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Student Scholarship Day 2004

Grand Valley State University

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Grand Valley State University



Student Scholarship Day April 7, 2004

Members of the SSD Committee

Neal Rogness, Chair

Teresa Beck

Jan Brashler

Stephen Burton

Phyllis Curtiss

Nancy Levenburg

Michael Lombardo

Kathy Olthof

Diann Reischman

Ross Reynolds

Paul Stephenson

Pat Videtich

WELCOME FROM THE PROVOST

April 7, 2004

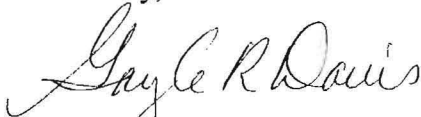
It is with great pleasure that I welcome you to the ninth annual Student Scholarship Day at Grand Valley State University. Throughout the day you will have the opportunity to share in some of the year's best faculty/student collaborative efforts. The results that are on display represent a wide variety of talent ranging from scientific research and scholarly papers to art exhibits and performances.

Our students and faculty are committed to the belief that scholarship efforts from the creation of an idea, through the development of the results, to the presentation of their efforts provide extraordinary learning opportunities. The high level of participation and the excitement you will observe today will confirm that this kind of learning is not only beneficial but also enjoyable.

An event of this magnitude requires organization as well as the cooperation and dedication of many people. Dr. Neal Rogness, who initiated the original idea for this event, has chaired the Student Scholarship Day Committee every year since its inception. He has always done an excellent job and this year is no exception. At the end of this year, Neal will step down as Chair of the Student Scholarship Day Committee. Under his leadership this event has grown and prospered. Consequently, the Student Scholarship Day event has provided a forum that has showcased nearly four thousand students over the past nine years. On behalf of the entire GVSU community, I want to express our sincere gratitude to Dr. Neal Rogness and his colleagues for creating this event and organizing it for the last nine years.

As students, faculty, friends and family, you are encouraged to attend as many of the events as your schedules will allow. It is with a deep sense of appreciation to all who have contributed in such diverse ways, coupled with pride in the accomplishments of our students, that we welcome you. It is our hope that you will experience some of the enjoyment and satisfaction that we have.

Sincerely,



Gayle R. Davis

Provost and Vice President for Academic Affairs

ACKNOWLEDGMENTS FROM THE CHAIR

Welcome to Student Scholarship Day (SSD) 2004, the ninth annual SSD at GVSU! It is with mixed emotions that I step down as Chair of the planning committee, a role in which I have served for the last nine years. As with most things at GVSU, SSD has experienced tremendous growth over the years. In 1996, Student Research Day (as it was then called) had 100 presentations and 150 presenters. This year, over 550 different students are presenting their work in 365 separate presentations. Further, what began as an event primarily composed of science and mathematics majors has flourished with representation from across the entire university. The GVSU community has truly embraced this event as a day in which to take pause and celebrate the scholarly achievements of students from the past year.

This year's event includes a number of visible changes. Because of the tremendous increase in requests to do poster presentations, we now have a morning poster session and an afternoon poster session. Further, for the first time, we have SSD presentations occurring on two campuses. A limited number of oral SSD presentations are being given in DeVos Hall, Pew Campus in the later afternoon and early evening. I encourage you to visit the downtown campus and to enjoy these presentations.

A tremendous amount of work goes into planning this event. I have been assisted with the planning of this event over the years by a very dedicated group of faculty. The names of the current committee members are listed in the front of this book. Other committee members over the years have been: Sanjay Ahuja, Lawrence Burns, Johnine Callahan, Lynette Coggins, Mike Cotter, John Capodilupo, John Gabrosek, Eaaron Henderson-King, Richard Jelier, Jann-Huei Jinn, Jacquie Johnson, Jerry Johnson, Mary Karpen, Mary Last, Connie Lesnick, Michael Lyons, Tony Nieuwkoop, Karen Ozga, Peggy Perozzo, Justine Ritchie, Linda Scott, Robert Smart, Gloria Tate, Patricia Underwood, Paul Wittenbraker, and Renee Zettle-Sterling. A tremendous and sincere thank you goes to each of the committee members, both current and former, who have helped make SSD into the event that it has become.

Thanks are also due to Dave Poortvliet from Institutional Marketing for his help with the online registration system and to Jeff Woollett, who has assisted creating the poster display boards and in setting up for the event over the years. Oral presenters in large part judge the success of their presentation on how well their equipment works. The SSD Committee is fortunate to have a tireless group of staff from Academic Computing/ Information Technology who help make the technology go as intended. A hearty thank you to Dave Chapman and his colleagues for their much-appreciated efforts in this area.

Loreen Hospodar was the artist who created the logo for SSD 2004. Her artwork can be found on the cover of this book as well as on the complimentary coffee mugs and T-shirts given to the sponsors and the presenters. Thanks Loreen! Also, thanks to the University Bookstore and Campus Dining (ARAMARK) for helping to recognize the students involved in SSD.

I would also like to express a huge sense of gratitude to Cheryl Smalley in the Science and Mathematics Deans Office for her extremely capable assistance in accomplishing all of the many tasks over these years. Thanks also to Dean Kindschi for providing the support to start Student Research Day, to Provost Niemeyer for his assistance in making SSD a university-wide event, and to Provost Gayle Davis for her continued support of SSD, both philosophically and financially.

Lastly, a huge thank you goes to each student presenter for participating in the event and to the faculty/staff sponsors for serving as mentors to the presenters. The day is truly yours!

Another academic year is drawing to a close. Many of the fruits of labor for the GVSU students from the year are being presented at today's event. I encourage you to explore and sample as much as you can. As am I, I'm sure you'll be greatly pleased with the quality and breadth of the presentations. Please enjoy!



N. Thomas Rogness
Chair of the Student Scholarship Day Committee

SCHEDULE OF EVENTS

Morning Oral Presentations	8:00 - 11:15 a.m.
168, 207, 209, 210, 211, 261, and 262 Padnos	
Presentation Grids	Pages 1 – 3
Abstracts	Pages 15 – 32
Morning Poster Presentations	9:00 - 10:50 a.m.
Henry Hall Atrium	
Presentation Grids	Pages 9 – 10
Poster Location Map	Page 14
Abstracts	Pages 61 – 75
Appreciation Luncheon	11:30 a.m. - 1:15 p.m.
Grand River Room, Kirkhof Center	
Welcome: Neal Rogness, Chair, SSD Committee	
Introduction of Speaker: Gayle Davis, Provost	
Keynote Address:	
Cardinogens in the Environment: Separating Fact from Fiction;	
James Gentile, Dean for the Natural Sciences and Chair of the	
Biology Department at Hope College	
Closing Remarks: Neal Rogness, Chair, SSD Committee	
Afternoon & Evening Oral Presentations	
Allendale Campus	
168, 207, 209, 210, 211, 261, and 262 Padnos	1:20 – 6:15 p.m.
Presentation Grids	Pages 4 – 7
Abstracts	Pages 33 – 55
Pew Campus	
117E, 119E, 136E, 138E, and 205E DeVos	4:00 – 6:35 p.m.
Presentation Grids	Page 8
Abstracts	Page 56 – 60
Afternoon Poster Presentations	2:00 - 4:50 p.m.
Henry Hall Atrium	
Presentation Grids	Pages 11 – 13
Abstracts	Pages 76 – 101
Alphabetical list of presenters	Pages 102 – 107
Keynote speaker	Page 108

Morning Oral Presentations

Note that throughout the oral presentation grids the second column refers to the room locations in the Padnos Hall of Science on the Allendale Campus.

