behavior was created based on preliminary observations in each system. One hour of video was collected from each system on two different mornings and afternoons. Using the video, the behavior of each bird in the flock will be noted every five minutes. Data will be analyzed using a generalized linear mixed model. We expect the caged birds to show higher levels of frustration behavior, while birds in the open floor system will experience aggressive behaviors more frequently. This study will provide a foundation for future research correlating specific chicken behaviors and welfare as related to the housing of layer hens.

382 ***Hormonal Regulation of Neural Plasticity in the Adult Mouse Amygdala***

Zachary King
Under the direction of Dr. Cynthia Jordan, Psychology; Dr. S. Marc Breedlove, Neuroscience Program
2:00 PM - 4:00 PM, Ballroom

The posterodorsal medial amygdala (MePD) of the adult rat has been shown to be sexually dimorphic and responsive to circulating adult hormones. While the rat is a good model for behavior, the mouse is a better genetic model because its genes are currently easier to manipulate. By showing that the MePD of the mouse is also sexually dimorphic and responsive to adult circulating hormones, this study could provide a model to better explain the process of sexual differentiation by utilizing advances in molecular genetics. Observations at the molecular, cellular, and behavioral level offer a systems level approach to answer how the brain controls behavior.

383 ***How Higher Education Institutions Differentiate Themselves through Slogans***

Krista Anderson
Under the direction of Dr. Bruce Vandenbergh, Advertising, Public Relations, and Retailing
9:30 AM - 11:30 AM, Ballroom

Slogans are a commonly used method of quickly communicating the brand of an organization. College and universities alike utilize slogans to encompass their core values and the value they provide students. But how do they develop their institutional slogans? To learn more about the strategy and creation of these slogans, college employees who worked in either institutional advancement or development

departments, or in college communications-related departments were surveyed. Next, content analysis was utilized to gather information on what attributes of college slogans made them a value-added asset. This study gave insight into the planning and procedures colleges and universities use to brand and differentiate their schools in an increasingly competitive market of higher education institutions.

385 ***Identification of Neisseria Gonorrhoeae-Specific Gene Clusters***

Corrinne Thomas
Under the direction of Dr. Cindy Arvidson, Microbiology and Molecular Genetics
9:30 AM - 11:30 AM, Ballroom

Neisseria gonorrhoeae is a gram-negative bacterium that is responsible for gonorrhea, one of the oldest documented infectious diseases of humans. Global gene expression analysis of N. gonorrhoeae has revealed a subset of genes that are upregulated upon exposure to sublethal concentrations of the antibiotic ciprofloxacin. These genes are clustered in three specific regions on the gonococcal chromosome. Many genes found in these clusters are homologous to known bacteriophage genes, suggesting the clusters are of phage origin. Several genes homologous to genes involved in virulence in other pathogenic bacteria are unique to each cluster. We used PCR to compare the presence of selected genes from each of the three clusters in N. gonorrhoeae strain MS11, 24 recent clinical isolates from the Michigan Department of Community Health (MDCH), 15 isolates from the 1930s (pre-antibiotic era), and eight commensal Neisseria species. Our results show that at least three genes encoded in the clusters are present in all N. gonorrhoeae isolates, but are absent from the commensal Neisseria species. Curiously, one pair of genes unique to one of the clusters appears to be absent in the pre-antibiotic isolates as well as the commensals, yet is present in all recent clinical isolates of N. gonorrhoeae. These results have led us to the hypothesis that the genes distinctive to N. gonorrhoeae have been retained in the genome over time as an adaptation of the gonococcus to the human host.

386 ***Impulsivity and Compulsivity in Self-Harm***

Emily Dworkin
Under the direction of Dr. Rebecca Campbell, Psychology
2:00 PM - 4:00 PM, Ballroom

Self-harm describes the group of behaviors in which body tissue is deliberately, directly destroyed without conscious suicidal intent. For the friends, family members, researchers and clinicians who come into contact with individuals who self-harm, this is a frustrating and confusing phenomenon. There is a pressing need for research that will group the individuals who utilize these self-destructive behaviors. In the current study, it is hypothesized that self-harm type, self-harm function, and personal characteristics of individuals who self-harm (e.g., participant demographics, psychiatric diagnoses, abuse history), will differ among those who use these behaviors impulsively and those who do so compulsively. Treatment of impulsive and compulsive maladaptive behaviors is quite different, although this distinction may not always be obvious in a clinical setting. Giving clinicians supporting information to assess whether the self-harm behavior is impulsive or compulsive would be likely to aid treatment by assisting the tailoring of coping mechanisms to the individual. Such understanding of self-harm is very important for the large number of individuals who struggle with this behavior.

387 ***Inhibiting Urokinase Plasminogen Activators***

Marci Baranski
Under the direction of Dr. Maria Zavodszky, Biochemistry and Molecular Biology
9:30 AM - 11:30 AM, Ballroom

Urokinase plasminogen activators (uPA) are known to be involved in tumor cell metastasis and invasion. In this study, the computer program SLIDE was used to identify possible inhibitors for uPA. Two binding templates were created based on several known strong uPA inhibitors and interaction points in

the protein's active site. A dataset of small molecules with drug-like qualities was downloaded from the online ZINC database, and the program OMEGA was used to generate different conformations for each of these molecules. SLIDE screened this database and identified possible matches based on geometric fit and van der Waals overlaps between the protein and ligand. The dockings were saved and scored based on hydrophobic complementarity and the number of hydrogen bonds. Two scoring functions were used in the present study: DrugScore, to select the best orientation of each docked molecule, and the scoring function built into SLIDE, to predict the binding affinity. The top scoring molecules will then be experimentally tested to determine if they effectively inhibit uPA.

388 ***Ink: A Serious Online Multiplayer Game Designed to Facilitate the Teaching and Learning of Writing***

Seth Morton
Under the direction of Dr. David Sheridan, Arts and Letters Writing Center
9:30 AM - 11:30 AM, Ballroom

Developed collaboratively by the WIDE (Writing in Digital Environments) Research Center and the MSU Writing Center, Ink is a Persistent Alternate World (PAW) computer game being designed to facilitate the growth and development of writers. Players contribute to textually rich and vibrant world by producing compositions--from research reports to movie reviews--within formal contexts. This presentation will focus on data collected through formal play testing, including focus-group and ethnographic data meant to help us understand the gaming and learning experiences players have in Ink and to inform future revisions of the game.

389 ***Interaction of Galectins and TFII-I: Their Role in pre-mRNA Splicing***

Seth Dickey
Under the direction of Dr. John Wang, Biochemistry and Molecular Biology
9:30 AM - 11:30 AM, Ballroom

Galectin-1 (Gal1) and galectin-3 (Gal3) are two members of a family of carbohydrate binding proteins found in nuclei of cells. Using HeLa cell nuclear extracts (NE), depletion-reconstitution experiments documented that they are factors involved in pre-mRNA splicing. An in vitro pull-down experiment using fusion proteins containing glutathione S-transferase (GST) identified the general transcription factor TFII-I as an interacting partner of Gal1 and Gal3 Our studies yielded several key conclusions: (a) Either GST-Gal1 or GST-Gal3 can specifically pull-down TFII-I out of NE. (b) â-galactosides, ligands of galectins, inhibited this interaction whereas non-binding carbohydrates failed to yield the same effect. (c) Site-directed mutants of Gal1, devoid of carbohydrate-binding activity, retained the ability to interact with TFII-I and, unlike the wild-type protein, this interaction was no longer sensitive to saccharide inhibition. Along with assays of splicing, our results suggest that the interaction of Gal1 and Gal3 with TFII-I was closely correlated with their splicing activity and that saccharide-binding, per se, was not necessary for either of the former two activities. Interestingly, a recent proteomic analysis of spliceosomes identified TFII-I as one of the components.

390 ***Investigating the Multiple Targeting Pathways that Direct Proteins to Various Membranes within the Chloroplasts***

Robert Orler
Under the direction of Dr. Kenneth Keegstra, Plant Research Laboratory
2:00 PM - 4:00 PM, Ballroom

To ensure the efficient and correct targeting of proteins to their final destination, chloroplasts have evolved numerous internal protein routing systems. Two pathways have been proposed for the targeting of proteins to the inner envelope membrane (IEM): the stop-transfer and conservative sorting pathways. We propose to investigate why thylakoid proteins and some inner envelope proteins are translocated

across the IEM, while other proteins are halted (i.e., via the stop transfer pathway) at the IEM. In addition, we propose to investigate the unique problem of how IEM proteins that use the conservative sorting pathway are specifically redirected to the IEM rather than being mistargeted to the thylakoid membrane. Using standard molecular biology techniques to analyze model IEM and thylakoid proteins, we propose to identify targeting determinants that direct these proteins to their final destination. Several critical biophysical features that could serve as a signature targeting sequence will be considered for this analysis: for example, size and hydrophobicity of a transmembrane domain (TMD); charge distribution; prevalence of prolines and serines near or within a TMD. We anticipate that by identifying and comparing the targeting determinants between IEM and thylakoid proteins, we will be able to identify specific targeting signals that are predictive of whether a protein is to be targeted to either the IEM or the thylakoid membrane.

391 ***Investigating the Role of Stat5a in Pubertal Mouse Mammary Gland Development***
Elisabeth Starnes
Under the direction of Dr. Susan Conrad, Microbiology and Molecular Genetics
2:00 PM - 4:00 PM, Ballroom

Signal transducer and activator of transcription (Stat)5a is one of the many factors that contribute to mammary gland development in the mouse. During pregnancy, Stat5a has been shown to be crucial for differentiation and proliferation of mammary epithelial cells and is also critical for lactation. Our lab has shown that Stat5a is present not only in mammary glands from adult virgin, pregnant and lactating mice, but is also detectable in glands from pubertal mice. In efforts to investigate the significance of Stat5a's presence in mammary epithelium during pubertal development, Stat5a knockout mice have been obtained. Research is currently in progress to examine and compare pubertal Stat5a -/- mouse mammary glands with glands from their heterozygote littermates.

392 ***Knockout of the Photorhabdus Luminescens Homolog of the Yersinia Murine Toxin Gene and Determination of its Function in Nematode Transmission and Insect Virulence***
Eric Kleiner
Under the direction of Dr. Todd Ciche, Microbiology and Molecular Genetics
9:30 AM - 11:30 AM, Ballroom

Symbiosis is the non-transient association between dissimilar organisms which range from pathogenic to mutually beneficial. The Gram-negative bacterium Photorhabdus luminescens is mutually associated with the entomopathogenic nematode Heterorhabditis bacteriophora. The nematode requires P. luminescens for insect pathogenicity, growth and reproduction, while this bacterium uses H. bacteriophora for transmission to insect hosts. P. luminescens contains a homolog, plu1971, of the Yersinia Murine-like toxin gene, ymt. This gene is known to play a role in the colonization of Yersinia pestis, the causative agent of the plague, to the flea gut, which is required for plague transmission. Similarly, plu1971 is hypothesized to play a role in transmission of P. luminescens. We seek to determine the role of P. luminescens plu1971 by gene disruption using allelic exchange in P. luminescens labeled with the green fluorescent protein and assaying nematode transmission and insect virulence. A gene deletion construct of plu1971 was made using the method of strand overlap extension (SOE) and cloned into the allelic exchange vector, pWM91. Using allelic exchange, the genomic wild type gene will be replaced with the deletion construct. Characterization of the P. luminescens plu1971 mutant might help us understand P. luminescens and plague transmission in their respective vectors.

393 ***Laboratory Row: History, Renovation, and Preservation***
Sarah Van Domelen
Under the direction of Dr. Michael Velbel, Geological Sciences
9:30 AM - 11:30 AM, Ballroom

The red-brick buildings along Circle Drive, including Eustace-Cole, Marshall-Adams, Old Botany, Chittenden, and Cook, often referred to as "Laboratory Row," are an important reminder Michigan State University's early history. Originally built as scientific laboratory buildings near the turn of the 20th Century, many adaptive changes have been made to these structures throughout their existence, and more are planned for the future. The current use of the buildings is dramatically different than the original use, and though the exteriors remain in near original form, much renovation has taken place in the interiors. Over the past several years, Eustace-Cole and Marshall-Adams have undergone extensive restorations thanks to generous donations, and restoration of the remaining three buildings is projected in the Campus Heritage Initiative. In an age when historically significant buildings are lost to neglect or demolition every day, Michigan State University is taking an important step to preserve these irreplaceable buildings. This study will explore how past updates and renovations have changed the overall functionality of the structures, as well as how future changes will provide efficient new uses for the space while retaining their historic value.

394 ***Learning For Liberation: A Critical Look at the Impacts of the Intercommunal Youth Institute***
Dominick Quinney
Under the direction of Kenfentse Chike, African American and African Studies
2:00 PM - 4:00 PM, Ballroom

During the rise and prominence of the Black Panther Party, there were many programs that were created to engage the Black community in the process of social change. However, the images of the Panthers are that of militant, violent men without means or an exigency to improve the situation of the citizens in their community. The Intercommunal Youth Institute created in 1969 by the Panthers dispels the stereotype placed on this organization. This comparative study seeks to explore the curriculum of this institute, the teachers involved with the school, and if the curriculum of the institute could currently be taught in an African-centered school setting. These aspects of the Intercommunal Youth Institute will be examined to see if they offer critical thought, community engagement, and unconventional learning. The specific purpose of this school is to educate students on basic school subjects, as well as understanding the struggle of Black people in America.

395 ***Light-Induced Unfolding of Zn -Substituted Cytochrome c: A Continuous-Wave Fluorescence Excitation Study of the Unfolding Transition State***
Kenneth Barns
Under the direction of Dr. Warren Beck, Chemistry
9:30 AM - 11:30 AM, Ballroom

We used continuous wave fluorescence spectroscopy to study unfolding transitions of Zn substituted Cytochrome c (ZnCytC). Our experiments show that excitation with high energy light causes the fluorescence spectrum of ZnCytC to shift towards the blue in comparison to the fluorescence spectrum of the native protein. This shift in the fluorescence spectrum is an indication of the protein unfolding. Our experiments show that the fluorescence spectra exhibits changes in the vibronic structure of the protein, for the range of excitation wavelengths between 430 nm and 500 nm. The first transition state region in the unfolding of ZnCytC occurs by exciting the protein with 3200 wavenumbers of excess energy. Excitation with 6200 wavenumbers of excess energy causes the protein to pass over the activation energy barrier to the unfolded state. These findings are significant because they show that it is possible to unfold a protein using light instead of chemical reactions or temperature changes.

396 ***Listening to Music: University Students' Device Preferences***

Alexandra Artymovich, Tori Frost, Minyoung Jeong, Fan Lin, Neil Patel, Emilie Sweet
Under the direction of Dr. Jill Elfenbein, Communicative Sciences and Disorders; Dr. Jerry Punch, Communicative Sciences and Disorders
9:30 AM - 11:30 AM, Ballroom

More than 500 undergraduate and graduate students on the Michigan State University campus were surveyed to determine the types of electronic devices (e.g., MP3 players, cell phones, CD players, and computers) that they use to listen to music. Data were also collected concerning their patterns of device use, their concerns about the impact of device use on their hearing, and the steps that they would be willing to take to lower the risk of hearing loss. This session will focus on a comparison of the MSU results to existing data from a national sample. Zogby (2006) surveyed teens and adults regarding their use of personal electronic devices and their concerns about potential for device use to damage their hearing. Only 195 of his 1000 adults were ages 18 to 29 years and, of those, only 93 were ages 18-24 years. The importance of examining university students' behavior patterns will be discussed.

397 ***Lithium Production in Asymptotic Giant Branch Stars***

Julie Krugler
Under the direction of Dr. Timothy Beers, Physics-Astronomy; Dr. Horace Smith, Physics-Astronomy;
2:00 PM - 4:00 PM, Ballroom

When stars undergo helium shell burning, they are subject to many different mixing processes which contribute to unusual elemental abundances found in these stars. 7Lithium burns at relatively low temperatures; however, it is found in these asymptotic giant branch (AGB) stars. This should not be possible, except through the production of lithium via hot bottom burning and the Cameron-Fowler mechanism. In this study, 122 AGB candidates were analyzed for possible lithium production. Lithium abundances (or upper limits) were determined for these stars using MOOG, as well as [Fe/H], radial velocity, and rotational velocity estimates.

399 ***Localizing Michigan State Food Sources***

Danielle Hiser, Rachel Linsmeier, Shalyne Love,
Under the direction of Dr. Steven Safferman, Biosystems and Agricultural Engineering
9:30 AM - 11:30 AM, Ballroom

The average amount of food miles per item in the Michigan State University Residence Hall Cafeterias is between 1,000 and 2,000 miles. The CO2 emissions from shipping food across the country have a very detrimental effect on our global environment. Shipping also takes much time and energy which compromises the freshness of produce and requires added preservatives. Since the MSU Residence Hall Cafeterias order 120 tons of lettuce on average per year, we propose a plan beginning on a small scale with the lettuce to be grown for the new Phillips-Snyder cafeteria. Michigan State has designed low-energy, virtually unheated hoop houses which extend Michigan's growing season to 48 weeks. Instead of buying lettuce grown in California and Arizona, forward-contracts can be made with local farmers to build these hoop houses, creating jobs in Michigan. If Michigan State agrees to be a customer of these hoop house crops in the future, it would significantly reduce the University's ecological footprint, especially if implemented on a larger scale.

400 ***Major Newspapers' Coverage of College Binge Drinking Prevention Strategies***

Mary Slonske

Under the direction of Dr. Teresa Mastin, Advertising, Public Relations, and Retailing

9:30 AM - 11:30 AM, Ballroom

Despite efforts to curb college binge drinking, the rates have remained steady throughout the past decade. In this study, I examined one medium through which students, parents and college administrators learn about binge drinking prevention strategies. I analyzed content of major newspaper articles published between 1997-2006 that covered college drinking to examine environmental strategies, including alcohol free campuses, alcohol-free late night student activities, and restricting alcohol advertising. Overall, coverage was minimal and declined during the study timeframe. These findings suggest there is room for college administrators and the media to work together to increase awareness of and knowledge about solutions proven to be most effective in combating college binge drinking.

401 ***Material Decay of MSU Residence Halls***

Kellyn Strong

Under the direction of Dr. Michael Velbel, Geological Sciences

2:00 PM - 4:00 PM, Ballroom

Stone degradation is a common problem for buildings which have been standing for many years. Numerous examples of stone decay occur on Michigan State University's campus. However, the time scale over which noticeable deterioration occurs varies with stone type and environmental factors. This study examines the question, "are there differences in the amount of degradation between two buildings that were built 30 years apart?" The study compares and contrasts the amounts of visible decay on the newest residence halls with the oldest residence halls that are still being used for their original purpose. Although there were 30 years between the construction of the oldest and newest dorms, many of the same materials were used. These buildings illustrate a range of building-material durability and deterioration on buildings with similar uses over a 30 year time span.

402 ***Meaningful Experiences with One-to-One Correspondence and Mathematical Development in Kindergarten Children***

Erin Holcomb

Under the direction of Dr. Kelly Mix, Counseling, Educational Psychology and Special Education

2:00 PM - 4:00 PM, Ballroom

One-to-one correspondence constitutes the conceptual foundation for many cognitive activities including mathematical operations such as counting, conservation, and symbol grounding. As the foundation for more sophisticated forms of mathematics, it is important to understand how one-to-one correspondence develops in children. Whether children are born with some ability to recognize equality in sets, or it is acquired with age, there is general agreement that this ability does not emerge completely developed. The experiences that allow a child to attain competence with one-to-one correspondence are key to understanding this phenomenon. The purpose of this project is to investigate whether experiences with certain kinds of one-to-one matching facilitate the development of complex number concepts, like equivalence, more than others.

403 ***Measurement of the Activity Level of Succinyl-CoA Synthetase (SucCD) as a Tool to Detect Activity of Alpha-ketoglutarate Dependent Dioxygenases***

Andrea Silva
Under the direction of Dr. Robert Hausinger, Microbiology and Molecular Genetics
9:30 AM - 11:30 AM, Ballroom

SucCD is an enzyme used in a coupled assay in which the formation of succinate is coupled to the oxidation of NADH to measure the activity of alpha-ketoglutarate dependent dioxygenases. The sucCD genes were overexpressed in C41(DE3) Escherichia coli cells, which were used to prepare cell extract, and the protein was purified using an anion exchange chromatography column. Preliminary activity assays were conducted using SucCD in combination with pyruvate kinase and lactate dehydrogenase enzymes. Because SucCD exhibited a low level of activity, the sucCD plasmid was sequenced and a nucleotide mutation leading to an amino acid mutation was found. Site-directed mutagenesis was performed using specific primers to reverse the mutation. The enzyme was overexpressed and purified as before and the level of activity was higher. SucCD will now be used to detect activity of alpha-ketoglutarate dependent dioxygenases.

404 ***Measuring the Evolution of Pulsating Giant Stars***

Katherine Rabidoux
Under the direction of Dr. Horace Smith, Physics-Astronomy
2:00 PM - 4:00 PM, Ballroom

Type II Cepheids are giant, pulsating stars found in old stellar systems. Changes in the structure and size of these stars can be revealed by tiny changes in their pulsation periods long before they can be detected by any other means. We have used old and new observations to study the long term period changes of two Cepheids in the globular star cluster M5 and one Cepheid in the globular star cluster M3. We compare these observed period changes with those predicted for these stars by stellar evolution theory.

405 ***Mechanical Properties of Typical Paving Concrete Mixtures***

Jacob Martin, Jeremy Zalud
Under the direction of Dr. Neeraj Buch, Civil and Environmental Engineering
2:00 PM - 4:00 PM, Ballroom

Concrete is formed by combining cement powder, water, fine aggregate and coarse aggregate. Concretes can differ based on the size and strength of the aggregrate rocks included. The concrete can vary in terms of durability, strength, and longevity, among other things. There are many tests that can determine the mechanical properties of concrete such as elastic modulus, split tensile, flexure, and compressive stress. These tests measure the ultimate load that can be put onto the concrete in terms of pound per square inch before the concrete fails and cracks. Using mathematical formulas based on the spatial measurements (length, width, etc.) of the sample, in addition to the load at failure, the tests can determine certain mechanical properties of different types of concrete. Knowing these mechanical properties helps determine which concrete and aggregate best fits a certain project for building that is based on certain criteria.

406 ***Molecular Identification, Virus Detection, and Blood Meal Analysis of a West Nile Virus Vector***

Lisa Abernathy
Under the direction of Dr. Edward Walker, Microbiology and Molecular Genetics
9:30 AM - 11:30 AM, Ballroom

West Nile Virus (WNV), first seen in the US in 1999, is a mosquito-borne flavivirus that can cause deadly encephalitis or meningitis in humans. Culex spp. are the primary vectors for WNV and therefore are of the most concern. Culex spp. were identified using species-specific primers in PCR, a molecular

identification method for morphologically similar organisms. Mosquitoes testing positive for WNV were determined by qPCR of viral RNA extracted directly from the mosquito. Blood meal analysis of blood-fed mosquitoes is a lab technique used to identify the origin of a blood meal. DNA is extracted from a blood-fed mosquito abdomen, amplified using PCR, sequenced, and blasted in Genbank to find a match, thus identifying the origin of that particular blood meal. The ability to determine the origin of a blood meal taken by a mosquito has a number of applications, including identifying other vectors and reservoirs and feeding preferences for particular spp. of mosquito. To our knowledge, we are the first group to have found a mosquito testing positive for WNV that was shown to have taken a blood meal from a humans. This finding has the potential to identify the mosquito species most responsible for human infection.

407 ***Motion Capture in a Clinical Environment: An Approach for Objectifying Head/Neck Motions Related to Palpatory Diagnosis***

Sam Leitkam
Under the direction of Dr. Tamara Reid Bush, Mechanical Engineering
2:00 PM - 4:00 PM, Ballroom

The current practice of palpatory examination to determine musculoskeletal impairment strongly relies on the subjective assessments of clinicians. This study examines a possible method to add objective, physical measurements to the resources used by the clinicians when assessing levels of impairment. Using a 3D motion capture system, it is possible to track the angles that the head moves relative to the thorax during a lateral cervical flexion test. That angle data can then be used to examine the coupling effects of lateral flexion and rotation in the head as it occurs in patients with neck pain compared to patients without pain. Also, it could provide a means to show tangible evidence of asymmetry, and the corrective nature of various treatments over time. From this study, early results show that motion capture could prove to be a valuable tool that would allow clinicians to more accurately and consistently diagnose and monitor treatment of patients.

408 ***MSU Athletic Buildings***

Rosamond Meerdink
Under the direction of Dr. Michael Velbel, Geological Sciences
2:00 PM - 4:00 PM, Ballroom

This project will examine three athletic programs that are very important to MSU, with special attention to the venues which house them. The construction, materials, architecture, and history of each building will be discussed as well as possible flaws and conservation efforts. Finally, I will discuss the importance of these buildings and the teams they support to Michigan State University and all of its students, alumnae, and fans.

409 ***MSU Telecasters - Sideshow***

Ryan Alloway, Michael Horgan, Brandon Peeples
Under the direction of Dr. Robert Albers, Telecommunication, Information Studies and Media
9:30 AM - 11:30 AM, Ballroom

Sideshow is a completely student run sketch comedy television show that is part of the MSU Telecasters organization. In an effort o learn more about the process of producing a television show, students who are part of MSU Telecasters are responsible for writing, filming, editing, promoting, and distributing their shows content.

410 ***Musquitocide within Heterorhabditis Bacteriophora***

Jeffrey Urquhart
Under the direction of Dr. Todd Ciche, Microbiology and Molecular Genetics
9:30 AM - 11:30 AM, Ballroom

During their adolescent stage of growth for Heterorhabditis bacteriophora, there is a symbiotic relationship between a nematode and varying bacteria that will get expelled from the nematode as it has reached adulthood. Some of these bacteria produce potentially fatal endotoxins, killing the surrounding organism that the nematode lived in. This will be examining the bacteria produced by such nematodes as a potential musquitocide. Testing differing variations in concentrations of varying bacteria upon Aedes Egyptii Musquito larvaes before they molt. Utilizing E.Coli OP50 and sample broth as negative controls, what results is incredible findings of potential musquitocides.

411 ***New Insect Cell Lines for Baculovirus Expression Vectors***

Heather Peplinski
Under the direction of Dr. Suzanne Thiem, Entomology
9:30 AM - 11:30 AM, Ballroom

New cell lines from *Trichoplusia ni* were established for improving membrane protein expression in the baculovirus expression vector system. The E7 and T4 insect cell lines initially showed high levels of expression when infected with a human Neurotensin 1 receptor-GFP membrane-fusion protein as a model to evaluate expression. Using flow-cytometry we found that the E7 and T4 cells had a lower rate of infection and lower intensity in comparison with Sf-21 cells from *Spodoptera frugiperda* (the control). To confirm this observation confocal microscopy was used in determination of individual cell fluorescence versus total fluorescence. The E7 and T4 cell lines showed high levels of intensity of infection, but unspecific localization in E7 and semi localization in T4. The Sf-21 cells showed similar levels of intensity and a high localized of infection on the outer membrane. Both cell lines show favorable growth characteristics, for example adaptation to spinner cultures and high rates of growth. Based on this model protein, these cell lines do not appear to be better for membrane protein expression, showing the need for additional model membrane proteins to be tested. There are only two commonly available cell lines for baculovirus expression- Sf21 and High5. Some proteins are not expressed well in either resulting in other strategies being tested for example, expression of p35.

412 ***Noise Pollution at MSU***

Rebecca Frear, Ruoting Sun
Under the direction of Dr. Steven Safferman, Biosystems and Agricultural Engineering
2:00 PM - 4:00 PM, Ballroom

Noise pollution is one of the least talked about forms of pollution, yet this seldom-mentioned disturbance is something that affects daily life. This study will focus on the magnitude and effect of noise pollution on life for students and faculty at MSU. In particular, the level of noise given off from heating and cooling systems in buildings, garbage trucks on campus, and general car traffic will be studied. The effects of these pollution sources will then be considered in relation to working, studying, and living on campus.

413 ***Online Campus Tour***

Michael Harvey
Under the direction of Dr. Michael Velbel, Geological Sciences
9:30 AM - 11:30 AM, Ballroom

This project entails the creation of an online, interactive map of campus that will allow viewers to see comprehensive information on every building on campus. This information will include history,

construction material, points of interest, and images of the buildings. Unlike other similar online maps, this project will take the form of an interactive campus tour that would provide useful information about the beautiful MSU campus to future, current, and past students alike. My presentation will consist of a poster displaying a printout of the campus map, as well as several sample pages about individual buildings.