8:00 – 8:15	168	Richard Schneider <i>Testing the Psychological Skills Hypothesis: The Effects of Mental Imagery on the Psychological States of Collegiate Rowers</i>
	207	Katie Gerst, Jason Karel, Crystal Sadler, Nick Sharland, Kelli Wohlert <i>In Search of Consumer Interest: How Important is the Label?</i>
	209	Penny Richards, Denise Schmitt <i>An Anorexic Women's Perception of Her Relationship with Her Father and the Affect of that Perception on the Emotional Experience of her Select Occupations</i>
	210	Sarah Szurley <i>Shape, Size, Sorting, and Percentage of Quartz Grains in Dolomite in the Mississippian Michigan Formation, Western Michigan</i>
	211	Neil Besteman <i>Applying GIS in Assessing Gypsy Moth Spread and Control in West Michigan</i>
	261	Vickie Mukans <i>Designing a Wetland Education Project for Allendale Public Schools</i>
	262	Mary Sulek <i>Determining Human Goodness Through Greek Lyric Poetry</i>
8:20 - 8:35	168	Eric Serna <i>The Power of Language in Maoist China as seen in Ha Jin's "Ocean of Words"</i>
	207	Casey Black, Brad Franz, Anne Perosky, Jillian Ross, Wade Rumley <i>Research Revealing the Perception and Satisfaction of Trans-Matic's Customers</i>
	209	Jennifer Wells <i>Integration of Open and Closed Kinetic Chain for Intervention of an Ipsilateral Patellar Tendon Anterior Cruciate Ligament Reconstruction and a Lateral Outside-in Meniscal Repair: A Case Report</i>
	210	Jennifer DeLoge <i>Total Organic Carbon in Shale from the Mississippian Michigan Formation, Western Michigan</i>
	211	David Kowalski <i>Using GIS to Analyze Land Use/Cover Changes and Suitability for Development in Alto, Michigan</i>
	261	Mark Prusakiewicz <i>Using GIS to Assess Land Use Change in Otsego County, Michigan</i>
	262	Ryan Putnam <i>A Project in Theoretical Computer Science</i>
8:40 - 8:55	168	Josh Bourke, April Decker, Dana Halonen, Jay Ofield, Steve Tuls <i>Quality Auto Group: A Descriptive Research Study</i>
	207	Nicole Rondini, Tami Thornton <i>Childhood Coping in Chronic Illness: The Role of Occupational Therapy with Acute Lymphoblastic Leukemia</i>
	209	Shannon Hammond, Stephanie Kupkowski, Terri Moore <i>The Effects of a Six-Week Hippotherapy Intervention on Thoracic Kyphosis in Clients with Neurological Deficits</i>
	210	Jeremy Meyer <i>Frequency and Origin of Pyrite in Dolomite in the Mississippian Michigan Formation, Western Michigan</i>
	211	Kevin Hollebeek <i>Analysis of Baxter State Park Trails Using a GIS</i>
	261	Kristian Williams <i>Developing a Conservation Plan for a Landowner in Van Buren County</i>
	262	Angelo Blancato <i>Skier Quest Business Plan</i>

Morning Oral Presentations

9:00 - 9:15	168	Alissa Carlton, Shaun Lehman <i>The Plate Tectonic Setting and History of Mystery Basin #1</i>
	207	Chad Gravatt, Ed Heller, Derek Migazzi <i>Muscle Strength and Functional Performance in Active College Age Students</i>
	209	Shauna Boughey, Kathleen Brantley, Katie Rosene <i>Effectiveness of Therapeutic Play for Improving Cognitive Functioning and Developmental Delay in Children: A Critical Review of the Literature</i>
	210	Paul Schmude <i>Core Study of the Washington 10 Niagaran Reef, Macomb County, Michigan</i>
	211	Kenneth Hughes <i>Geographic Information Assessment of Contaminants within the Little Black Creek</i>
	261	Andrew Haapala <i>Mapping of Ionia State Recreation Area Through Digital Interpretations and Production</i>
	262	Dawn Johnson, Roberta Jordan, Amy McCalla, Patricia Sprick, Marcy Stonex, Rachel Vanderkolk, Susan VanderZouwen, Jennica VanHouten, Bridget Whelan, Rebecca Wiltjer <i>Community Partnership Project</i>
9:20 - 9:35	168	Chance Bidelman, Brent Ritchie <i>The Plate Tectonic Setting and History of Mystery Basin #2</i>
	207	Melinda Olson <i>Use of the Balance Master for Proprioceptive Training After Anterior Cruciate Ligament Reconstruction: A Case Report</i>
	209	Carrie Cybulski, Kim Williams, Megan Zimmer <i>Effectiveness of Pet Therapy as an Intervention for Persons with Dementia: A Critical Review of the Literature</i>
	210	Brian Beach <i>Grain Size and Shape Analysis of a Lake Michigan Beach, Holland, Michigan</i>
	211	Jennifer Bauer <i>A GIS Database to Assess the Potential Spread of the Plum Pox Virus</i>
	261	Angela Mrozinski <i>Public Perceptions of Stormwater Sources and Effects</i>
	262	Cecy Bailey, Wioletta Brechting, Kontarrow Bryant, Kristin Burgess, Megan Highhouse, Kristi Irelan, Lin Miu-Linda Ng, Anna Przekadzinska, Mary Rozneck, Theland Washington <i>Community Partnership Project</i>
9:40 - 9:55	168	Michael Shelton, Matthew Weiss <i>The Plate Tectonic Setting and History of Mystery Basin #3</i>
	207	Michelle Kreusel <i>Conservative Treatment of Snapping Iliopsoas Tendon in a Recreational Athlete: A Case Report</i>
	209	Kelly Hoff, Andrea Monroe, Angela Noelke <i>Effectiveness of Humor for Reducing Pain Associated with Arthritis: A Critical Review of the Literature</i>
	210	Nick Spicer <i>Grain Size Analysis of Sediment from Sand Creek in Ottawa County, Michigan</i>
	211	Benjamin A. Mathew <i>Multi-Use Trail Systems: Will Mountain Biking be the Death of It All?</i>
	261	Dustin Hormann <i>Steelhead Diet in the Muskegon River After the Introduction of Zebra Mussels</i>
	262	Terre Buck, Meranda Lamoreaux, Kelli Leask, Erin Macklin, Kurt Phillips, Michelle Riemersma, Rebecca Stevens, Jessica Tkach <i>Community Partnership Project</i>

Morning Oral Presentations

10:00 - 10:15	168	Jaime Curtis <i>Tyrosine Kinase Substrate Analysis and Fluorescence Assay Development</i>
	207	Erin Burgess, Mindy Huhn, Christina Mokienko <i>The Comparative Effectiveness of Proprioceptive Neuromuscular Facilitation Stretching Techniques and Static Stretching in Increasing Acute Hamstring Flexibility</i>
	209	Heather Adame, Kenny Riley, Brainne Taylor <i>Effectiveness of Community Reintegration for Persons with Mental Illness: A Critical Review of the Literature</i>
	210	John Van Regenmorter <i>Mississippian Coprolites from the Michigan Formation, Western Michigan</i>
	211	Jennifer Boller <i>Identification of a Nature Preserve to Aid in the Restoration of the American Bald Eagle Population in Ottawa County Michigan</i>
	261	Jason Okuly <i>Cougar Habitat Assessment for Huron-Manistee National Forest</i>
	262	Kathryn Ballantine, Stacy Becker, Carrie Germain, Carrie Gillette, Wendy Goodfellow, Andrea Hoffman, Katie Pemberton, Kristi Stewart, Beth Welliver <i>Community Partnership Project</i>
10:20 - 10:35	168	Paul Cook <i>The Binding of CDC42Hs and the CRIB-72 Domain of mPAK-3</i>
	207	Allison Bailey, Wendy Hintz, Kathleen McCauley <i>Nutritional Knowledge and Dietary Habits of Female, Collegiate Basketball Players</i>
	209	Katie Banner, Rachel Roback, Amy Schlichter <i>Effectiveness of Relaxation Techniques in Reducing Anxiety: A Critical Review of the Literature</i>
	210	Rachael Czechowskyj <i>Mississippian Plants in the Michigan Formation, Subsurface of Grand Rapids, Michigan</i>
	211	Angela Mrozinski <i>GIS Applications to Assess Groundwater Sensitivity in Kent County, MI</i>
	261	Greg White <i>Increasing Aesthetics and Wildlife Habitat to Meet Land Owner Objectives</i>
	262	Stacy Anderson, Nicole DeYoung, Tammi Donker, Christian Kessler, Jackie Lefere, Heather Parmelee, Lindsey Reck, Kristy Wheeler <i>Community Partnership Project</i>
10:40 - 10:55	168	Emily Vander Woude <i>Living Under Suspicion: Investigating the Impact of September 11, 2001 on Arabs and Arab Americans</i>
	207	Lisa Hartman, Jessica Kirchner, Stephanie Shamus <i>The Effects of a Supplemental Aquatic Physical Therapy Program on Grades I and II Lateral Ankle Sprains in Collegiate Athletes</i>
	209	Courtney Cook, Dara Smith, Valerie Tuomi <i>Effectiveness of Aquatic Therapy for Improving Physical Functioning in Older Adults: A Critical Review of the Literature</i>
	210	Matthew Weiss <i>Petrology of Celestite in Dolomite in the Mississippian Michigan Formation in Western Michigan</i>
	211	Dustin Hormann <i>Can GIS Predict Water Quality in Streams?</i>
	261	Anna Whitmore <i>Increasing the Usefulness of a Nature Trail at the Home for Veterans</i>
	262	Ben Beaudou, Johnny Clauson, Sanja Petrovic, Shannon Phenicie, Lindsey Shepard, Christine Werner <i>The Sahara Cooler Venture</i>
11:00 - 11:20	168	Bennie Beretta <i>A Nuyorican Looks Back: Reflections in Words and Images</i>
	207	Jill Arnold, Deanna Bondie, Julie Tetreau <i>The Effects of Music on the Motor Learning Task of Keyboarding in Nine and Ten-year-old Children</i>
	209	Trevor Lyon <i>The Rieggle-Neal Act and Bank Competition</i>
	210	Chance Bidelman <i>Grain Size Distribution of Beach Sand from Two Locations Along the Eastern Shore of Lake Michigan</i>
	211	Heather Jahr <i>Deposition of Pollutants into Waterways Surrounding Ski and Golf Resorts and Resulting Environmental Alterations</i>
	261	Aaron Rydecki <i>Lyme Disease Spread Across Southwestern Michigan</i>
	262	Brian Chan, Chris DeWinter, Tara Fairchild, Cherie Latva, Jon Schultz <i>Challenge Machinery</i>

Afternoon & Evening Oral Presentations

1:20 - 1:35	168	Jennifer Alavarez, Laura Bloomfield, Jill Chamberland, Kimberly De LaCruz, McKensay Hourtienne, Molly McGee, Tina Marie Padron, Becky Roobol, April Vaughan <i>Community Partnership Project</i>
	209	Jeffrey Fuller <i>Swarm Intelligence: Investigating Emergent Behavior</i>
	210	Lisa Raterink <i>Grain Size and Shape Analysis of Scott Creek between Scott Lake and the Grand River, Kent County, Michigan</i>
	211	Jacob Hargrove <i>Using Gis To Compare the Pigeon River Watershed and Associated Sub-Watersheds</i>
	261	Daniel Mays <i>Woodcock Habitat Management Plan for 20 acres in Muskegon County, MI</i>
	262	Melissa Copley, Katherine Lee <i>Using Grid-based Computing to Perform Distributed Data Mining of Large Biological Databases</i>
1:40 - 1:55	168	Maria Ivantchenkova <i>Use of Math in Accounting</i>
	207	Justin Hardy, Crystal Jewett, Joe Martinez, Andrea Resovsky, Kelly Wisniewski <i>Descriptive Study of Medical Transcription Industry</i>
	209	Frank Durante <i>Hunting Viral Fossils in the Sheep Genome</i>
	210	Ryan Sleeper <i>Suspended Load Analysis of a Stream on the Grand Valley State University Campus, Allendale, Michigan</i>
	211	Michael Calkins <i>Habitat Suitability Models for Amphibians at Bass River State Recreation Area</i>
	261	Josh Brinks <i>GIS Applications and Management Plan for Red Pine at Ottawa County Parks</i>
	262	Josh Rowe <i>A Performance Evaluation of Implementations of Distributed Shared Memory</i>
2:00 - 2:15	168	Grant Berry <i>Men and Their Tools</i>
	207	Cara Accivatti, Kathleen Graham, Korrie Knoper, Amanda Travis <i>The Structure of Variability in Motor Learning for Children with Learning Disabilities</i>
	209	Maureen Michalski <i>Early Physical Therapy Intervention for an Infant With a Rare Genetic Disorder</i>
	210	Kelly Heid <i>Characteristics of Limestone Clasts within a Cambrian-Ordovician Conglomerate from Cow Head, Newfoundland</i>
	211	Elaine Sterrett Isely <i>Geospatial Analysis of Land and Water Features of the White River Watershed</i>
	261	Kevin Hollebeek <i>Creating a GIS Map of Trail Data in Baxter State Park, ME</i>
	262	Beth Lathers <i>A Statistical Consulting Learning Experience: Evaluating the Structured Learning Assistance Program</i>
2:20 - 2:35	168	Matt Dundon, Mike Parniske <i>Jones Fractures, a Possible Sequela of Idiopathic Pes Cavus</i>
	207	Pennie Alger, Andrew Doren, Rachel Lee, Meghan Wieten <i>Connecting Communities: Grand Rapids Neighborhoods on the Internet</i>
	209	Mary Bakker <i>Dissociative Identity Disorder - Public Opinion and Awareness</i>
	210	Jennie Cooper, Dylan Fox, Nic Miller, Darren Rehfeld, Albert Samuels, Keri Vosburg <i>Market Research for Bayer Cropscience Regarding Biodiesel</i>
	211	Mary Sievert <i>Determining the Uniqueness of Blue Ribbon Trout Streams: A Landscape Scale Approach</i>
	261	Joel Walen <i>Survey of Farmers About Erosion and Surface Water Quality Effects</i>
	262	Justin DeWind <i>Non-visual Navigation of Web Pages</i>

Afternoon & Evening Oral Presentations

2:40 - 2:55	168	Jeff Geissler, Scott Lawrence, Stacy Schwalm, Kurt Vander Veen <i>Adderall vs Concerta in Treatment of Adult ADHD</i>
	207	Josh Kipker, Tracy Smith, Wayne Ward <i>Revalidation and Reliability of a Fall Risk Screening Tool for Community Dwelling Elderly</i>
	210	Jennifer Schenk <i>Foundations</i>
	211	Jason Okuly <i>Core Cougar Habitat in Huron-Manistee National Forest</i>
	261	Jacob Hargrove <i>Comparison of Similar Habitat for Macro-Invertebrates and Water Quality in the Pigeon River and its Tributaries</i>
	262	LeAnna Lowe <i>A Discussion of the Utilization of Intraclass Correlation Coefficients</i>
3:00 - 3:15	168	Han Vu, Kathryn Zagel <i>The Incidence of Colon Cancer in Previously Diagnosed Breast Cancer Patients</i>
	207	Marsha Whalen <i>Aquatic Physical Therapy's Effect on a Patient with Polymyositis: A Case Report</i>
	209	Nathan Hillila <i>A Statistical Consulting Experience: Studying The Effectiveness of an Academic "Bridge Program"</i>
	210	Tom Kennedy <i>Statistical Models for Baseball</i>
	211	Derrick Mund <i>Monster Trucks are the Path of the Wakened Buddha</i>
	261	Josh Brinks <i>Salmon-Derived Nutrients in Terrestrial Ecosystems: Conservation, Ecological, and Managerial Implications</i>
	262	LeAnna Lowe <i>A Statistical Consulting Experience: GVSU Financial Aid Department Phone Call Logs</i>
3:20 - 3:35	168	Rebecca Eversdyk, Steve Heckel, Melissa Van Tol <i>Testicular Cancer Research</i>
	207	Christy Puite <i>Physical Therapy Intervention in a Patient with Aicardi's Syndrome in a School Setting</i>
	209	Kati Smith <i>Genetic Analysis of Ranid Frog Populations in Three West Michigan Localities: A Possible Tool for Conservation Decisions</i>
	210	Shane Wolf <i>Building a Data Driven Web Site Using PHP and MySQL</i>
	211	Stacy Dixon, Laurel Pfister, Jake Silcox, Kelly Veenstra, Jay Walker <i>DynaCon: Powder Finish vs. Anodized Leg Supports</i>
	261	Josh Brinks <i>Assessment of Environmental Racism in Grand Rapids: A GIS Database</i>
	262	Tara VanderStelt <i>Economic Impact of President Bush's proposed changes to immigrant policy</i>
3:40 - 3:55	168	Brandi Britton, Ebony Grisby, Robin Loubert, Beth Way <i>The Effect Of Race On Second Stage Labor And Pushing Duration</i>
	207	Kristen Esparza, Stephanie Gravelle, Kristy Kerkela <i>Comparison of Keyboarding Activity Under Static and Continuous Passive Motion Conditions</i>
	209	Ryan McCarty <i>"Guided by Faith and Matchless Fortitude": Milton's Portrayal of the Son in Paradise Lost</i>
	210	Fahmy Mamuya <i>Allelopathy of Chara</i>
	211	Greg Sturgeon <i>Using CT/MRI Data to Develop Computer Models for Use in Prosthetic Design</i>
	261	Melissa Reneski <i>Environment Affects Expression of Parental Behavior in Largemouth Bass: A Multivariate Approach</i>
	262	Rohini Prinja <i>Employment Opportunities for Mexican Women Immigrating to the U.S.</i>