414 ***Output Levels of the Apple iPod for Three Types of Earphones***

Hazel Atienza, Sameer Bhagwan, Alicia Kramer, Allan Morris, Daniel Pabst, Amy Warren, Nathan Williams

Under the direction of Dr. Jerry Punch, Communicative Sciences and Disorders; Dr. Jill Elfenbein, Communicative Sciences and Disorders

9:30 AM - 11:30 AM, Ballroom

Sound level measurements were made of white noise and of music generated by an Apple iPod Nano, as worn on an acoustic manikin. Data were used to calculate the time in hours to reach 100% dose at each of four volume settings (25%, 50%, 75%, and 100%) and under three types of earphones. Results indicated comparable output levels for white noise and music and excellent test-retest reliability. Progressively higher output levels were obtained under supraaural, earbud, and insert earphones, respectively. At 100% volume, the measured levels exceeded the exposure levels permitted by NIOSH (85 dBA) for all three earphones, and approached the permissible limit at a 75% volume setting for the insert earphone. The poster will include specific guidelines for the safe usage of iPods.

415 ***Paleobiogeography of North American Bryozoa in the Middle Mississippian Era***

Ryan Morgan

Under the direction of Dr. Robert Anstey, Geological Sciences

2:00 PM - 4:00 PM, Ballroom

In order to better understand the effects of time and environment on species distribution, a systematic analysis involving Bryozoa genera is being performed. The Middle Mississippian era was chosen due to the widespread Mississippian fauna, especially predominant in the Mississippi valley area and also in the Redwall area (Grand Canyon) of Arizona. This is done using PAST, a cladistic analysis program, to calculate relations among the known usable localities, and then applying this data as area cladograms in order to better understand what effect the surroundings may have had on Bryozoa at the time, and to see the distribution of fauna by facies through time.

416 ***Simulations of Optimal Redistributive Taxes and Transfers***

Michael Gallagher

Under the direction of Dr. Charles Ballard, Economics

2:00 PM - 4:00 PM, Ballroom

In economics, simulation models are used to determine the effects of tax changes in tax policy on labor supply. Many of these models require the researcher to choose a parameter for the model showing the consumer's choice between labor and leisure. That parameter tends to be chosen very arbitrarily, even though it could have a very significant impact on the outcome of the model. It is my goal to show to the profession the importance of the parameter selection in these labor supply models. I will do this by recreating several famous models and demonstrating their sensitivity to changes in parameter selection. It is very important that this sensitivity is known and recognized, since the use of these models affects the governmental policy decisions every day.

417 ***Paulownia Intercropping in Heze, Shandong Province: Its Past Success, Current Demise, and Future Potential***

Jacob Baker
Under the direction of Dr. Runsheng Yin, Forestry
9:30 AM - 11:30 AM, Ballroom

This poster presents a case study of paulownia intercropping systems in the Heze Prefecture of Shandong Province, China. From the 1970's to the early 1990's, intercropping with paulownia trees (Paulownia spp.) was one of the most common agroforestry systems in northern China. However, due to a number of factors, paulownia trees have been largely replaced by populous trees (Populous spp.). Intercropping with populous has been tremendously successful in providing local farmers with timber, fodder, fuelwood, and cash; and today more than 80% of trees planted in Heze are populous. The risks associated with such a lack of diversity, however, are great. Such heavy reliance on one type of tree makes these systems very susceptible to outbreaks of insects or disease. Therefore, it may be in Heze's best interest to incorporate a greater variety of species, such as paulownia, back into their intercropping systems. The objectives of this research are to review the past success of paulownia intercropping systems, identify the factors that led to their decline, evaluate the current success of populous intercropping systems, and analyze the benefits and likelihood of incorporating paulownia trees back into intercropping systems in Heze.

418 ***Peabody Picture Vocabulary Test--III: Receptive Language in Preschool Aged Children***

Abigail Baker, Kristi Brown, Amy Carey, Lauren Paluta
Under the direction of Dr. Anne Soderman, Family and Child Ecology
2:00 PM - 4:00 PM, Ballroom

The acquisition of language is an important piece of the overall development of children, and as such, an extensive amount of research has been done regarding how professionals can support this process. Within two university-run preschools with diverse populations, teachers have been implementing several specific strategies for interacting with the children both to enhance their language development and promote prosocial behavior. This research study used the Peabody Picture Verbal Test-III to assess the receptive language skills of these students at the beginning of the 2006 school year. Other data collected included demographic information and the Social Competence Behavior Evaluation scale (a measure of prosocial behavior.) The same set of assessments will be conducted at the end of the 2006-2007 term. This data from the fall was analyzed for significant correlations, and similar calculations will be done on the new data with the additional goal of the tracking improvement in scores. The results found are useful not only for research purposes but also as a reflection on the strengths and weaknesses of the program implementation within the preschools.

419 ***Phylogenetic Relationships Among Diverse Environmental and Pathogenic E. coli Using Oligonucleotide Microarrays***

Sarah Buddenborg
Under the direction of Dr. Deborah Himes, Crop And Soil Sciences; Dr. James Tiedje, Crop and Soil Sciences
9:30 AM - 11:30 AM, Ballroom

Although most strains of Escherichia coli are harmless and live in the environment or in the gastrointestinal tract of healthy humans, some strains of E. coli contain powerful toxins that can cause severe illness in humans or even lead to death. Currently, our knowledge of Escherichia genomes is based almost solely on pathogenic strains. Due to the lack of research on environmental isolates, little is known regarding the genetic differences that are required for the survival of E. coli in the environment. We hypothesized that environmental E. coli will contain genes unique to growing in environments such as soil whereas pathogenic E. coli will possess virulence genes and genes associated with survival in hosts. Using oligonucleotide microarrays, the genomes of many diverse stains of E. coli from different

geographic locations, environments, and patients have been analyzed. Gene presence or absence was assessed using GACK software and GeneSpring software was used to cluster microarray data into groups from which we can infer phylogenetic relationships. The phylogeny of pathogenic strains is compared to known genome sequences to verify accuracy of the microarray data. These data analyses show whether genomes can be clustered according to their habitats, thus providing evidence for evolutionary divergence through acquired genes.

420 ***Polymaths: Arts Avocations of Members of the National Academy of Sciences (USA), 1900-2005***
Lindsay Allen, LeighAnna Beach, Chelsea Hosey, Kaitlin Lonc, Laurie Tennant, Eric Vrtis
Under the direction of Dr. Robert Root-Bernstein, Physiology
9:30 AM - 11:30 AM, Ballroom

In 1878, J. H. van't Hoff, the man who would win the first Nobel Prize in Chemistry (1901), proposed that the difference between the most innovative scientists and their average peers was imagination developed and expressed through the practice of the creative arts. Van't Hoff, for example, was a fine flautist and wrote poetry in four languages. Robert Root-Bernstein has validated van't Hoff's thesis by examining a group of 40 self-selected scientists that included four Nobel laureates, and by analyzing the biographical and autobiographical information available for Nobel Prize winners in Chemistry from 1901 to 2001. The current study investigates van't Hoff's thesis for all of the members of the National Academy of Sciences (USA) who died between 1900 and 2005 using the Biographical Memoirs of the National Academy. Data on adult arts, crafts, performance arts, and writing avocations were gathered from the Biographical Memoirs and compared with 1970s U. S. census data and with a survey of 40,000 members of Sigma Xi (The Research Organization) that was carried out in the United States in 1936. Since Sigma Xi was open to any working research scientist, it is assumed that this group is representative of the average scientist. We also compared data from members dying prior to 1935 with those dying between 1936 and 1969, and those dying after 1970, to detect possible changes in the distribution of arts avocations with time.

421 ***Polymethylhydrosiloxane (PMHS) in Pd Catalyzed Reactions with Acid***
Wenzheng Chong
Under the direction of Dr. Robert Maleczka, Chemistry
2:00 PM - 4:00 PM, Ballroom

Earlier, our group showed that acid chlorides can participate in one-pot Pd-mediated hydrostannation/Stille couplings where the trialkyltin hydrides are generated in situ from the corresponding tin halides and polymethylhydrosiloxane (PMHS). Despite literature reports to the contrary and our own experiences in the above sequence, we also have shown that Pd-mediated reductions of electron rich or neutral aromatic acid chlorides by PMHS can afford the corresponding aldehydes in good yields. Recent advances in both processes will be presented.

422 ***Potential for PA19 Protein from Toxoplasma to Inhibit Cancer***
Michelle Marinich
Under the direction of Dr. J. Justin McCormick, Osteopathic Medicine Research and Advanced Study Programs
9:30 AM - 11:30 AM, Ballroom

The recombinant protein PA19 from the Eimeria tenella parasite has been shown to activate dendritic cells in mice. When athymic mice were injected with human cancer cells, the tumor growth in mice that were administered PA19 from Eimeria was greatly decreased, suggesting that PA19 stimulates a cellular immune response. The recombinant PA19 protein from the Toxoplasma parasite has also been found to activate dendritic cells. For that reason we believe that this protein will also exhibit anticancer properties. To study this, we cloned the gene for PA19 from Toxoplasma into an expression vector, transfected it

into E. coli, and isolated PA19 protein. Having produced PA19 protein, we will measure its anticancer activity by injecting athymic mice with human cancer cells and this protein using the identical procedures we used for PA19 from Eimeria. PA19 has been classified as a "profilin-like" protein. To better understand the mechanisms of the anticancer action of PA19, we will do a taxonomic comparison of the PA19 proteins with four classes of profilins found in animals, plants, and protists. The amino-acid sequence, the spacing of introns in the chromosomal sequences, and the chromosomal context will all be taken into account.

423 ***Practical Applications of Noni Juice Derived from the Plant Miranda Citrifolia***

Michael Wiederoder
Under the direction of Dr. Evangelyn Alocilja, Biosystems and Agricultural Engineering
2:00 PM - 4:00 PM, Ballroom

Noni juice is derived from the tropical fruit Miranda citrifolia which is grown in mainly tropical climates. While its use in Eastern tradition has a long history of use as a medicinal supplement, its characteristics are only now being investigated by Western researchers. In literature Noni and its byproducts have been used for a variety of purposes such as anti-tumor activity, fibroblast inducing activity to promote healing, and many other positive applications. In this research Noni is being investigated for its possibility as an anti-biotic or for helping to culture pro-biotic bacteria. A variety of microbiological tests such as inhibition tests, have led to interesting conclusions. A part of Noni may also prove to be useful as a part of a drug delivery mechanism. Overall derivatives of Noni have many practical applications for use as aiding people.

424 ***Predicting College Student Success: New Measures and New Directions***

James Beck
Under the direction of Dr. Neal Schmitt, Psychology; Fred Oswald, Psychology
2:00 PM - 4:00 PM, Ballroom

This research examines the ability of a biographical data (biodata) instrument and situational judgment inventory (SJI) developed by Oswald, Schmitt, Kim, Ramsay, and Gillespie (2004) to predict long term outcomes in a sample of college students. A test of the hypotheses (H1) biodata and SJI will predict degree attainment, (H2) biodata and SJI will predict time to graduate, and (H3) biodata and SJI will predict graduation with honors is presented. Based on our results, we performed an exploratory analysis and were able to show support for a model where degree attainment and graduation with honors are fully mediated by first year GPA.

425 ***Preferred Listening Levels of MP3 Music with Three Types of Earphones***

Hazel Atienza, Sameer Bhagwan, Alicia Kramer, Allan Morris, Daniel Pabst, Amy Warren, Nathan Williams
Under the direction of Dr. Jerry Punch, Communicative Sciences and Disorders; Dr. Jill Elfenbein, Communicative Sciences and Disorders
9:30 AM - 11:30 AM, Ballroom

Listeners were asked to indicate their preferred volume settings for music played by an Apple iPod Nano, as they listened in quiet and in two levels of background noise using earbud, supraaural, and insert earphones. Preferred volume settings were mapped to output levels measured in an earlier study on an acoustic manikin, and those output levels were used to calculate the amount of time permitted by NIOSH when listening at the preferred levels. Test-retest reliability was assessed for one style of earphone per listener by retesting preferred levels under each of the three listening conditions. Results revealed the extent to which preferred listening levels offer significant risks to hearing, based on group averages for the three earphone types.

426 ***Preliminary Evidence of a Novel Neutral Polysaccharide in Human Brain that is Age and Disease Regulated***

Rebecca Kornas
Under the direction of Dr. Birgit Zipser, Physiology
9:30 AM - 11:30 AM, Ballroom

Alzheimer's disease is a neurodegenerative disease characterized by amyloid plaque and neurofibrillary tangle deposition in brain tissue. Typically Alzheimer's researchers study the amyloid beta peptide or hyperphosphorylated tau that precipitated into these plaques or tangles, as well negatively charged glycans, polysialic acid and glycosaminoglycans. Investigating the so far ignored neutral glycans, we have discovered a novel type of polysaccharides, that we termed chitinaceous polymers (CP) that, according to our preliminary evidence, are regulated by age and disease. To elucidate and compare the chemical compositions and structures of CPs from Alzheimer's disease (AD) brains, age-matched controls and 1 yr old brain, we have developed the following purification method: we performed delipidation, hydrazinolysis, ion exchanges and size exclusion chromatography to harvest and purify the neutral polysaccharides from brain tissue. Based on the analysis of Bio-Gel P4 fractions, a high molecular weight fraction of chitinaceous polymers appear to be more highly expressed in AD brain tissue than in control brain tissue. The prominent HMW fraction from the AD tissue was separated using Bio-Gel P30 fractionation from the low molecular weight LMW common to all brain tissues. The multiple peaks apparent within the AD HMW fraction infer that it contains several discrete polysaccharides, which we will attempt to fractionate using HPLC. We will elucidate the chemical composition and structure of these AD-specific HMW species and further examine with NMR spectroscopy GC/MSS and MALDI.

428 ***Problem and Emotion-Focused Coping in Men and Women as a Predictor of Alcohol Use***

Lindsay Dietz
Under the direction of Dr. Zaje Harrell, Psychology
2:00 PM - 4:00 PM, Ballroom

Coping strategies have been shown to be related to health behaviors, including alcohol use. Gender differences are evident in the use of specific coping strategies and alcohol use. The purpose of this study is to better understand the relationship between gender and alcohol use in a college population. I predicted that coping strategies and gender would interact such that males who use emotion-focused coping strategies will drink more frequently than women. Participants were 273 (74 males, 199 females) undergraduates from Michigan State University. Coping strategies were measured using the COPE Inventory (Carver, Scheier, Weintraub, 1987). Frequency of alcohol use, binge drinking, and alcohol problems were also assessed. As expected, frequency of alcohol use was related to emotion focused coping strategies (i.e. denial, behavioral disengagement, religious coping) and to active coping. Binge drinking was also related to emotion-focused coping strategies (i.e. denial, behavioral disengagement, religious coping), while alcohol problems were related only to the coping strategy of denial. Men used alcohol more frequently, drank more often, and had more alcohol related problems. However, there were no significant interactions between gender and coping strategies for any of the alcohol use outcome variables.

429 ***Rapid Detection of Bovine Viral Diarrhea Virus***

Rebecca Busk
Under the direction of Dr. Evangelyn Alocilja, Biosystems and Agricultural Engineering
2:00 PM - 4:00 PM, Ballroom

Bovine Viral Diarrhea Virus (BVDV) is a pathogen effecting cattle spread primarily through bodily secretions and contact with fecal matter. Symptoms of the disease include Pneumonia, diarrhea, lameness, fever, immunosuppression and most important abortion or early embryo death. Signs of

disease may become apparent in as little as 10-14 days after infection. A pregnant animal will abort the fetus in as little as 4 weeks after exposure. The early development of debilitating effects and ease of transmission from one animal to another within a herd present needs for rapid detection of BVDV. The Biosensors Lab here at Michigan State University has been working on development of an immunoassay biosensor with much success. In a continuation of this effort, my research project focuses on reducing variability in testing and simplifying the testing device through the use of a magnetic polyanaline and the use of test strips with built in control regions. Both pure cultured virus dilutions and tissue samples were used in determining the effectiveness of the new test strip variants.

430 ***Raskolnikov's Motives for Murder***

Jessica Sack
Under the direction of Dr. Sherman Garnett, James Madison College
9:30 AM - 11:30 AM, Ballroom

Dostoevsky's novel, Crime and Punishment, is a renowned work of literature. He uses his main character, Raskolnikov, to present his opinion on some of the philosophical questions raised in Russia during the creation of his book. He addresses the idea of utilitarianism or the philosophy of doing the greatest good for the greatest number of people, along with existentialism which is the idea that one must define his or her own life through their actions. Also, he presents the idea that there exists a Napoleonic race, or those that are "extraordinary" and therefore are above the laws of the common man, and have the right to commit criminal acts in the name of a better cause. Through Raskolnikov's murder of an old pawnbroker that is seemingly worthless to the world, he presents his opinion on these beliefs.

431 ***Regeneration of Ash Following Invasion by Emerald Ash Borer: The Role of Ash Seed Banks***

Stephanie Blumer
Under the direction of Dr. Deborah McCullough, Entomology
9:30 AM - 11:30 AM, Ballroom

Emerald ash borer (Agrilus planipennis Fairmaire) (EAB), a phloem-feeding beetle native to Asia, has killed over 20 million ash trees (Fraxinus spp.) in southeast MI since it was identified in 2002. Populations of EAB have also been found in IL, IN, MD and OH. Insecticides can protect some valuable landscape ash trees but are not a viable option for forest trees. EAB can not be eradicated, making it important to consider the potential for ash regeneration in forests affected by EAB. This study focused on the potential contribution of the ash seed bank to regeneration. Objectives were to determine 1) abundance of viable ash seed in the seed bank of sites dominated by one of three ash species and 2) viability of current-year ash seeds. We collected soil samples with a slide hammer from 18 white, green, or black ash-dominated sites heavily impacted by EAB. We recovered 40 seeds from the 216 soil samples and only four seeds, all white ash, were viable. Results indicate that there is no viable seed bank in the green and black ash sites and only 14% of the white ash seeds were viable. Current-year contributions to the seed bank were evaluated by counting seeds collected in 1 m2 mesh traps distributed beneath 32 ash trees in five southern MI counties. Seed production in 2006 was highly variable within and among species, ranging from 0 to 8934 seeds per 1 m2. Seed mortality was unexpectedly high due primarily to predation by the ash seed weevil (Lignyodes spp.).

433 ***Restoring Diagrams to Ancient Philosophical Works***

Terence Echterling
Under the direction of Dr. Debra Nails, Philosophy
9:30 AM - 11:30 AM, Ballroom

Diagrams mentioned in the dialogues of Plato and treatises of Aristotle were not copied and transmitted along with the Greek texts of those works, but they are sometimes necessary to understanding the philosophical points being made. The highly developed level of the visual arts in ancient Greek culture

(architecture, theater, sculpture, vase painting, etc.) and the diagrammatic emphasis of Greek mathematics provide evidence on how the Greeks approached the symbolic representation of abstract ideas. I present reconstructions based on these models and explain their relevance to the texts. This is part of a project to make available on the Web supplemental material on the characters in the dialogues of Plato and other Socratics.

434 ***Rites of Passage and the African-American Female***

Effie Alofoje
Under the direction of Dr. Denise Troutman, Writing, Rhetoric and American Culture
9:30 AM - 11:30 AM, Ballroom

The rites of passage of young African-American females, or some of the social practices within the black culture, are critical in fostering self-worth and identity in the black female. Specifically, hand and circle games that have been passed down from generations have been an important part of building a sense of sisterhood within black females. In order to assess this theory, Daughters of the Collective Research and Mentoring program examines the young girls we mentor at Malcolm X Academy in Detroit, MI, as they partake in this rite of passage. What we see is a bond created from older generations to their own, and a stregthened sense of self through the unity hand and circle games provide.

435 ***RNA Silencing in the Determination of Symbiosis-Related Genes in Heterorhabditis Bacteriophora***

Keara Grady
Under the direction of Dr. Todd Ciche, Microbiology and Molecular Genetics
9:30 AM - 11:30 AM, Ballroom

The nematode Heterorhabditis bacteriophora is in the same family, Rhabditidae, as the well-studied C. elegans, but is unique by being symbiotic with the bacterium Photorhabdus luminescens and an insect parasite. The symbiosis is necessary for insect pathogenicity as well as for nematode growth and reproduction. Through the use of dsRNA for RNA interference, we seek to systematically silence genes believed to be involved in the symbiosis, and thus determine the exact genes involved in the symbiosis of P. luminescens and H. bacteriophora. Double stranded RNA is delivered by soaking the L1 nematode larvae for 24 hours. They are then placed on agar plates with P. luminescens and allowed to grow normally for 2 days before phenotypes are analyzed for changes in morphology and symbiosis. Preliminary results show that the RNA silencing of the genes daf-21, cct-2, arf-1, and ben-1 result in abnormal or no gonad formation and sterility in adults. Abnormal gonad morphology is an easily recognized phenotype, and demonstrates the success of the RNAi experiment. We are currently testing additional nematode genes potentially involved in symbiosis. RNAi will be used with the H. bacteriophora genome sequence (in progress) to identify genes required for symbiosis This approach should further establish H. bacteriophora as model to study symbiotic host-bacterial interactions and parasitism.

436 ***Rotavirus Vaccination in Michigan***

Angela Fox, Theodore Madsen, Rachel Roys, Michelle Vogel
Under the direction of Dr. Mark Largent, James Madison College
9:30 AM - 11:30 AM, Ballroom

The Rotavirus affects millions of children each year. It creates intense flu-like system in infants and young children. In early 2006, the FDA approved the Rotateq vaccine, which protects infants from this disease. If every child were vaccinated against this disease, the overall quality of life in the state of Michigan would increase. Therefore, we sought out contacts with Michigan legislators in order to pass legislation mandating that children born in Michigan be vaccinated.

437 ***Search for a Novel Mutation Causing Hereditary Zinc Deficiency in Angus Cattle***
Volkan Karabacak
Under the direction of Dr. Vilma Yuzbasiyan-Gurkan, Small Animal Clinical Sciences
2:00 PM - 4:00 PM, Ballroom

Bovine hereditary zinc deficiency (BHZD) also known as Adema disease is an autosomal recessive disease which can lead to skin lesions, immunodeficiency and death unless treated with high doses of zinc. Classical BHZD was first been described in Holstein/Frisian cattle. However, clinical reports on Angus cattle have also been reported in the recent years. Last year, our laboratory revealed that the basic defect of the classical BHZD lies in the SCL39A4 (Zip4) gene and developed a diagnostic DNA test. Recently, an Angus calf having symptoms of zinc deficiency was brought to our attention and tissues forward to our laboratory. Analysis of Angus calf's SLC39A4 gene revealed a negative result for the previously identified mutation. Thus, we hypothesized that the mutation responsible for BHZD in Angus lies somewhere else in SLC39A4. To be able to find this mutation, 12 sets of primers that flank the exons by approximately 50 bp were designed and optimized. Through scanning all exons and exon-intron boundaries, we will be able to test our hypothesis. We hope that we will be able to identify a mutation and design a diagnostic DNA test that will help eliminate carrier animals in this economically very important population.

438 ***Sensitivity Analysis of DSC Measurements of Denaturation of a Protein Mixture***
Matt Ryerkerk
Under the direction of Dr. Neil Wright, Mechanical Engineering
2:00 PM - 4:00 PM, Ballroom

Quantifying the kinetics of denaturation of heated proteins can lead to insight into protein folding, for example. Differential scanning calorimetery (DSC) measures changes in enthalpy of a specimen as its temperature is changed. DSC is a popular method to study the kinetics of polymers and biological materials. Increasingly, researchers are using DSC to measure changes in the enthalpy of mixtures of proteins and in cells. The confidence region of the parameters reported in these studies maybe unclear, because numerous parameters are being estimated using a single enthalpy trace. The present study examines using DSC to denature rattail tendon, which is predominantly Type I collagen. Analyzing the resulting data provides values for the kinetic parameters, in particular those describing a first-order Arrhenius model, governing the reaction. Several different methods for determining the parameters have been presented in past studies. In this study, the sensitivity of the parameters to the variables of the reaction, including the method to determine the parameters, is investigated. The results can be used to as a starting point to study the reliability of parameters for DSC experiments involving the denaturation of multiple proteins.

439 ***Short-Term Exposure to Anesthesia in Newborn Rats has Chronic Debilitating Effects on Anatomy and Behavior***
Sarah Rothstein
Under the direction of Dr. Joseph Nuñez, Psychology
2:00 PM - 4:00 PM, Ballroom

During prenatal surgeries, infants are often exposed to such anesthetic drugs as the inhalant isoflurane and the barbiturate phenobarbital, the effects of which have not previously been studied in regards to a model of the developing brain. Using the newborn rat as a model of the premature human, we documented the effect of a single bout of exposure to either isoflurane or phenobarbital on anatomy and behavioral functioning in the adult animal. Significant decreases in emotional competence and cognitive functioning in adulthood were noted in each of the groups exposed to an anesthetic. There was also found to be a significant reduction in the hippocampal volume of animals exposed to both isoflurane and phenobarbital. The effects were more prominently seen in males, consistent with research involving both

humans and animals. Our findings highlight the need for alternatives to be developed to these anesthetic drugs, based upon their safety and use in the developing central nervous system of young animals.

440 ***SNP Analysis of Canine CYP450 Genes***

Theresa Maatman
Under the direction of Dr. Patrick Venta, Microbiology and Molecular Genetics
2:00 PM - 4:00 PM, Ballroom

Treatment with anticancer therapeutics results in a variety of responses between individuals. In humans, individuals differences in the therapeutic window, below which there is no affect, and above which is toxic, are due, in part, to the metabolic variability in the CYP450s, enzymes responsible for metabolism of may medications. We hypothesize that similar variability in drug response is present in canines due CYP450 variation. Using the canine CYP 2D15, the ortholog to the human CYP 2D6 gene, I searched for genetic variation by sequence comparison of national databases and by direct genetic sequencing of several PCR-amplified DNA of canines. Four variations were discovered, two which produce synonymous substitution, one which substitutes phenylalanine for isoleucine and one which substitutes valine for isoleucine. In order to determine if variants exist at polymorphic frequencies and, if so, at what allele frequencies among different breeds, I developed restriction enzyme assays for two of the assumed SNPs (single nucleotide polymorphisms). Based on these allelic frequencies, there variants are shown to be polymorphic. With identification of these SNPs testing can be done to determine if the variants are responsible for the variable response to therapeutics.

441 ***Social Disapproval and Individual Differences in Social Dilemmas***

Matthew Piszczek
Under the direction of Dr. Norbert Kerr, Psychology
2:00 PM - 4:00 PM, Ballroom

Social dilemmas are situations where there is a conflict between personal and collective welfare, and model many interesting social problems (such as natural resource conservation). A laboratory experiment is in progress to explore whether expressions of social disapproval, per se, are sufficient to increase cooperation. This study will shed light on several questions, including: 1. Do people, in general, care more about playing the game successfully than the feelings of their fellow players? and 2. Do chronic individual differences in cooperativeness moderate the effects of social disapproval as a social control mechanism?

442 ***Spirituality and Religious Beliefs in African American and American Indian Women Ages 55-70***

Don Lyons
Under the direction of Dr. Suzanne Cross, Social Work
2:00 PM - 4:00 PM, Ballroom

Spirituality and religious belief systems are, for many, the foundation of how they see, live and interact with the world. This study examines the spiritual and religious belief system of African American and American Indian women ages 55-70. Using a sample of twenty women, ten African American and ten American Indian women, this study explores to what extent spirituality and religious belief play in their daily decision making process, relationships with family members, friendships, interactions with social and health service workers and culturally relevant healers.

443 ***Sprouty-2 Sustains Expression of the EGFR MAP Kinase Pathway which is Required for Cancer Formation by Human Fibroblasts***

Patrick Bosman
Under the direction of Dr. J. Justin McCormick, Osteopathic Medicine Research and Advanced Study Programs
2:00 PM - 4:00 PM, Ballroom

Sprouty-2 (Spry2) has emerged as a signal specific regulator of receptor tyrosine kinase (RTK) signaling. Spry2 expression has been shown to have an antagonistic function in FGF, PDGF and VEGF signaling. In human fibroblasts, however, Spry2 has an agonistic role in EGF-induced signaling. In human fibroblastic cells malignantly transformed by expression of the HRas oncogene, levels of Spry2 were increased 30 fold compared to parental cells. Down-regulation of Spry2 resulted in a complete loss of tumorigenicity by these cells. A similar effect was found in patient derived tumor cell lines. When Spry2 was over expressed in normal human fibroblast lines by transfection of a spry2 gene encoding plasmid. These cells do not form tumors in athymic mouse models. After UV stimulation, clones expressing high levels of Spry2 (MSU-1.1 S41 and S62) showed reduced levels of apoptosis compared to cells transfected with an empty vector (MSU-1.1 VCA6) indicating that Spry2 plays pre-oncogenic role in the malignant transformation of these cells. EGF stimulation and UV stimulation assays were performed on these cells and the changes in expression of MAP kinase proteins compared to parental cells by Western blotting showed that Spry2 sustains the activity of the MAP kinase pathway. These results indicate that the antagonistic role of Spry2 in human fibroblasts is not Ras dependent. It suggests that additional oncogenic mutations must occur before the cells become malignant.