Afternoon & Evening Oral Presentations

4:00 - 4:15	168	Kim Garcia, Jay Kaszyca, Julie Wiecezorek <i>The Effect of Topical Vancomycin in the Reduction of Postoperative Sternal Wound Infections</i>
	207	Erica Addington, Elizabeth Gorski, Leslie Stein, Kathleen Wilson <i>Connecting Community in West Michigan: Civic Engagement on the Internet</i>
	209	Littisha Scott <i>Does the Number Matter: An Investigative Study of the Relationship Between Household Composition and Juvenile Delinquency</i>
	210	Kevin Trebesh <i>Investigating Students Understanding of Newton's Laws in the Context of Fluids</i>
	211	Erika Denise Edwards <i>Though Many Have White Skin, Their Veins Flow of Black Blood Afro-Argentine Culture and History During the Twentieth Century</i>
	261	Danielle Jarois <i>Does Parental Size Influence Parental Investment in Largemouth Bass? A Multivariate Approach</i>
	262	Trisha Tkach, Kelly VanDriel, Katie Yates <i>The Value of Standardized Patient Interaction in Physical Therapy Education: Students' Perceptions of Two Clinical Education Models</i>
4:20 - 4:35	168	Aaron Hunt, Jennifer Pierce, Tamara Springberg <i>Diabetic Adherence and the Patient-Provider Relationship</i>
	207	Molli Herth, Geri Lewis, Monica Rainer <i>Evaluating E-Philanthropy in West Michigan: Foundation and United Way Web Sites</i>
	209	Chris Gaffney <i>Coverage Tools and Unit Testing in Java</i>
	210	Michelle Smith, Jessica Sobanski <i>Motivation for Work and Meanings of Education</i>
	211	Josh Loyd <i>Timber Wolf and Deer Interactions Throughout Selected Counties in the Upper Peninsula</i>
	261	Angelica Fuentes <i>The Effects of Zebra Mussels on the Downstream Transport of Primary Production</i>
	262	Joshua Fisher, Craig Stasio <i>Factors Influencing Physical Therapists Intentions of Pursuing a Transitional DPT Degree: A Survey of Clinicians in Three States with Varying Direct Access Regulations</i>
4:40 - 4:55	168	Patrick Roth <i>Does the Metabolic Energy Base in Sand-Impacted Streams Differ as Nutrient, Riparian, and Land-Use Conditions Change</i>
	207	Chasciti Bell, George Kipkosgeik, Lauren Kruer, Heather Mack <i>Evaluating E-Government in West Michigan: County and Regional Web Sites</i>
	209	Jayson Otto <i>Direct Marketing as an Alternative to the Industrial Food Systems: Consumer Motivations at the Holland Municipal Farmers Market</i>
	210	Adam Channells <i>Social Problems From A Global Perspective</i>
	211	Jill Mihelich <i>Conservation of the Vulnerable Beautiful Nuthatch, Sitta Formosa: A Preliminary Analysis of Species Distribution and Habitat Requirements</i>
	261	Kaleena Bernardi, Sarah Taylor <i>Characterization of a mRNA Coding For a Putative Soybean Vegetative Storage Protein</i>
	262	Christina Burch, Breanna Chycinski, Melissa Lesniak <i>Wellness Needs in Adolescence</i>
5:00 - 5:15	168	Allison Pukey <i>The Role of Tumor Necrosis Factor Alpha in Atherosclerosis</i>
	207	Marnika Gibson, Brian Gripenrogg, Lindsey Simmons, Kyle Wartella <i>Evaluating E-Government in West Michigan: City and Village Web Sites</i>
	209	Sarah Barnhard <i>The Relationship of Polyimide Foam Properties to Monomeric Structure</i>
	210	Michael Kohlenberger <i>So This is Life...: Writings by Michael Kohlenberger</i>
	211	Andrew Moore <i>GIS and Natural Resource Management Evaluation of Millennium Park</i>
	261	Sarah Taylor <i>The Effect of RGD Peptide on Somatic Embryogenesis in Daucus Carota</i>
	262	Jeremy Stephison <i>The Negative Space of Raymond Carver</i>

Afternoon & Evening Oral Presentations

5:20 - 5:35	207	Nick VandenBroek <i>Analysis of Unionid Mussels from an Archaeological Context Found Along the Grand River in Ottawa County</i>
	209	Kenneth Bader <i>Cavitation Caused by Ultrasound</i>
	210	Sara Tansey <i>A Statistical Consulting Experience: Analysis of Dolomite layers</i>
	211	Carly Kelly <i>Effects of Habitat Alteration on Karner Blue Butterfly Populations</i>
	261	Elizabeth Baber <i>The Social Construction of Space at a West Michigan Farmers Market</i>
	262	Kristen Heise <i>The Language of Rape in Greco-Roman Myth and Literature</i>
5:40 - 5:55	207	Rachel VanderHart <i>A Petrographic Analysis of Clay Samples and Woodland Period Pottery from Two Archaeological Sites in the Grand River Valley</i>
	261	Amanda Mitchell <i>Disrupting the Dichotomy: The Presentation of Woman in Silence</i>
6:00 - 6:15	261	Alicia Gomori, Heath Thomson <i>Are We Teaching our Kids to Be "Big Pigs Too"? A Study of Linguistic Prejudice in Children's Animated Film</i>

The schedule for the afternoon and evening presentations at the Pew Campus are on the following page.

Afternoon & Evening Oral Presentations DeVos Center, Pew Campus

Note that throughout the following presentation grid the second column refers to the room locations in DeVos Center.

4:00 - 4:15	117E	Steve Bussis <i>Financial Planning for a Golf Professional</i>
	119E	Justin Karl <i>Evidence of Real-Estate Market Bubble</i>
	136E	Kristy Olson, Matt Palmer, Leigha Smith, Cassie Tinsely, Robert Westdrop <i>Strategic Intent of Meijer</i>
	138E	Shannon Briggs, Ken DeBoer, Stacy Dow, Fay Dubord, Anthony Rollins, Sarah Van Elderen <i>Fore Golfers: Providing Marketing Research for Denali, A Local Golf Wholesaler</i>
4:20 - 4:35	117E	Megan Greenwood <i>Operation of an Independent Insurance Agency -- A Case Study</i>
	119E	Jason Decker, Rebecca Denman, Daryn Kuipers, Lindsay Miracle, Austin Prater <i>Food Processing Companies: Spartan Foods</i>
	136E	Mark Dewys, Sara Mellema, John Parshall, Alan Smith, Lindsey VanKeuren <i>Unstitching the Embroidery Market! Research Designed to Discover How Everlasting Embroidery Can Meet the Logo Wear Needs of Area Schools</i>
4:40 - 4:55	117E	Shrikanth Parthasarathy <i>Pixar Animation Studios: The Disney Alliance</i>
	119E	Kelly Allen, Jill Barrs, Rory Byrne, Lesley Hooker, Christopher LaBelle, Allen Lenartz <i>An Exploration of Market Interest in Digital Communication Security</i>
	136E	Jason Chesla, Jeff Denes, Jeff Drew, Anthony Stepter, Dan VanVoorst <i>Study of Attorneys' Perceptions of the MI-SBTDC</i>
5:00 - 5:15	117E	Jennifer Anderson, Eric Gervais, Angela Knapp, Mark Peterson, Tiffany Sutton <i>A Detailed Look at Current Retirement Plans Offered to Non-Profit Employees</i>
	119E	Liz Bielik, Rebecca Brander, Marie Cameron, Trevor Kelly <i>Spray Foam, It's For You</i>
5:20 - 5:35	117E	Jordan Broker, Ryan Dosenberry, Adam Kammeraad, Brendan Kelly, Mike Porter <i>A Descriptive Study of Nursing Home Equipment</i>
	119E	Paul DeBoer, Trevor Pawl, Darcy Porter, Shaun Shira, James Streit <i>Light Corp</i>
	138E	Jared Hoving, Jennifer Jones, Timothy McIntosh, Mathew Norton, Laura Schmelzer <i>Research Solutions for Wyoming Town Center Business Coalition</i>
5:40 - 5:55	117E	Elizabeth Caliendo, Tracy King, Whitney Post, Brian Small, Gabrielle Steele <i>A Descriptive Research on Visual Communications</i>
	119E	Chris Burdick, Christin Glueck, Chris Harris, Justin Hood, Chris Kenny <i>A Descriptive Research Study on Visual Communication for Process, LLC</i>
	138E	Sara Manderscheid, Melisa Massaway, Hannah Morrison, Joshua Munn, James Voice <i>Automatic Springs Products Corporation: International Expansion Evaluation</i>
6:00 - 6:15	205E	Gurminder (Timmy) Khatra <i>The Future of Electronic Commerce</i>
6:20 - 6:35	205E	Lindsay Janka <i>EVA: A More Precise Measurement</i>