444 ***Studies on the Protein-Substrate Hydrophobic Interactions of the Retinoid Binding Proteins***

Farid Nossoni
Under the direction of Dr. Babak Borhan, Chemistry
9:30 AM - 11:30 AM, Ballroom

My undergraduate research has been focused on the biochemical manipulation and spectroscopic analysis of Cellular Retinoic Acid Binding Protein II (CRABP II). CRABPs (I and II) are small cytosolic proteins that bind retinoic acid with high affinity, exhibit distinct patterns of expression during embryonic development, and are thought to play important roles in the RA signaling pathway. Until recently the functions of CRAPB II were not clear, but recent studies revealed that CRABP II functions by channeling RA to RAR, thereby enhancing the transcriptional activity of the receptor, which can play a major role in gene regulation for the cell. My research is part of an ongoing project to reengineer CRAPII into a retinal binding protein. We are interested in studying the effects of hydrophobic mutations on the absorbance of retinal and other chromophores within the protein's binding pocket. A step-by-step process of DNA mutation and transformation as well as protein expression and purification are conducted during my lab work. A detailed spectroscopic evaluation and analysis of all the obtained CRAPII mutants' data when bound to different retinoids will be presented.

445 ***Susceptibility of Chloroplast DNA to Oxidative Damage in Very High Light Resistant Strains of Chlamydomonas Reinhardtii***

Matthew Enell
Under the direction of Dr. Barbara Sears, Plant Biology
9:30 AM - 11:30 AM, Ballroom

Plants require light to conduct photosynthesis, but excessive light can actually be damaging if the excitation energy exceeds the capacity of the electron transfer system. Under those circumstances, photo-oxidative stress can cause damage to proteins, lipids, pigments, and DNA. Two strains of C. reinhardtii have been shown to have a photosynthetic apparatus that is able to tolerate reactive oxygen species generated by excess light. We hypothesized that the rate of spontaneous mutation of chloroplast DNA

(cpDNA) in these very high light resistant (VHLR) strains would be reduced relative to wild-type if protection was conferred against reactive oxygen. In fact, we found that the spontaneous mutation rate was 100-10,000 times greater than that of the wild-type. In analyzing the cpDNA at the indicator gene, we discovered that only 1 in 20 mutants were altered at this site, whereas in wild-type strains half of the mutations occur at this position. To determine if the mutations were arising elsewhere in the chloroplast or in the nuclear DNA, we crossed the new mutants from VHLR strains to assess the pattern of inheritance. If the mutations occur in the nuclear DNA, it would indicate that in protecting their cpDNA from very high light conditions, these VHLR strains of C. reinhardtii may render their nuclear DNA more susceptible to oxidative damage.

446 ***Sustainable Development: An Exploration in the Implementation of Green Development into our Society***

Holly Chandler, Sebastian Jacobi, Susan Parker, Kelly Steffen
Under the direction of Dr. Mark Largent, James Madison College
2:00 PM - 4:00 PM, Ballroom

Sustainable development is a solution to the pressures exerted onto the environment by our generation and the generations before us. It is an innovative approach to integrating the needs of the natural world with the wants of our society. In an attempt to learn more about the social and political process of incorporating environmentally-friendly, "green", development into modern construction, we established contact with local professionals, including professors in Michigan State's urban planning program, leaders of non-profit green interest groups and Michigan housing authorities. Our research is to find ways to link existing green construction mechanisms with local community need. Ultimately, we found our niche with the developers of the East Village project, the Pierce Company, and were able to meet with the president and CEO of the company, as well as with the project coordinator in order to advocate the adoption of LEED guidelines, the nationally accepted standards of green development. Though we are unsure whether the guidelines will be adopted, as the deadline for LEED application is not until April 6, 2007, we have established ourselves as a resource inputting both student and environmental perspective into the East Village project. We hope that even if the project does not formally participate in LEED, we will still be able to aid in promoting an environmental awareness based on our familiarity with the process.

447 ***Sustainable Use of MSU Copy Paper***

Justin Biega, Priyanka Joshi, Brittany Murphy
Under the direction of Dr. Terry Link, Bailey Scholars; Dr. Stephen Safferman, Biosystems and Agricultural Engineering
9:30 AM - 11:30 AM, Ballroom

There is a possibility that MSU may be wasting time, money and natural resources by buying white copy paper from unsustainable or unfavorable locations. We will be researching whether the method in which MSU receives copy paper and the way in which this paper is made is sustainable, meaning it is cost effective and environmentally friendly. Research will be done to find out where MSU purchases its paper from and how it is transported. Then, these findings will be compared to other alternatives based upon price, location, post consumer waste, and company sustainability. According to the results, we may be able to suggest to purchase paper from a new vendor/mill.

448 ***Synthesis and Characterization of Metal Benzenedi- and Tri-Carboxylate Coordination Polymers Incorporating the Kinked Dipodal Organodiimine 4,4'-dipyridylamine***

Maxwell Braverman
Under the direction of Dr. Robert LaDuca, Chemistry
2:00 PM - 4:00 PM, Ballroom

A series of metal based coordination polymers incorporating the kinked dipodal organodiimine 4,4'-dipyridylamine and a variety of substituted benzenedicarboxylate linkers have been hydrothermally synthesized. The combination of these components in specific ratios and at appropriate conditions yields coordination polymers with varying dimensionality, from 1-D chains to 2-D layers to 3-D networks. Varying metal precursors afforded polymers with a range of coordination around each metal center. The effects of this change in coordination can be seen in a case where Ni2+ and Co2+ formed 1-D chains whereas Cu2+ formed a helical nanotube. At the same time, reactions performed using acid linker derivatives, such as those containing one or more additional carboxyl groups, resulted in additional novel structural motifs. In each compound, the degree of protonation as well as hydrogen bonding plays a major role in both structural integrity and crystal formation. This can be seen not only in the hydrogen bonding of the central nitrogen of 4,4'-dipyridylamine but also in cases where pH affected crystal formation yielding a single complex molecule at low pH and a polymer at higher pH. Materials were structurally characterized using single crystal x-ray diffraction, infrared spectroscopy, elemental analysis, and thermogravimetric analysis. Magnetic properties were investigated using SQUID whereas whereas luminescent properties were investigated using a Fluorimeter.

449 ***Synthesis, Structure and Magnetic Properties of Trimetallic Mu-tert-butylimide Complexes***

Dave Martin, Justin Thomas
Under the direction of Dr. Robert LaDuca, Chemistry
2:00 PM - 4:00 PM, Ballroom

The advancements in organic polymer chemistry have turned into a multi-billion dollar industry while organometallic polymers remain far behind in development; however, recent evidence shows that the future holds much potential. By transaminating W(NHtBu)2(NtBu)2 with a MN(SiMe3)2 species (M = Co, Fe, Zn, Mn), soluble "MWM" type trimetallic mu-tert-butylimide compounds were synthesized. Single crystal X-ray diffraction reveals electron delocalization around the tungsten center in all cases. Unusual antiferromagnetic coupling occurs around the trimetallic species through the tungsten bridge. Alternating W and M centers have the potential to form an organometallic polymer with the possibility of conducting electricity along the linear metal axis. The resulting polymer has the potential to become a "molecular wire" insulated by hydrophobic alkyl groups similar to a neurons axon protected by a myelin sheath.

450 ***Testing the Use of Light Attenuating Dye in Zoolankton Column Experiments***

Katie Krieger
Under the direction of Dr. Scott Peacor, Fisheries and Wildlife
2:00 PM - 4:00 PM, Ballroom

The zooplankton species Daphnia are an essential part of the food web in Lake Michigan and many other fresh water lakes. This study looks at the behavioral response of Daphnia to an invasive predator species, Bythotrephes. Within the lakes, zooplankton undergo diel vertical migration, taking refuge from visual predators in the deeper, darker waters during the day and returning to warmer surface waters at night. It has been shown that the risk of predation by visual predators is the main reason for this behavioral response. In the laboratory, zooplankton exhibit anti-predator behavior in response to predator karimones. Most lakes however, possess a greatly different light gradient than that which has been produced in the laboratory. We used a non-toxic water dye to increase the light gradient in column experiments in which Daphnia were exposed to predator karimones. Our specific objective is to

determine if an increased light gradient resulting from the dye affects the behavioral response of zooplankton to predation risk. This study expands our knowledge of interactions between invasive predators and their prey. Understanding these interactions allows for preservation and improved management of the lakes.

452 ***The Brody Complex: The Foundation of the Past, Present and Future***

Priyanaka Pandey
Under the direction of Dr. Michael Velbel, Geological Sciences
2:00 PM - 4:00 PM, Ballroom

With the construction of the last building, Armstrong Hall in 1955, the Brody complex was finally complete, and it opened its door to 3200 new freshman college students. A mainly freshman living area, Brody has evolved considerably in the 50 years since being put into service. From its occupants to its kitchen serving lines much has changed. The architect was careful in taking his time to visually making the buildings attractive, adhering to the campus-wide practice of using Indiana limestone on exterior surfaces. The project reviews the background, history, developments, and renovations made to the Complex. What results is a more informed view of the Brody Complex and the role it has played at Michigan State University.

453 ***The Campus Circle***

Natalie Youakim
Under the direction of Dr. Michael Velbel, Geological Sciences
9:30 AM - 11:30 AM, Ballroom

The circular layout of the older part of the Michigan State University campus is an integral part of its character, and it plays an inherent role in its development from a small agricultural college to the bustling institution it is today. In the early part of the twentieth century, the Olmsted brothers, sons of the renowned landscape architect Frederick Law Olmsted, suggested that a circular campus could be detrimental to the expansion of Michigan Agricultural College, and that a campus layout based on quadrangles would better serve the school's growing population. This presentation will discuss the Olmsted proposition and its opposition in detail.

455 ***The Crystal Structure of Human 1-L-myo-Inositol-1-phosphate Synthase***

Stephanie Tran
Under the direction of Dr. James Geiger, Chemistry
9:30 AM - 11:30 AM, Ballroom

Inositol-containing compounds play critical roles in signal transduction, stress response, and other biological functions. The enzyme 1-L-myo-Inositol-1-phosphate (MIP) synthase is essential for the biosynthesis of all inositol-containing compounds, as it catalyzes the conversion of D-glucose 6-phosphate to 1-L-myo-Inositol-1-phosphate. In this study we purified and crystallized the human MIP synthase protein to determine the exact structure of this enzyme to aid in determining its mode of action. I overexpressed the His-tagged full length (1-588) construct of the protein and a C-terminal truncation (1-508) in E.Coli. I purified the constructs using a Ni column and anion exchange chromatography. The purified proteins crystallized in several conditions. The best crystals of both constructs diffract to 3.5 Å but the data is of poor quality. I am working to improve the quality of the data by improving the quality of the crystals.

456 ***The Demography of Philanthropy***

Elizabeth Chidsey
Under the direction of Dr. Brendan Mullan, Sociology
2:00 PM - 4:00 PM, Ballroom

Despite mixed signals on the economy, Americans continue overwhelmingly to donate to a variety of charitable causes, with more than 90 percent giving at least $100 to more than $10,000 annually. Within a context of the changing demography of the United States, and using data from the 2005 inaugural Freelanthrophy Charitable Giving Index Survey, we analyze where this money is coming from and to whom is it going. We examine charitable giving in the United States and explore, describe, and explain this philanthropy using census and survey data with specific controls applied to examine differences across variables such as age, gender, education, and income. We conclude with an assessment of the implications of these finds for both the charitable giving "profession" and for society as a whole.

457 ***The Effect of Religion and Spirituality on Older Adults and the Aging Process***

Cherylanne Glassner
Under the direction of Dr. Suzanne Cross, Social Work
2:00 PM - 4:00 PM, Ballroom

For many years, researchers have not considered the effects of religion and spirituality on aging. Recently, the belief that religion and spirituality may play an important role in individual health and well-being has gained enough ground such that research in the area is now being conducted in many fields. This research has shown that there may be a strong relationship between religion and spirituality and successful aging - religion and spirituality are important when it comes to comfort and coping as well as health and well-being. These findings have implications in the care and treatment of older adults as they age and near death.

458 ***The Genetic Role of Plant FtsZ***

Joyce Bower
Under the direction of Dr. Katherine Osteryoung, Plant Biology
2:00 PM - 4:00 PM, Ballroom

The model plant organism, Arabidopsis thaliana, contains nuclear-encoded FtsZ1 and FtsZ2 families that include three proteins, AtFtsZ1-1, AtFtsZ2-1, and AtFtsZ2-2. Plant FtsZ proteins are homologs of bacterial FtsZ, an ancestral tubulin, and are required for plastid and bacterial cell division. FtsZ forms a ring at the midplastid for chloroplast division. Mutations in these genes result in fewer, enlarged chloroplasts. We are interested in the functional differences between these two gene families. To address this idea we are taking a reverse genetic approach. Nuclear genes are interrupted by insertion of transfer-DNA (T-DNA) from a binary transformation vector. T-DNA insertion mutants for each FtsZ gene are being used to generate double and triple mutants. Segregation of these mutants is determined by PCR genotype and by light microscopy phenotype. Double insertion mutants also have a phenotype of fewer, enlarged chloroplasts and an additional dwarfed whole plant phenotype. Immuno-blot analysis demonstrates that atftsZ1-1 and atftsZ2-2 have no detectable protein, and atftsZ2-1 expression is dramatically reduced. Putative segregating F2 triple mutants have apparent developmental defects such as altered leaf morphology and pigmentation. These data indicate chloroplast division is important for whole plant growth and development.