Poster & Exhibit Presentations

9:00 - 9:50	<p>Michelle Figueroa, Rachel Golin, Joshua Stickney <i>Salmonella</i> [1]</p> <p>Amanda Davis, Shannon Edwards, Erin Harris, Jessica Key <i>From Cow to Cannibal</i> [3]</p> <p>Eric Krupa, Patti Norby, Lauren Sanford, Sarah Vasquez <i>Cosmetic Toxins</i> [5]</p> <p>Jennifer Nyland <i>Variations of Polyimide Precursor and the Resultant Microsphere Diameter</i> [7]</p> <p>Afton Austin <i>Dying Well: The Role of Spirituality in End-of-Life Care Giving</i> [10]</p> <p>Chad Meyer <i>Groins and Beach Erosion</i> [13]</p> <p>Ryan McCarthy <i>Bikini Atoll</i> [16]</p> <p>Julie Groenleer <i>The World's Largest LIP: The Ontong Java Plateau</i> [19]</p> <p>Jordan Moon <i>Effectiveness of 2 specific lacrosse shots</i> [22]</p> <p>Allison Laackman <i>What Makes Me Happy? A Third Grader's Perception on Happiness</i> [24]</p> <p>Richard Barnes <i>Waves: Beautiful and Wonderful</i> [28]</p> <p>Gilde Dana <i>Why is the Ocean Salty?</i> [29]</p> <p>Esiquiel Cardenas, Ryan Vanportfliet <i>Effect of Curl Speed on Bicep Muscle Recruitment</i> [31]</p> <p>Kenny Cott, Ketti Martwick, Brian Perry <i>Effectiveness of Rehabilitation in Restoring Muscle Balance in ACL-Deficient Knees</i> [32]</p> <p>Matt Arnold, Brooklyn Netherton <i>Variations in Body Weight and Body Composition in High School Wrestlers</i> [38]</p> <p>Akosua Walters <i>Sampling mtDNA from the Hair of White-Footed Mice</i> [41]</p> <p>Rachael Czechowskyj, Caleb O'Boyle <i>Bingham Canyon Mine</i> [44]</p> <p>Kate Jones <i>The Parotid Gland: Controversy of its Surgical Anatomy</i> [46]</p> <p>Jeff Chivis <i>Understanding Prehistoric Ceramic Technology from the Grand River Valley</i> [48]</p> <p>Samantha Hawkins <i>What Causes Tides?</i> [52]</p> <p>David Hendrix <i>Tsunami vs. the World</i> [54]</p> <p>Lisa Raterink, Sarah Szurley <i>The Bushveld Complex of South Africa</i> [56]</p> <p>Lindsey Mackey <i>Yoga: Preceptions and benefits</i> [60]</p> <p>Lisa Schneider <i>Prevention of a Fatter Future for Today's Kids</i> [64]</p> <p>Lindsey Frawley, Hoang Nguyen <i>Relationship Between Physical Activity Levels in High School and College</i> [71]</p> <p>Grant Bailey, Ajdin Kavara <i>Aqueous-Phase Heterogeneous Hydrogenolysis of 1,3-cyclohexanediols</i> [74]</p> <p>Bonnie Wiekierak <i>Stress in the Workplace</i> [77]</p> <p>Brian Shelson <i>Dolphin Communication and Disturbances that Affect Them</i> [80]</p> <p>Christopher Tort <i>Amazing Discoveries in the Deep Sea: Hydrothermal Vents and Tube Worms</i> [83]</p> <p>Amer Hodzic <i>Dynamics of Charged Pendulum</i> [86]</p> <p>Richard Ruel <i>Animals of the Deep Sea</i> [94]</p> <p>Vanderlaan Troy <i>Seamounts: Indicators of Geologic Processes, Past and Present</i> [100]</p> <p>Ben Cutler, Kendra Grove, Emily Hohmann, Stephanie Januchowski, Danielle Jarois, Holly Nowak, Janice O'Neill, Joan Smith, Evan Wilson <i>Patterns of Copulation Behavior in North American Songbirds</i> [102]</p> <p>Richard Beaudin <i>History of Sonar</i> [105]</p> <p>Jennifer Snide <i>Candida Albicans Mbp1 Gene</i> [109]</p>
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Poster & Exhibit Presentations

10:00 - 10:50	<p>Rachel Blain, Megan Sawyer <i>Motion Analysis of the Softball Swing</i> [4]</p> <p>Jason Culbert <i>Building Along the Coast: A Gamble with Nature</i> [11]</p> <p>Nicole Augustine <i>Physician Assistant Studies Program Survey Analysis: A Statistical Consulting Experience</i> [15]</p> <p>Holli Popour <i>Distributed Data Mining of Large Biological Databases</i> [17]</p> <p>Michael Gurtowsky, Diana Martin <i>Upper Body and Lower Body Fatigue Characteristics</i> [18]</p> <p>Neil Schafer, Nick Spicer, Jon Vos <i>Geology of the Stillwater Complex</i> [20]</p> <p>Tonya Leeuw <i>Highly-Sensitive Inexpensive Isotope Ratio Determination using Wavelength Modulation and Cavity Ringdown Spectroscopy</i> [21]</p> <p>Paul Schmude <i>Reefs of Michigan</i> [23]</p> <p>Michael Shelton <i>The Hawaiian Hot Spot: Is It on the Move?</i> [26]</p> <p>Diana Kulczyski <i>Coccolithophores</i> [30]</p> <p>Sarah Boomstra <i>Exploring the Technological Caregiving Experience</i> [35]</p> <p>Brian Beach, Ryan Sleeper <i>The Petrogenesis of the Homestake Mine, South Dakota</i> [37]</p> <p>Richard Beaudin, Jennifer DeLoge <i>Keweenaw Copper Country, Like No Place Else On Earth</i> [40]</p> <p>Esiquiel Cardenas, Richard Schneider <i>The Efficacy of a Training Program on Increasing Sport Specific and Non Specific Skills in Collegiate Rowers</i> [43]</p> <p>Caleb O'Boyle <i>Tsunami</i> [45]</p> <p>Brandy Fedewa <i>Predictors of Relationship Satisfaction: What's Perfection Got to Do With It?</i> [51]</p> <p>Jennifer Mackson <i>Dolphin Intelligence</i> [53]</p> <p>Jordan Moon, Steve Zurek <i>Lacrosse Training Program</i> [58]</p> <p>David Calkins, Justin Fuchs, Matthew Zalewski <i>The Effects of Repetition Speeds on Muscle Improvement</i> [62]</p> <p>Lynette Wilson <i>Echolocation</i> [68]</p> <p>Megan Smith <i>A Sensory Journey in Poetry</i> [70]</p> <p>Jack DeGroot <i>Incidence of Mosquitoes Carrying the West Nile Virus in West Michigan</i> [73]</p> <p>JP Baertson <i>Affectation: 'Masculinity' in Mass Culture</i> [76]</p> <p>Alissa Carlton <i>Surtey: A Volcano Born from the Sea</i> [79]</p> <p>Kevin Weiss <i>The Big Lake They Call Gitche Gumee</i> [82]</p> <p>Gary Van Ravenswaay <i>Using Foram Shell Weight Loss as a Proxy for Carbonate Dissolution</i> [84]</p> <p>Rafael Castanon <i>Perceptions of Minorities Criminal Involvement in Grand Rapids: community and Media dialogue</i> [87]</p> <p>Stephanie Karczynski <i>The Summer in a Forensics Crime Lab</i> [88]</p> <p>Lauren Sanford <i>FAK Tyrosine Kinase Substrate Determination</i> [90]</p> <p>Jennifer DeLoge <i>Leodia Sexiesperforata, the Life and Legend</i> [92]</p> <p>Jeremy Fisher, Ryan Whitsitt <i>The Influences of Physical Activity on Academic Performance</i> [96]</p> <p>Michelle Smith <i>A Qualitative Analysis of the Meaning of Education in Students Lives</i> [97]</p> <p>Alex Koning <i>Human Impacts on the World's Coral Reefs</i> [103]</p> <p>Nick Sheriden, Ryan Smith, Nicole Zyla <i>Vascular Anomaly</i> [104]</p> <p>Amy Clough <i>Religion and Rape in Abusive Relationships</i> [106]</p> <p>Ryan Mengel, Brian Shelson <i>Kimberly Mine (South Africa)</i> [108]</p> <p>Julie Woodbury <i>Social Norms and Bone Health Promoting Behavior in Adolescents: Analysis of Data from The Health Bones Norm Questionnaire</i> [110]W</p>
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Poster & Exhibit Presentations