459 ***The Geography of Innovation: Distribution of Members of the National Academy of Sciences, 1900 – 2005***

Jacqueline Lapp, Kendell Pawelec, Abigail Podufaly, Stacey Weinlander
Under the direction of Dr. Robert Root-Bernstein, Physiology
9:30 AM - 11:30 AM, Ballroom

In 1931, the physical chemist T. Brailsford Robertson proposed the founding of a new field to study to be called the "geography of innovation", but little has been done in this area since. Robert Root-Bernstein made a preliminary foray into this field in 1989, proposing that scientific innovation occurs at the peripheries of the scientific community rather than at its centers. We test this hypothesis by examining where members of the National Academy of Sciences (USA) who died over the past century were trained and where they were eventually employed. It was assumed that those institutions at which the most NAS members were employed were the centers of American science. NAS members dying prior to 1935 were compared with those dying between 1936 and 1969, and those dying after 1970, in order to detect any possible changes in scientific centers with time. These data were compared with the tribution of members of Sigma Xi, the Research Organization, which provides an approximate snapshot of how many scientists were working at which institutions at various times. Nobel Prize winners among the NAS group were selected out and compared with the NAS members as a whole and with the Sigma Xi data.

460 ***The Impact of Gender Interaction between Rater and Child on Behavioral Scores on the Devereux Early Childhood Assessment Scale***

Cathleen Pasia
Under the direction of Dr. John Carlson, Counseling, Educational Psychology and Special Education
2:00 PM - 4:00 PM, Ballroom

This study investigates the effect of gender interaction between raters and children on the Devereux Early Childhood Assessment (DECA), specifically, on the behavioral concerns scale. Forms were completed by 1361 parents that were currently involved in the Head Start program of Mid-Michigan. DECA rating forms are included in the enrollment packets from the 2005-2006 academic year. The DECA is completed by the head of household who can give a report of the child's behavior within the last four weeks. Informants can be mothers, fathers, foster parents, guardians, or other. This study will compare the mean behavioral scores of female/male, female/female, male/male, and male/female pairs. It is hypothesized, that female raters will consistently rate children higher while male children will be rated higher than female children. Therefore, the largest mean difference should be seen between female/male and male/female scores.

461 ***Retinal Analogs and Binding of CRABPII***

Kaveri Korgavkar
Under the direction of Dr. Babak Borhan, Chemistry
9:30 AM - 11:30 AM, Ballroom

The basic principle behind human color vision involves the interactions between four different membrane proteins (rhodopsins) and one single chromophore (11-cis-retinal) bound as a protonated Schiff base (PSB) via a lysine residue. In order to understand the mechanism of wavelength regulation that allows humans to see the entire visible spectrum, a small cytosolic protein, Cellular Retinoic Acid Binding Protein II (CRABPII), has been reengineered into a rhodopsin mimic that can bind retinal as a PSB. A large library of CRABPII mutants has been generated and a comprehensive study of their spectroscopic properties when bound to retinal is underway. This presentation will focus on our attempts to bind additional chromophores (retinal analogs) to CRABPII mutants in order to study their specific interactions with the proteinic environment.

462 ***The Interactive Effects of Domestic Violence and Substance Use on Maternal Parenting Behaviors***
Meghan McKenzie
Under the direction of Dr. Alytia Levendosky, Psychology
2:00 PM - 4:00 PM, Ballroom

Researchers examining domestic violence and its effects on parenting have discovered that partner violence causes stress in maternal parenting, which in turn negatively influences parenting behaviors (Levendosky and Graham-Bermann, 1998; 2000; 2001). This longitudinal quasi-experimental study examines the direct and interactive effects of maternal report of domestic violence and substance use on observed parenting behaviors in 180 mothers. One model of parenting (Belsky, 1984) suggests that parenting behavior is most protected by the parent's psychological well-being. Thus, the trajectory of experience of domestic violence and substance use are proposed to interact to negatively influence parenting over time. Trajectories of risk based on domestic violence and substance use were computed such that six patterns resulted: constant risk, increasing risk, u-shaped risk, inverted u-shaped risk, decreasing risk, and constant no risk. Then, data was analyzed using ANCOVAs for the six risk patterns to compare the parenting behaviors. Mothers with constant risk expressed less sensitivity and more unresponsiveness toward their children than those in the no risk group. In addition, those with decreasing risk and u-shaped risk exhibited less sensitive parenting than the no risk group. Income and child externalizing behavior were also significantly associated with the different risk patterns. Findings are discussed in light of Belsky's model of ecological influences on parenting.

463 ***The Legacy of Perceptions of Interracial Relationships as Demonstrated in News Media Coverage***
Toshira Johnson
Under the direction of Dr. Geri Alumit Zeldes, Journalism
9:30 AM - 11:30 AM, Ballroom

The history of interracial relationships in America is a painfully loaded issue which is still evolving in the consciousness of the 21st century. Through this research various thematic content will be analyzed to describe press coverage of interracial relationships, a subject largely ignored by media scholars. More specifically, the exploration of the variety, or lack thereof, of coverage of the landmark case of Loving v. the State of Virginia in which the United States Supreme Court overturned anti-miscegenation laws in 1967. Up until that point, 16 states banned interracial marriage between races. Subsequently, the analysis of the coverage will provide insights into the social history of mid-twentieth century America as well as reportorial differences between four newspapers strategically placed throughout different regions of the country that may have divergent viewpoints on anti-miscegenation laws. Furthermore, this study will provide a benchmark for future studies that explore more contemporary interracial media depictions as the population of people who identify themselves as bi or multi-racial in the U.S. has quadrupled since 1967. This study recognizes the 40th anniversary of this landmark case.

464 ***The Letters of Robert Coles***
Lisa Shaw
Under the direction of Dr. David Cooper, Writing, Rhetoric and American Culture
9:30 AM - 11:30 AM, Ballroom

Dr. Robert Coles is a world-renowned child psychiatrist, a poet, author of over 90 books, and Harvard professor with a long list of achievements and awards including: the Pulitzer Prize, a MacArthur Foundation Fellowship, and the Medal of Freedom. However, beyond even these accomplishments is Dr. Coles' extraordinary letter writing, the subject of my undergraduate research project. In addition to his manuscripts and papers, Dr. Coles' personal archive includes over 90,000 pages of correspondence. Coles' letters are an intimate witness to a pivotal and tumultuous period of American history by a psychiatrist, teacher, and writer, whose life-long project is to explore the intersection of personal life and social change. They are, then, not only important exchanges about history- shaping events; they are

insightful evidence of his own mind and moral life at work and, at times, in play. Coles' correspondence serves as a timely reminder of the essential role that listening to others plays in our lives – and as a "call to listen" in an era of noisy complaint, personal bravado, and blaming the other guy. The goal of this project is to research, compile, verify, select, edit, and eventually publish a scholarly and definitive collection of the letters of Robert Coles.

465 ***The Magnitude of the Post-Contraction Blood Flow Increase is Influenced by Relative Force***

Cody Weston
Under the direction of Dr. Ronald Meyer, Physiology
2:00 PM - 4:00 PM, Ballroom

Following a single, brief muscle contraction, blood flow to the activated muscle can increase by up to 500%. Although the underlying mechanism for this flow increase is not completely understood, there is evidence that the flow increase is proportional to the force of the muscle contraction. Therefore, the purpose of this study was to look at the relationship between force, % relative to maximal voluntary contraction (MVC) in the ankle dorsiflexor muscles and the magnitude of the post-contraction blood flow increase. We hypothesized that the blood flow increase following a single brief (1-sec) contraction would be proportional to relative force and therefore higher at higher relative forces. All subjects (n = 3) gave written informed consent. Subjects lay supine on a patient table, legs extended and right foot strapped to the footplate of a custom built foot device. The foot device was fitted with a strain gauge, which allowed us to measure the force produced by the ankle dorsiflexor muscles. Subjects performed a series of 1-sec contractions at 100, 75, 50 and 25% of their MVC. The order of the protocol was randomized and subjects performed at least two contractions at each intensity. Resting blood flow and the blood flow following each contraction was measured in the anterior tibial artery using Doppler Ultrasound. The blood flow increase following a single contraction was higher (458, 374, 298, 191 % increase) at higher forces (100, 75, 50, and 25% MVC) respectively.

466 ***The Prevalence of Theoretical Behavior Change Components in the Top Breast Cancer Websites to Encourage Detection or Prevention Behaviors and to Solicit Donations***

Carolyn LaPlante, Samantha Munday
Under the direction of Dr. Sandi Smith, Communication; Dr. Pamela Whitten, Telecommunication, Information Studies, and Media
9:30 AM - 11:30 AM, Ballroom

The Internet has become a primary resource for the general public who seek health information about a variety of topics, including breast cancer. This particular research is part of a larger study which evaluated the use of basic design tenets and theoretical behavioral change components in the top 157 breast cancer websites. Fourteen components were taken from three behavioral change theories. The focus of this particular project was to assess the use of these 14 theoretical components on breast cancer websites as they persuade users towards prevention or detection behaviors. It will also discuss how some of these components were additionally used to persuade users to contribute money to the organizations that sponsor the websites. It should first be noted that overall, theoretical components were absent from the websites in general. Nine out of the 14 components were found to be used primarily for detection, as opposed to prevention. This is an important finding because it is just as valuable, if not more so, for a person to prevent a disease as it is to detect it early. Four of the 14 were considered when assessing persuasion in terms of fundraising. Of these four that were assessed, three were used more than 50% of the time when soliciting money. These results lend ideas for future research on such topics as well as ideas to better the current state of the top breast cancer websites.

468 ***The Relationship between Coxsackie B4 Virus and Insulin and Insulin Receptor***

Jessica Vonck
Under the direction of Dr. Robert Root-Bernstein, Physiology
9:30 AM - 11:30 AM, Ballroom

Coxsackie B4 Virus is strongly associated with the onset of Diabetes; however, there is a significant lack in literature investigating by what mechanism this may occur. The purpose of this research is to examine the relationship between Coxsackie B4 virus and insulin and insulin receptor. Two methods were used to assess such a relationship. Homology searches were conducted to find whether or not Coxsackie B4 virus contained any insulin or insulin receptor like regions, several such homologous regions were found. ELISA binding studies were conducted to determine whether Coxsackie B4 Virus antibody recognized and bound to insulin receptor. Insulin receptor peptides were synthesized for different amino acid sequences in the alpha chain and tested for their binding affinity to Coxsackie B4 virus antibody. This research discovered that there are several regions of the insulin receptor alpha subunit that bind to Coxsackie B4 virus antibody and that there is binding between insulin and Coxsackie B4 virus antibody. This suggests a mechanism by which Coxsackie B4 virus may trigger an autoimmune response leading to the onset of Type 1 Diabetes.

469 ***The Role of hRev7 in Human Mutatgenesis***

Kathryn Fletcher
Under the direction of Dr. Veronica Maher, Osteopathic Medicine Research and Advanced Study Programs
2:00 PM - 4:00 PM, Ballroom

In the event of exposure to DNA damaging agents, such as UV irradiation, fork-blocking DNA lesions may occur. In these incidences, cells may use translesion synthesis in order to replicate past the damaged DNA. This type of replication may be error-prone and as such may induce mutations. One polymerase known to execute translesion synthesis is DNA polymerase zeta, which consists of two subunits, hRev3 and hRev7. Using siRNA, our lab generated human fibroblasts with reduced levels of hRev7. We determined that cells with reduced hRev7 are more sensitive to the cytotoxic effect of UV irradiation and demonstrate lower UV-induced mutation frequencies compared to normal cells. These data strongly suggest that hRev7 plays a role in UV-induced mutagenesis in humans. To demonstrate unequivocally that these differences in cytotoxicity and mutation frequency are the result of the decreased hRev7 protein, we restored the level of hRev7 in these cells by transfecting them with a vector carrying hRev7. This vector was genetically engineered to express a hRev7 mRNA that is unable to be targeted for degradation by siRNA. Numerous independently-transfected cell strains were isolated and assayed to identify those that were determined to have levels of hRev7 at least as high as normal. The UV-induced mutation frequencies of normal human fibroblasts, human fibroblasts with reduced levels of hRev7, and human fibroblasts in which the level of hRev7 has been restored, are being investigated.

470 ***The Role of Social Work with Regard to Religion and the Lives of American Indian and African American Senior Citizens***

Sarah Frantz
Under the direction of Dr. Suzanne Cross, Social Work
2:00 PM - 4:00 PM, Ballroom

Senior Citizens are more likely to have a strong religious affiliation than other age groups. It is particularly important that Social Workers learn about and acknowledge that aspect of a client's life in order to better serve them. Two specific groups of elders, African Americans and American Indians, hold very different beliefs that are very significant in their lives. This study presents those beliefs and the role social workers must take on in order to assist these two demographics in the best possible manner.

471 ***The Role of Spirituality and Religion in the Older African American Female Population***
Sarah Frantz, Cherylanne Glassner, Megan Kursik, Sarah Losinksi
Under the direction of Dr. Suzanne Cross, Social Work
2:00 PM - 4:00 PM, Ballroom

Spirituality and religion are important to many older African American females. Specifically, members of this population look to spirituality and religion for support in dealing with problems of oppression (specifically female oppresssion), family responsibility, poverty, disease, and emotional issues. Thus, spirituality and religion could serve an important role in professional social care if intergrated into the social work process. This research project looks at both the role of spirituality and religion in the older female African American population and the ways in which the two could be applied to professional social work.

473 ***Training for Complex Skill Acquisition: The Effects of Goal Content and After-Event Reviews on Self-Regulation and Training Outcomes in a High Learner Control Environment***
James Beck
Under the direction of Dr. Steve Kozlowski, Psychology
2:00 PM - 4:00 PM, Ballroom

The current research will examine the effects that learning goals and performance goals, as well as conducting after-event reviews, have on several self-regulatory processes and training outcomes. Main effects of learning and performance goals on metacognition, self-efficacy, and effort will be examined. Half of participants will be told that their goal is to learn as much as possible about the task, while the other half will be told to perform as well as possible on the task. Main effects of after-event reviews on metacognition, autonomy, and off-task thoughts will also be examined. Half of participants will be instructed to provide detailed accounts of their mistakes and successes following performance on the task and the other half of participants will only receive simple data about their performance from the task itself. In addition to exploring main effects, this research will also explore what synergistic effects on the outcome variables task knowledge, task performance, and transfer performance there may be when different goal contents are coupled with after-event reviews.

475 ***University Students' Patterns of MP3 Player Use: Is There Hearing Health Risk?***
Alexandra Artymovich, Tori Frost, Minyoung Jeong, Fan Lin, Neil Patel, Emilie Sweet
Under the direction of Dr. Jill Elfenbein, Communicative Sciences and Disorders
9:30 AM - 11:30 AM, Ballroom

More than 500 undergraduate and graduate students on the Michigan State University campus were surveyed to determine whether they use Apple iPods or other MP3 players and, if so, to determine their patterns of device use, their concerns about the impact of device use on their hearing, and the steps that they would be willing to take to lower the risk of hearing loss. More than 85% of the respondents reported use of at least one MP3 player. This session will examine the students' device-use patterns in light of the Apple iPod output data reported at UURAF by Atienza, Bhagwan, Kramer, Morris, Pabst, Warren and Williams. Implications for the development of hearing health campaigns will be discussed.

476 ***Use of DNA Microarrays to Probe Gene Function and Antimicrobial Mechanisms***
Stephanie Rolsma
Under the direction of Dr. Robert Britton, Microbiology and Molecular Genetics
9:30 AM - 11:30 AM, Ballroom

Our aim is to use DNA microarrays in order to probe gene function and antimicrobial mechanisms. YqeH is an essential GTPase that has homologs in humans and bacteria. Past research from our laboratory suggests that YqeH plays a role in ribosome biogenesis, specifically in the assembly of the

30S subunit. To identify potential functions of YqeH in the cell, we have isolated suppressor mutations that allow cells to grow normally in reduced levels of YqeH. To identify the suppressor mutation, we used DNA microarrays to compare gene expression patterns in cells depleted of YqeH and suppressor mutants that grow normally in the absence of YqeH. Genes for amino acid and sugar metabolism and transport are differentially overexpressed in the suppressor mutant. We validated this result by finding a mutation in ptsH, a major regulatory component of sugar import. This data suggests a link between carbohydrate metabolism and ribosome biogenesis. Muscodor albus is a recently discovered endophytic fungus that produces volatile organic compounds with potent antimicrobial and antifungal activity. We used DNA microarray analysis to determine possible mechanisms of action of the M. albus volatile organic compounds. Initial microarray studies of B. subtilis exposed to M. albus volatile organic compounds show an increase in expression of DNA repair pathways. This result indicates that M. albus is inhibiting cells by causing DNA damage.

477 ***Use of Flutamide as a Potential Therapy in a Mouse Model of Kennedy's Disease***

Sandra Troxell
Under the direction of Dr. Cynthia Jordan, Psychology; Dr. S. Marc Breedlove, Neuroscience Program
2:00 PM - 4:00 PM, Ballroom

Kennedy’s disease is an androgen-dependent, neurodegenerative disease in humans that progressively inhibits motor strength and control, eventually leading to death. Previous studies in our lab on a transgenic mouse model of Kennedy’s disease have shown that when a female is given testosterone, she will rapidly develop the disease, and die by the 9th or 10th day post-treatment. It has also been shown that treatment of male mice with the disease genotype in utero with flutamide will inhibit disease progression when born. The goal of this study was to see if flutamide could block disease progression in adult females when the disease was induced by testosterone,. 6 female mice were pre-treated with flutamide for a day, and later implanted with a testosterone capsule sub-cutaneously and ovarectimized. 3 mice received flutamide injections after addition of the T-cap, while 3 received vehicle injections of propylene glycol. Grip strength and weights were measured everyday, and full behavior testing was preformed every other day. On the 8th day of post-treatment, all females were sacrificed and muscles were harvested for future analysis. While there was a trend for improvement on motor tasks, no statistically significant difference was found in disease progression between females who received flutamide and those who received vehicle controls. It is possible that with a larger sample size, the results may prove to be statistically significant.

478 ***Using Immunocytochemistry to Visualize Proteins in the Brain***

Elissa Pastuzyn
Under the direction of Dr. Laura Smale, Psychology
2:00 PM - 4:00 PM, Ballroom

Immunocytochemistry (ICC) is a useful tool for visualizing fibers and regions in the brain. ICC utilizes serum and antibodies made in animals that bind to molecules, including peptides, and it can show were in the brain they are being produced. Rinsing the brain sections in a variety of different solutions then causes a color change, and the regions that contain the antibodies can be seen under a microscope. We ran several ICCs on brain tissue from Arvicanthus niloticus (Nile grass rat) and Acomys cahirinus and A. russatus (common and golden spiny mouse), using antibodies for VIP (vasoactive intestinal peptide) and TGF-á (transforming growth factor alpha) in order to characterize the distributions of these proteins. We are planning to perform more ICCs to examine different proteins in other Acomys.

479 ***Using the Health Belief Model to Assess Risk Perceptions Associated with the Asbestos Exposure in Libby, Montana***

Ryan McAward, Jennifer Mitchell
Under the direction of Dr. Kami Silk, Communication
9:30 AM - 11:30 AM, Ballroom

Since the early 1980s, the town of Libby, Montana, has suffered several hundred deaths from asbestos-related disease due to contamination from vermiculite mining. When the mine, owned by W.R. Grace and Company, closed in 1992, the Environmental Protection Agency and Montana Department of Health and Environment sampled local soil and air and found no evidence of asbestos contamination. Further investigation by a Seattle newspaper reporter in 1999 discovered that many former miners, as well as their families, suffered from several asbestos-related diseases, with many suffering from asbestosis, a fatal type of lung cancer. The EPA immediately cleaned up the former mining site and called Libby "the worst case of community-wide exposure to a toxic substance in U.S. history." In conjunction with the Karmanos Cancer Institute, transcripts from nine focus groups (n=9) and five interviews conducted with residents of Libby, Montana will be analyzed. We will assess these data from a risk communication perspective, to determine what beliefs about severity, susceptibility, and self-efficacy participants communicate about exposure to mine-related vermiculite. Overall, the risk analysis data will provide insight for future communication research, campaigns, and interventions related to asbestos-related and "slow-motion" disasters in other communities.

481 ***Virulence of Clinical and Environmental Isolates of Burkhoderia Cenocepacia to Caenorhabditis Elegans Nematodes***

Richard Lucas Gray
Under the direction of Dr. Todd Ciche, Microbiology and Molecular Genetics
9:30 AM - 11:30 AM, Ballroom

The bacteria genus B. cenocepacia is a ubiquitous group of bacteria, with many common environmental forms as well as pathogenic members that range from onion pathogens to certain pulmonary infections that are especially active in sufferers of Cystic Fibrosis. The nematode C. elegans is a species with well-documented development and a fully sequenced genome that makes it an excellent research organism. It is hypothesized that C. elegans can serve as a model for B. cenocepacia infection and mortality. In the current experiment, J4 stage C. elegans are placed on cultures of different B. cenocepacia strains. Strains are grown on two types of media, one designed to allow worms to be killed quickly and the other, slowly. The percentage mortality was recorded daily and used to calculate the effective virulence of each strain. Preliminary data shows that some strains are much more virulent than others. Strains AU1054, AMMD, and HI2424 all show “quick killing” (more than 50% of nematodes dead within 3 days), even on “slow killing” media. Once fully compiled, this data will be used to assess the range of virulence of diverse B. cenocepacia to C. elegans. Specifically, it is hoped that virulence to nematodes is an accurate indicator of the capacity of B. cenocepatia to cause human disease. The interactions between the B. cenocepacia and C. elegans can then be examined to determine the B. cenocepacia genes that cause disease, information which can then be applied to treating the bacteria in its pathogenic forms.

482 ***Viva Les Trout: An Exploration of the Relationship Between Snow and Soil Variables***

Jason Bernstein
Under the direction of Dr. David Hyndman, Geological Sciences
9:30 AM - 11:30 AM, Ballroom

Climate change is expected to change precipitation patterns at northern mid- latitudes, including Michigan, albeit in uncertain ways. In addition, human land use will continue to affect dramatic changes to both natural and anthropogenic environments over the next century. Most recharge of near-surface groundwater aquifers in Michigan during spring occurs as a result of snowmelt. Previous research has

established the sensitivity of Michigan's formerly seasonally-ubiquitous snowpack to shifts in climate and land-use patterns. Thus it is important to determine the role that snow plays in regulating soil temperature, soil moisture, and the water table level. This study attempts to establish spatially- and temporally-varying relationships between snow depth, snow-water content, soil moisture, and soil temperature across varied land uses. The Muskegon River Watershed (MRW) is used as a representative region, primarily because its lake effect snows provide a steady source of snowfall throughout the winter. The results of this study can be used specifically to anticipate the effects of climate change on the soil temperature, moisture, and groundwater in the MRW, and will be used as a basis for a computer model to simulate the effects of climate and land use changes on cold-water fisheries across the watershed.

483 ***Welfare and Behavior***

Amy Hendricks
Under the direction of Dr. Maurice Bennink, Food Science and Human Nutrition
9:30 AM - 11:30 AM, Ballroom

Infants and small children in Tanzania continue to suffer from protein-energy malnutrition. The objective of this research was to determine food processing conditions that would ease preparation of thin gruel from an extruded food supplement to rehabilitate malnourished children. The resulting data will assist professors in the nutrition department at Sokoine University of Agriculture in Morogoro, Tanzania as they work with malnourished children. Extrusion as a method of cooking exposes food to a high temperature for a short period of time and is currently utilized in the U.S. to produce breakfast cereals and snack foods. A mixture of red beans and corn was extruded, crushed in a burr mill, and sieved. Samples differed only in pre-extrusion moisture content (MC) and post-extrusion particle size. Some cooks prepare gruel by first mixing the dry food with cold water; others add the dry food directly to boiling water. Samples with higher MC and smaller particle size hydrated best in cold water. However, when dry food was added directly to boiling water, the medium-sized particles hydrated best. Product mouth-feel improved slightly with increased pre-extrusion MC. The use of inexpensive extruders could greatly benefit developing nations as extrusion utilizes less energy that traditional cooking, increases product shelf-life, and ensures complete protein denaturation and starch gelatinization.

485 ***Gender and Domain Identification as Moderating Variables of Stereotype Threat in Women***

Jennifer Jones
Under the direction of Dr. Ann Marie Ryan, Psychology
2:00 PM - 4:00 PM, Ballroom

The purpose of this study is to determine whether women experience stereotype threat effects when taking a test of mechanical ability, and whether gender identification and domain identification act as moderating variables in the extent to which stereotype threat is experienced. Stereotype threat has been defined as being at risk of confirming a negative stereotype about one's group as self-characteristic. There will be two conditions: one in which the subjects are confronted with the stereotype that women tend to perform more poorly than men on the test of mechanical ability (explicit condition), and one in which no mention of the stereotype is made (control condition). Before taking the test, subjects will fill out surveys to determine the strength of their gender identity and the strength of their identification with mechanics. The first hypothesis is that women in the explicit stereotype threat condition will perform more poorly on the test of mechanical ability than will women in the control condition. The next hypothesis is that gender identification will moderate stereotype threat effects such that stereotype threat effects will be greater for those with greater identification. The final hypothesis is that domain identification will moderate stereotype threat effects such that stereotype threat effects will be greater for those with greater identification.

487 ***MSU Telecasters***

Michael Horgan, Brandon Peeples
Under the direction of Dr. Robert Albers, Telecommunication, Information Studies and Media
9:30 AM - 11:30 AM, Ballroom

MSU Telecasters is an organization for students who are interested in persuing a career in television and film productions. In an effort to learn more about the process of producing a television show, students who are part of MSU Telecasters are resoponsible for writting, filming, editing, promoting, and distributing their shows content.

490 ***Investigation into the Coefficient of Thermal Expansion of Portland Cement Concrete***

Brian Goldberg, William Monticello, Joseph Podolsky
Under the direction of Dr. Craig Gunn, Mechanical Engineering; Dr. Neeraj Buch, Civil and Environmental Engineering
2:00 PM - 4:00 PM, Ballroom

Portland Cement Concrete (PCC) is a composite comprising of coarse aggregates, sand, cement and water. As a result of this composite nature each ingredient has an impact on the thermal expansion properties of PCC. The coefficient of thermal expansion (CTE) test is conducted to document the linear change in length of a PCC specimen for a unit change in temperature. The CTE values for the laboratory specimens were determined according to the AASHTO TP-60 Protocol. In this investigation the impact of aggregate geology on PCC CTE was documented. The three coarse aggregate types used in the fabrication of the PCC specimens were gravel, slag, and trap rock. Three replicates for each concrete sample were tested to quantify the CTE. The average CTE values for the concrete mixtures ranged from 9.8 με/°C to 10.7 με/°C.

491 ***Mutant Screen for Upstream Components of the Cold Acclimation Response in Arabidopsis Thaliana***

Megan Sargent
Under the direction of Dr. Michael Thomashow, Plant Research Laboratory
2:00 PM - 4:00 PM, Ballroom

Environmental stresses such as cold and drought significantly impact the capacity of plants to survive throughout many regions of the world and result in significant losses in crop productivity. We are interested in understanding the mechanisms that plants have evolved to survive freezing temperatures with the long-range goal of improving the stress tolerance of important crop species. Toward this end, we are studying plant cold acclimation, the process whereby plants increase in freezing tolerance in response to low non-freezing temperatures. C-Repeat Binding Factors (CBF) are transcriptional activators that are induced rapidly upon exposure to low, non-freezing temperatures and that they activate expression of a group of genes, the CBF regulon, that impart freezing and drought tolerance. In this project, a genetic approach is being taken to identify trans-acting factors that function through these cis-acting regulatory elements of CBF2 to regulate gene expression in response to low temperature. A mutant screen was conducted using plants containing a region of the CBF2 promoter fused to the GUS reporter gene. Mutagenized plants were screened for GUS expression after cold treatment and a mutant was identified with reduced GUS expression after seven days at 4ºC. Further analysis of this mutation will determine if this is a mutation in a trans-acting factor involved in regulation of the CBF genes.

492 ***Religiosity and College Student Alcohol Use: An Investigation of the Mediating Role of Social Support Coping***

Feyza Menagi
Under the direction of Dr. Zaje Harrell, Psychology
2:00 PM - 4:00 PM, Ballroom

College students consume more alcohol than their non-student peers. Protective factors against alcohol may ultimately help deter students from potentially dangerous drinking practices. Religiosity is often highlighted as a protective factor against alcohol use for students. Specifically, the social support resources available in religious organizations or religious networks and among religious individuals is the factor that may deter students from drinking practices. The purpose of this study is to examine the role of coping through social support in the relationship between religiosity and alcohol use in college students. Preliminary analysis shows that emotional social support coping accounts for the relationship seen between religious coping and binge drinking. That is religious coping, when entered with emotional social support coping, was no longer a significant predictor of binge drinking. More detailed explanations will be outlined after final analysis.