2:00 - 2:50	<p>Roberta Jordan <i>Nursing Care of a Complex Client</i> [13]</p> <p>Pete Crawford, John Dillay, Jon Vos <i>Mapping GVSU Allendale Campus Using GPS / GIS Technology</i> [15]</p> <p>Rebecca Creswick, Michael Hrabonz, Justin Sterett, Thea Walsh <i>Keratinase Producing Microorganisms</i> [16]</p> <p>Abram Bos <i>Silicon Nanoparticles in Carbonaceous Chondrite Meteorites</i> [18]</p> <p>Lauren Pike <i>Potemkin Village</i> [20]</p> <p>Rachel Vanderkolk <i>Nursing Care of a Complex Client</i> [23]</p> <p>Kimberly De LaCruz <i>Nursing Care of a Complex Client</i> [25]</p> <p>Stacy Anderson <i>Nursing Care of a Complex Client</i> [30]</p> <p>Kristi Stewart <i>Nursing Care of a Complex Client</i> [33]</p> <p>Bridget Whelan <i>Nursing Care of a Complex Client</i> [34]</p> <p>Mary Rozneck <i>Nursing Care of a Complex Client</i> [37]</p> <p>Rebecca Stevens <i>Nursing Care of a Complex Client</i> [39]</p> <p>Richard Beaudin <i>Keweenaw Copper Country, a Hydrothermal Deposit</i> [42]</p> <p>Tina Marie Padron <i>Nursing Care of a Complex Patient</i> [46]</p> <p>Lin Miu-Linda Ng <i>Nursing Care of a Complex Client</i> [49]</p> <p>Terre Buck <i>Nursing Care of a Complex Client</i> [52]</p> <p>Erin Macklin <i>Nursing Care of a Complex Client</i> [55]</p> <p>Jessica Tkach <i>Nursing Care of a Complex Client</i> [58]</p> <p>Megan Highhouse <i>Nursing Care of a Complex Client</i> [61]</p> <p>Donna McMullen, Mark Saylor, Sunalath Siakhasone, Becky Touchett <i>Using GPS Technology to Identify Erosion Prone Areas in the Grand Velley Ravine System Adjacent to the Arboretum, and Measure the Characteristics of Surrounding Features with GIS</i> [63]</p> <p>Cecy Bailey <i>Nursing Care of a Complex Client</i> [64]</p> <p>Scott B. DeVries <i>The Role of the Virtual Classroom in Physics</i> [67]</p> <p>Rebecca Attila-Fried, Bret Groendyke, Jason Skantze <i>GIS Inventory: Management of Grand Valley State University's Arboretum</i> [68]</p> <p>Carrie Germain <i>Nursing Care of a Complex Client</i> [70]</p> <p>Diana Brown <i>The Phenotypic Characterization of a Candida albicans YPD1 Null Mutant</i> [72]</p> <p>Erik Howell <i>Characterization of a Kanamycin Resistance Gene Identified in Sinorhizodium Fredii</i> [74]</p> <p>Lauren Pontious <i>Urban Poetry-A Collection of Poetry Influenced by the Sights, Sounds and Citizens of the City</i> [76]</p> <p>Aimee Leestma <i>Arthrometric Assessment of Glenohumeral Laxity in Healthy Females Using the KT-1000 Instrumented Arthrometer</i> [80]</p> <p>Jennifer Alavarez <i>Nursing Care of a Complex Client</i> [84]</p> <p>Marcy Stonex <i>Nursing Care of a Complex Client</i> [87]</p> <p>Kristy Wheeler <i>Nursing Care of a Complex Client</i> [90]</p> <p>Kontarrow Bryant <i>Nursing Care of a Complex Client</i> [93]</p> <p>Jamie Tamim, R.N. <i>Patient Satisfaction in Primary Care Centers</i> [94]</p> <p>Christian Kessler <i>Nursing Care of a Complex Client</i> [96]</p> <p>Kelli Leask <i>Nursing Care of a Complex Client</i> [102]</p> <p>Andrea Deming, Sara Ruess <i>Degree of Tolerance for Sexual Orientation as a Function of the Level of Intrinsic Religiosity</i> [106]</p> <p>Jackie Lefere <i>Nursing Care of a Complex Client</i> [108]</p> <p>Darcy Lown <i>Contrast Therapy: Does it really work?</i> [110]</p>
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Poster & Exhibit Presentations