493 ***Violence and/or Sexual Abuse Relate to Severe Overweight Status in Michigan Adults***

Megan McCullough
Under the direction of Dr. Sharon Hoerr, Food Science and Human Nutrition
2:00 PM - 4:00 PM, Ballroom

Findings from studies with small samples suggest that women who experience intimate partner violence (IPV) and/or sexual abuse have a higher prevalence of obesity compared to non-victims. A representative sample of Michigan adults (n=4537) was obtained from the 2005 Michigan Behavior Risk Factor Survey. These sample-weighted cross-sectional data were analyzed using SUDAAN software to conduct Chi-Square tests of the association between weight status and a lifetime experience of having ever been threatened or victimized by IPV and/or sexual abuse among gender, race-ethnic and income groups. IPV/sexual abuse was associated with weight status in men ($p<0.05$), but not women. Men with a BMI >40 were more likely to have experienced IPV/sexual abuse than normal weight men (32% versus 17%). The association between IPV/sexual abuse and weight approached significance ($p<0.07$) for non-Hispanic black males. IPV/sexual abuse was associated with gender ($p<0.01$), race-ethnicity ($p<0.05$) and income ($p<0.01$) in that IPV/sexual abuse was higher in females (32.3%) than in males (17.5%), higher in non-Hispanic blacks (31.7%) than in non-Hispanic whites (23.3%) and higher in low-income (<$35,000) groups. This study provides empirical data to support an association between IPV/sexual abuse and increased risk for obesity in men. Further investigation is warranted to separately evaluate the relationship between weight status and either IPV or sexual abuse in both gender groups.

496 ***Goal Setting and Revision Over Time***

Michael Daniels
Under the direction of Dr. Rick DeShon, Psychology
2:00 PM - 4:00 PM, Ballroom

This research attempts to understand how individuals set, maintain, and revise goals over time and how reactions to feedback affect performance. Participants performing a radar task on the computer (TEAMsim) were asked to self set goals after receiving feedback about their performance. Goal setting and performance were measured longitudinally to assess their receptiveness to the feedback over time. The goal performance discrepancy (GPD) of each individual was analyzed to get a sense of how this figure changes over the course of the performance period for different people. Individual difference measures were analyzed for main effects on feedback receptivity and performance. One such individual difference is self-efficacy. Low self-efficacious individuals are more likely to set lower initial goals and we attempted to see whether this translates into low responsiveness to feedback, even if that feedback

indicates that performance is well above the self-set goal level. Goal-orientation was also analyzed in the context of goal revision in an attempt to find a relationship between performance-goal orientation and downward goal revision.

497 ***Preparation of Improved Biodiesel from Waste Oil***

Mamud Dako
Under the direction of Dr. Ramani Narayan, Chemical Engineering and Materials Science
2:00 PM - 4:00 PM, Ballroom

With the unpredictable nature of crude oil prices and the increasing interest in alternative fuels like biodiesel, used cooking oil stands out as an economical source of biodiesel production. The objective of the current research project is to produce biodiesel from waste oil that currently sells for cheap and is difficult to effectively dispose of. Even though the properties of waste oils are affected as a result of frying and recycling, the biodiesel obtained still gives better fuel properties than the conventional petro-diesel fuels.

498 ***The Role of Src-Homology-3 in the Activation Mechanism of MLK3***

Waleed Brinjikji, Ramy Goueli
Under the direction of Dr. Kathleen Gallo, Physiology
2:00 PM - 4:00 PM, Ballroom

Mixed-lineage kinases (MLKs) are mammalian protein kinases that play critical roles in mitogen-activated protein kinase (MAPK) signaling pathways. MLK3 is activated by the small GTPase, Cdc42. Our lab has demonstrated that the src-homology 3 (SH3) domain of MLK3 is involved in an autoinhibitory interaction with a single proline containing sequence located between the Cdc42-binding region and leucine zipper domain of MLK3 The purpose of this study is to determine the thermodynamic parameters (ΔG, ΔS, ΔH and Ka) of the binding interaction between the SH3 domain of MLK3 and a peptide corresponding to the MLK3 autoinhibitory region using isothermal titration calorimetry (ITC). The SH3 domain of MLK3 was digested from pGEX-2T-1-SH3 plasmid and re-ligated into a bacterial expressed vector pGEX-6P-1, which contains a PreScission protease sequence, using the BamHI and EcoRI restriction sites. pGEX-6P-1-SH3 plasmids were transformed into Rosetta (DE3) pLysS cells. The GST-SH3 fusion proteins were induced by adding IPTG and then purified using glutathione affinity agarose. We are currently working to remove the GST tag from the purified fusion protein in order to produce pure SH3 of MLK3 for ITC experiments.

499 ***Interpretations of Relative and Absolute Adjectives in Child Language Acquisition***

Matthew Kelly, Joseph Jalbert, Peter Klecha, Erin O'Conner, Chad Glinsky
Under the direction of Dr. Cristina Schmitt, Linguistics and Germanic, Slavic, Asian and African Languages
9:30 AM - 11:30 AM, Ballroom

There are various types of adjectives. Some adjectives can be modified by completely and others cannot. We can say 'John is completely mad' but not 'John is completely tall'. Previous work by Syrett, et al (2005) and Syrett (2007) on the acquisition of the differences between the two types of adjectives suggest that children seem to have learned them by around age 3, with some lexical exceptions. However the experimental design forced children to reject both options available as answers. In other words, when presented with a situation in which two cups were not full, children were asked which one is full. In this project we present a new experiment testing children's ability to distinguish the two types of adjectives. We ask whether children start with one type of adjective and then learn the second type or whether both options are available from start. The experiment we propose modifies a technique used by Snedecker (to appear) for testing implicatures of numerals. The technique can circumvent the need for the child to deny the experimental conditions. We hypothesize that children will choose examples that indicate relative

interpretations of adjectives and we predict that absolute adjectives interpretations typical of adults are achieved through later with developing semantic or pragmatic understanding.

500 ***Media Coverage of Asian American's Tuberculosis Disparity***

Natalie Giannosa
Under the direction of Dr. Geri Alumit Zeldes, Journalism
9:30 AM - 11:30 AM, Ballroom

According to the Center of Disease Control's website, in the year 2005, 4.3 percent of the United States' population was made up of Asian Americans, and the U.S. Census Bureau predicts in the year 2050, the Asian American population will comprise 9.3 percent of the population. This growing minority group deserves great concentration, especially when studying the health issues pertaining to the population. This study will examine the media health coverage of the Asian American population pertaining to Tuberculosis (TB) in California. Since the media serves as an important instrument in conveying information to its audience, this presentation will examine how well mainstream media and ethnic media educates and informs Asian Americans about TB.

501 ***Segment Calibrations for Segmented Germanium Detectors***

Ryan Norris
Under the direction of Dr. Krzysztof Starosta, Physics-Astronomy
2:00 PM - 4:00 PM, Ballroom

At the National Superconducting Cyclotron Laboratory, gamma-ray spectroscopy is used to study atomic nuclei far from stability. In many cases, the nuclei studied travel at fast speed. Thus, the radiation emitted is Doppler shifted relative to the laboratory reference frame. Segmented Germanium detectors are used for these experiments because they provide superb energy resolution and knowledge of the interaction position within the detector. The latter improves angular resolution, reducing the uncertainty of the measurements caused by the Doppler effect. At the NSCL, these detectors are electronically segmented into 32 segments and a central contact. As part of the experiment, each must be calibrated. Central contact calibrations follow a standard procedure. However, segment calibrations face several obstacles. Two of these include inter-segment coupling for events in which the total energy is shared by more than one segment and cross talk between the electronics that record the events. While often these cases are corrected in methods that do not separate events in multiple segments, in some experiments this reduces the available data. In response, a novel method for calibrating segments has been developed. For events in which a gamma ray is recorded in one segment, parameters for all 32 segments are produced in the calibration. For those in which two segments record the same event, 32x31/2 parameters are produced. This method will be presented and its results discussed.

502 ***Expecting Isabel: The Journey***

Hanna Christiansen, Stephanie Koenig, Ethan Link, Anne Mosbacher, Rebecca Simons
Under the direction of Dr. Lori Nichols, Theatre; Elizabeth Zernechel, Theatre
9:30 AM - 11:30 AM, Ballroom

This poster presentation documents the research and artistic effort put into the production of a play produced in fall 2006 by the MSU Department of Theatre. "Expecting Isabel," by Lisa Loomer, played in the Arena Theatre in October. It was adjudicated by representatives from the Kennedy Center American College Theatre Festival and chosen as one of only six productions out of 50 entered in the Midwest region for entry into the national competition at the KACTF Festival in Milwaukee in January. Directed by Professor Lorijean Nichols, the production involved faculty, graduate, and undergraduate students in all phases of production: acting, design, technical directing, and stage management. The poster presentation gives a visual and narrative account of the production process. The undergraduate student

researchers from the Theatre Department will explain details of the production and answer questions about technical and creative aspects of producing a play and taking it on the road to Milwaukee.

503 ***Women in Boot Camp***

Gabriel Iocco, Lindsay Reilly
Under the direction of Dr. Christian Lotz, Philosophy
9:30 AM - 11:30 AM, Ballroom

For our research project, we have taken an in-depth look at how men and women are treated differently in prison camps. We did our research through visiting Michigan's Special Incarceration Camp and talking to camp personnel, studying writings about power and authority by Michael Foucault, and reading research and articles that have been made on our topic. Our research supports our claim that men and women at prison camps are not only treated differently by the camp personnel, but also that this treatment leads to gender specific attitudes. In addition, activities, such as classes, and the environment of the prisons, such as the barracks they stay in, further instill these attitudes. For example, as we will show, being a successful female is reduced to homemaking.

504 ***Health Attributes of Members of the Royal Society, 1900-2005***

Ragini Bhadula, Caitlin Russ
Under the direction of Dr. Robert Root-Bernstein, Physiology
2:00 PM - 4:00 PM, Ballroom

As part of a larger study of the relationship of avocations to scientific success, we are characterizing the health attributes of members of the Royal Society (London) whose obituaries have been published in the Biographical Memoirs of the Royal Society between 1900 and 2005. Previous studies of scientists have suggested that successful scientists may be more physically vigorous and long-lived than their less successful colleagues. On the other hand, contrary to what is found among artists and poets, various psychological studies of scientists report that the incidence of mental illness is somewhat less than that found among the general population. We have therefore collected data on longevity, physical activities, and reports of mental illness among Royal Society members and compared them with several data bases: 1) data from a 1936 survey of physical activities of Sigma Xi (The National Research Organization) members, which represents a group of average scientists; and 2) tables of average longevity among the US population; and 3)Arnold Ludwig's data on mental illness among eminent scientists in The Price of Greatness.

505 ***Historical Trends of Building Stone Use on Michigan State University Campus***

Heather Arnold
Under the direction of Dr. Michael Velbel
9:30 AM – 11:30 AM, Ballroom

Michigan State University is well-known for its brick, collegiate-gothic style buildings and the ambiance they create around campus. The objective of this study is to create a usable database of the different building materials used on campus. Applications of this compilation include studying trends of stone usage throughout MSU's history, and providing information for further studies on preservation and conservation of building stone.

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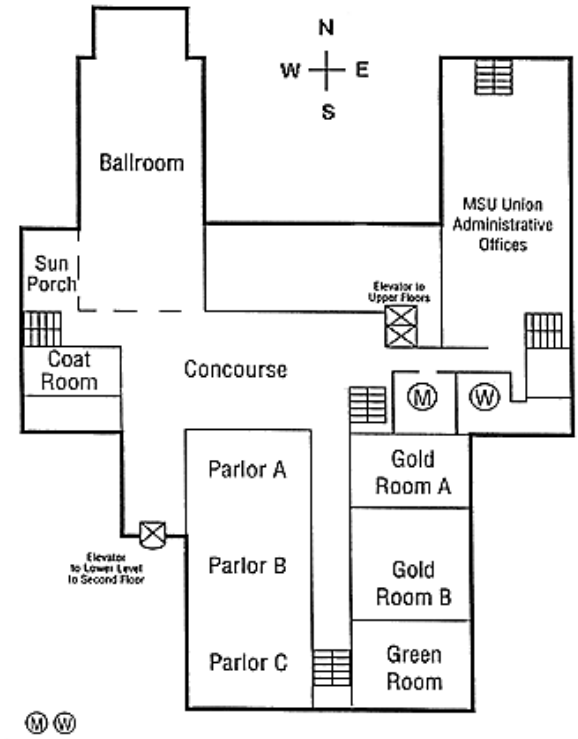
Student participants are listed alphabetically by last name. The number following each presenter's name represents the program the student is presenting.

Maps



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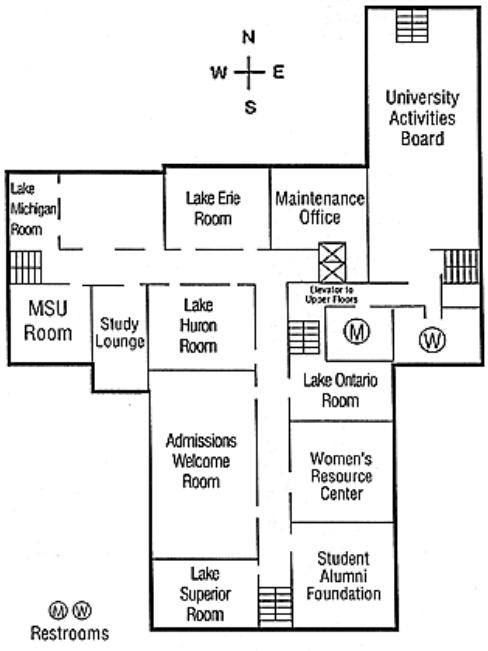

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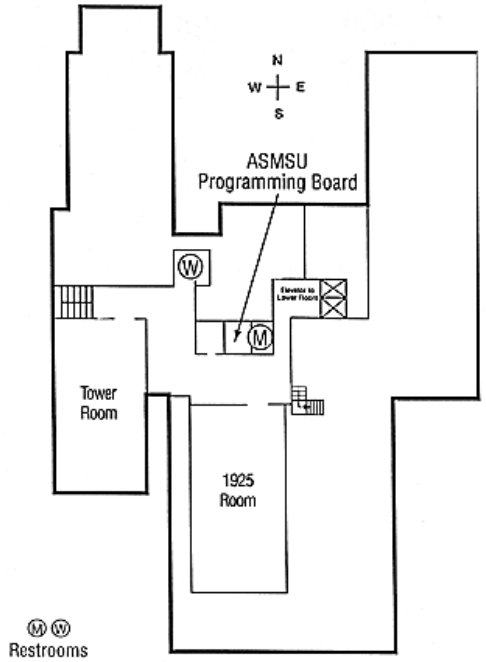

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