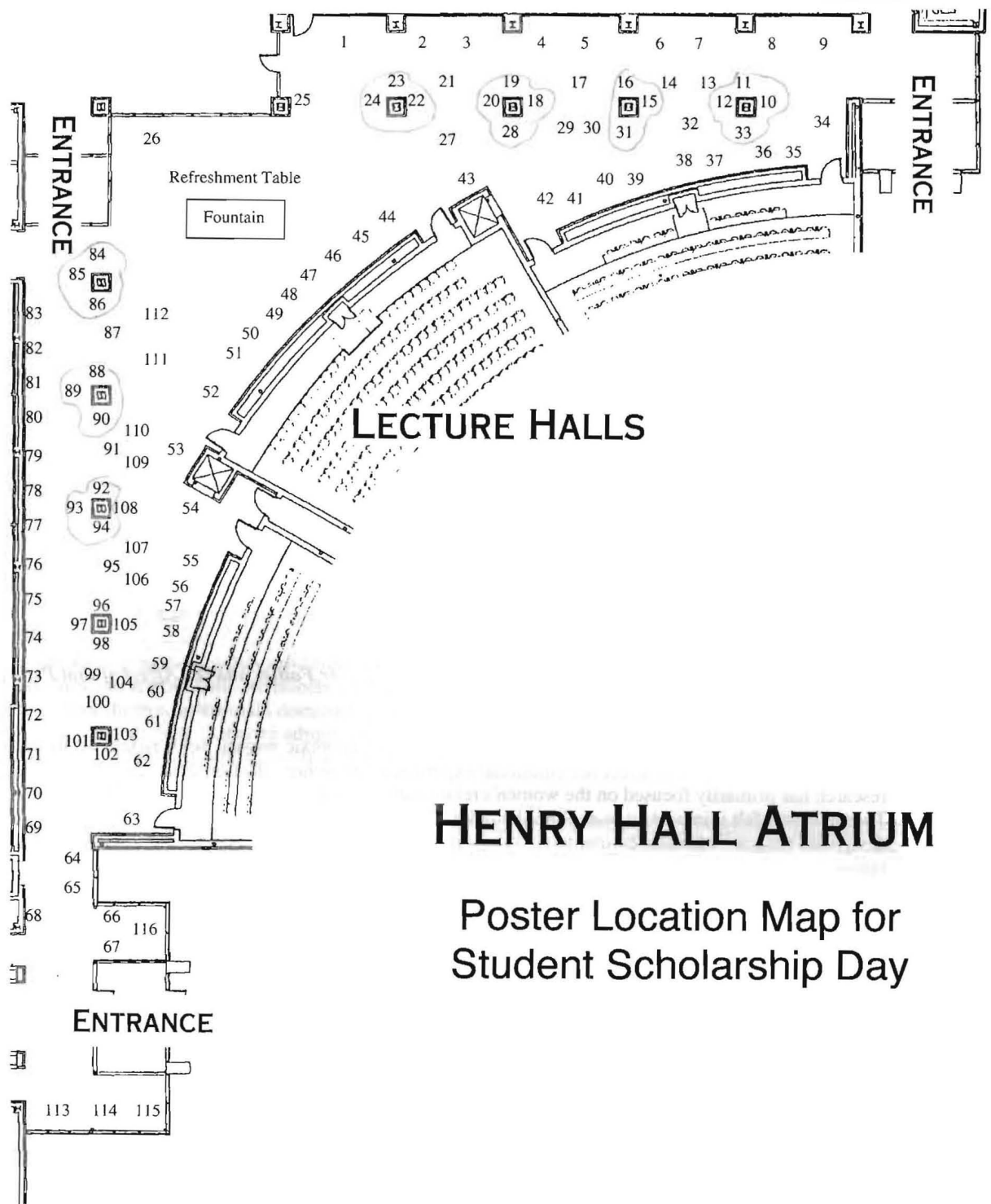
3:00 - 3:50	<p>Mike Kinney, Tom Koziol, Chris Michael <i>Motion Analysis of Pole-Vaulting</i> [10]</p> <p>Meagan DeHaan, Sara Lewis <i>Effects of Caffeine on Submaximal Exercise and Muscular Strength Tasks</i> [12]</p> <p>Carrie Gillette <i>Nursing Care of a Complex Client</i> [17]</p> <p>Kristin Burgess <i>Nursing Care of a Complex Client</i> [19]</p> <p>McKensay Hourtienne <i>Nursing Care of a Complex Client</i> [21]</p> <p>Erika Curtiss, Laura Hite, Rachel VanderHart, Matt VanPortfliet <i>Using GIS to Monitor and Evaluate Soil pH in GVSU Arboretum</i> [22]</p> <p>Amy McCalla <i>Nursing Care of a Complex Client</i> [24]</p> <p>Nicole DeYoung <i>Nursing Care of a Complex Client</i> [28]</p> <p>Katie Pemberton <i>Nursing Care of a Complex Client</i> [29]</p> <p>Anna Przekadzinska <i>Nursing Care of a Complex Client</i> [32]</p> <p>Katherine Handley <i>An Analysis of Mold Spores in the GVSU Dissection Laboratory</i> [35]</p> <p>Laura Bloomfield <i>Nursing Care of a Complex Client</i> [36]</p> <p>Ryan Hoekstra <i>Twice as Nice: Producing Conducting Polymers by Solving the Problem of Double Nitrogen Substitution on Metal Olefin Complexes</i> [38]</p> <p>Jill Chamberland <i>Nursing Care of a Complex Client</i> [41]</p> <p>Patricia Sprick <i>Nursing Care of a Complex Client</i> [44]</p> <p>Kevin Devormer, Todd Tiano, Catherine Willis <i>Analysis of the Genetic Structure of Brown Trout (<i>Salmo Trutta</i>) in the Muskegon River</i> [47]</p> <p>Molly McGee <i>Nursing Care of a Complex Client</i> [48]</p> <p>Becky Roobol <i>Nursing Care of a Complex Client</i> [51]</p> <p>J.R. Lotto, Michael Shelton, Kristian Williams <i>Mapping Grand Valley State University's Nature Trails with GIS</i> [53]</p> <p>Kathryn Ballantine <i>Nursing Care of a Complex Client</i> [54]</p> <p>Wendy Goodfellow <i>Nursing Care of a Complex Client</i> [56]</p> <p>Shelley Deemter <i>Diversity Management Relative to Manufacturing Environments</i> [57]</p> <p>Rebecca Wiltjer <i>Nursing Care of a Complex Client</i> [59]</p> <p>Stephanie Hitsman <i>Individual Differences in Processing Speed, Working Memory, and Reasoning Abilities</i> [62]</p> <p>Dawn Johnson <i>Nursing Care of a Complex Client</i> [65]</p> <p>Thelard Washington <i>Nursing Care of a Complex Client</i> [66]</p> <p>Meranda Lamoreaux <i>Nursing Care of a Complex Client</i> [69]</p> <p>Stacy Becker <i>Nursing Care of a Complex Client</i> [71]</p> <p>Heather Parmelee <i>Nursing Care of a Complex Client</i> [73]</p> <p>Lindsey Reck <i>Nursing Care of a Complex Client</i> [75]</p> <p>Tammi Donker <i>Nursing Care of a Complex Client</i> [77]</p> <p>Jennica VanHouten <i>Nursing Care of a Complex Client</i> [79]</p> <p>Crystal Dymock <i>A Health and Wellness Statistical Consulting Experience</i> [81]</p> <p>Kristi Irelan <i>Nursing Care of a Complex Client</i> [82]</p> <p>Kevin Devormer, Todd Tiano, Catherine Willis <i>Genetic Differences Between Strains of Brown Trout (<i>Salmo Trutta</i>) at the Oden State Fish Hatchery (Michigan)</i> [83]</p> <p>Beth Welliver <i>Nursing Care of a Complex Client</i> [85]</p> <p>Wioletta Brechting <i>Nursing Care of a Complex Client</i> [88]</p> <p>Kurt Phillips <i>Nursing Care of a Complex Client</i> [92]</p> <p>Amber Eby, Chris Shearer <i>Authentic Enough: Poems by Amber Eby</i> [98]</p> <p>Andrea Hoffman <i>Nursing Care of a Complex Client</i> [100]</p> <p>Michelle Riemersma <i>Nursing Care of a Complex Client</i> [103]</p>
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There are more 3:00 – 3:50 poster presentations listed on the following page.

Poster & Exhibit Presentations

3:00 - 3:50	Kevin Senko <i>Peliminary Findings of Grandmothers Raising Grandchildren: Stressors, Social Support and Health Outcomes</i> [104] Susan VanderZouwen <i>Nursing Care of a Complex Client</i> [105] Cindy Penman <i>Poems by Cindy Penman</i> [107] April Vaughan <i>Nursing Care of a Complex Client</i> [109]
4:00 - 4:50	Kyle Meyers <i>Patterns and Functions in String Art</i> [1] Rachel Lewis <i>Bungee Jumping and Exercise: The Study of Stretching</i> [2] Tiffany Stob <i>The Functions of Quilts</i> [4] Omar Hwail <i>A Heuristic Algorithm, Simulating Light Propagation in Orthogonal Polygons</i> [5] Joshua Brandsen <i>Not Just a Bedtime Story: Exploring Inverse Functions Through Children's Literature</i> [6] Stephen Nelson <i>Evolution, Understanding and Acceptance : A Student Statistical Consulting Experience</i> [7] Jessica Roy <i>Batty Functions</i> [8] Tom Tomasiak <i>Immunocytochemical Identification of Histaminergic Cells in the Central Nervous System of Drosophila Melanogaster</i> [9] Barbara Brown <i>Comparison of Digit Ratio in Male and Female House Sparrows</i> [11] Carrie Fletcher <i>The Burqa Solution</i> [26] Doug Feenstra <i>Tyrosine Kinase Substrate Synthesis and Analysis</i> [27] Terri Foster <i>The Effects of Nitric Oxide Inhibitor L-name in Goldfish Telencephalon</i> [31] Brandon Comerford, Jessica Roop, Aaron Szura <i>The Influence of Health Status and Lifestyle Behaviors on Total Cholesterol Levels</i> [40] Lisa Glenn <i>Yoga and Pilates as Physical Therapy Treatments</i> [43] Rachel Decker <i>Modeling and Bone Health Promoting Behaviors in Adolescents: Analysis of Data from the Healthy Bones Modeling Questionnaire</i> [45] Nicole Evans <i>The Effect of Lrp5-deficiency on Mammary Hyperplasia in Mice Overexpressing Wnt-1</i> [50] Andy Albrecht, Richard Barnes, Jason Culbert, Darrell Dakan, Pete Gerardini, Samantha Hawkins, Kenneth King, Ryan Mengel, Caleb O'Boyle, William Packard, Richard Ruel, Brian Shelson, Troy Vanderlaan <i>Educating Residents of the City of Grand Rapids on the Impact of a 100-year Flood Event</i> [60] Catherine Kidd, Ann Trombly <i>Abortion as Entrance into Womanhood</i> [78] Carl Griffith <i>A Statistical Consulting Experience: Determining Relationships Between Questions in a Conceptual Chemistry Test</i> [86] Sandra Horn <i>Initiation into the World of Statistical Consulting: Analysis of Developmental Writing Classes</i> [89] Alysa Samotis, Jaeden Wagner <i>Hand Dominance, Eye Dominance, and Anticipation Timing</i> [91] Robin Smith <i>Social Support and Bone Health Promoting Behaviors in Adolescents: Analysis of Data from the Healthy Bones Social Support Questionnaire</i> [95] Shannon Edwards <i>Synthesis of Chiral Silanes</i> [97] Kristina Lund <i>The Generalized Area Principle</i> [101] Alicia Brazeau <i>Groupies and Singletons: Student Perspectives on Group and Individual Writing Tutorials</i> [113] Jenny Brinks <i>A Direct Test of the Sexually Transmitted Microbe Hypothesis of Avian Copulation in Tree Swallows (Tachycineta Bicolor)</i> [114] Craig Johnson <i>A Statistical Consulting Experience: Analysis of Biology prerequisites</i> [115] Elizabeth Barko, Harvey Sanders <i>Hand Dominance and Bilateral Transfer</i> [116]

Note: The bracketed number directly following each title corresponds to the poster/exhibit location. A map of the poster locations appears on page 14.



Padnos 211

Applying GIS in Assessing Gypsy Moth Spread and Control in West Michigan**Neil Besteman**

For over 20 years, defoliation caused by the Gypsy Moth has resulted in an increased mortality to trees as well as having a negative affect on the tourist and Christmas tree industries in West Michigan. The purpose of this study is to find patterns within the distribution and spread of Gypsy Moth infestations as well as effectiveness of containment and eradication methods. GIS data layers will be used including orthophotos, land cover and elevation data as well as infected and treated locations for multiple years. Results will include observed patterns of infested areas, characteristics of areas that have a high risk of introduction and impact, and best management practices for containment and eradication. Although the topic of Gypsy Moth spread and eradication has been widely studied, by using GIS, I intend to look for patterns and relationships not thoroughly investigated.

Sponsor: Shaily Menon

Padnos 261

Designing a Wetland Education Project for Allendale Public Schools**Vickie Mukans**

The Allendale Public School system is in the midst of constructing a new school near a stream/wetland area. Data have and will be continuously collected on the stream/wetland area for future uses in the science curriculum. Students will use these data to analyze and make comparisons in their science labs. Data were also analyzed to determine if the school construction is changing the stream/wetland ecosystem. By comparing soil, air, and water temperatures, pH, dissolved oxygen, ammonia concentration, and invertebrate samples from before and also during construction, I will be able to identify any changes that have occurred.

Sponsor: Carol Griffin

Padnos 262

Determining Human Goodness Through Greek Lyric Poetry**Mary Sulek**

Through their individual experiences and general ideas about how the world functions, the Greek lyric poets Archilochus and Simonides each developed a set of standards that they believed qualified someone as a good person. Each poet distinguishes different variables as necessary factors in their definitions of a person's goodness. In effect, while Archilochus acknowledges the role of external factors, he views the utilization of inner thumos as the main dominating factor. On the other hand, Simonides' poetry portrays a reversal of Archilochus' view in that he admits the role of one's inner ability but stresses that the power of external factors has a more dominant part that directly influences men's inner ability.

Sponsor: Charles Pazdernik

Beginning at 8:20

Padnos 168

The Power of Language in Maoist China as seen in Ha Jin's "Ocean of Words"**Eric Serna**

Ha Jin's Collection of Stories "Ocean of Words" presents a portrait of China under Chairman Mao's rule. Through the various stories Ha Jin shows how language itself was a powerful means of control for the Communist rule, as well as how language is as much a force of nature as the titular ocean. This presentation will discuss how language is presented in these stories as well as what it means in the context of China during the 1970's.

Sponsor: David Ihrman

Padnos 207

Research Revealing the Perception and Satisfaction of Trans-Matic's Customers**Casey Black, Brad Franz, Anne Perosky, Jillian Ross, Wade Rumley**

Trans-Matic is a manufacturing company that is in the business of deep drawn stampings and assemblies. Their Sales and Marketing department has requested that research be done in regards to the perception that their customers have of them. A questionnaire was sent to Trans-Matic's customers to obtain feedback regarding perception of the company as well as their satisfaction with customer service. All data collected was tabulated and analyzed using SPSS statistical analysis software. The data was presented to the Vice President of Marketing at Trans-Matic, Mark Southwell.

Sponsor: Nancy Levenburg

Padnos 209

Integration of Open and Closed Kinetic Chain for Intervention of an Ipsilateral Patellar Tendon Anterior Cruciate Ligament Reconstruction and a Lateral Outside-in Meniscal Repair: A Case Report**Jennifer Wells**

Standard rehabilitation protocols for anterior cruciate ligament (ACL) reconstruction and meniscal repair primarily involve open kinetic chain (OKC) exercises. Closed kinetic chain (CKC) exercises have been thought to offer increased safety and functional training. The purpose of this case report is to integrate OKC and CKC exercises into a rehabilitation protocol. A 49-year-old female presented with a left knee ACL reconstruction and lateral meniscal repair. The patient's functional strength improved with an integrated OKC and CKC program. This case demonstrates a combined OKC and CKC protocol that possibly allows for optimal functional training.

Sponsor: Barbara Baker

Padnos 210

Total Organic Carbon in Shale from the Mississippian Michigan Formation, Western Michigan**Jennifer DeLoe**

During the Mississippian micro-organisms thrived in some environments in what is now western Michigan. Preserved organic material of some of these organisms can be measured by determining the total organic carbon (TOC) content of shale in the Michigan Formation. Geologic evidence suggests that during the mid Paleozoic many marine environments at times were anoxic to suboxic, possibly due to regression of the sea. Such a low oxygen environment favors preservation of organic material. Thus, TOC measurements will give a better understanding of the depositional environment of the shales as well as processes that occurred post deposition.

Sponsors: Richard Rediske, Patricia Videtich

Padnos 211

Using GIS to Analyze Land Use/Cover Changes and Suitability for Development in Alto, Michigan**David Kowalski**

Small rural towns near Grand Rapids, such as Alto, have experienced tremendous growth in recent years. In this project I will compare land use/land cover data for Alto, Michigan from 1978 and 1998. I will also find locations most suitable for future development that will minimize impact on the environment. The following GIS data layers will be included in the analysis, previous and current land use/cover, soil, proximity to water, open area available and current land ownership. I will determine where future development should occur as well as environmental impacts of current and past development. Such analyses will be useful in future zoning and development decisions.

Sponsor: Shaily Menon

Padnos 261

Using GIS to Assess Land Use Change in Otsego County, Michigan**Mark Prusakiewicz**

This project will examine the town expansion for the areas surrounding the city of Gaylord, which is located in Otsego County, Michigan. The main focus of my project will be examining the extent of loss of agricultural and forested lands in the last 20 years. The main data that will be used to aid in my project will be the GIS maps of land use, land cover, and aerial photography. A GIS overlay method will be used to portray how the expansion has affected the surrounding areas of this city. The expected results are to show a significant loss of the two types of land cover and to examine how urban sprawl has impacted the community. The significance of this project is expansion of this once small community and the implications to the residents and policy makers. If we continue to expand without taking in account for the loss that occurs we could lose valuable agricultural and forested lands that are pertinent to the survival of the human species.

Sponsor: Shaily Menon

Padnos 262

A Project in Theoretical Computer Science**Ryan Putnam**

Theoretical Computer Science is the study of the mathematical foundations behind computing -- how do we define a computation? To answer this question, different automata have been defined: deterministic finite, non-deterministic finite, and pushdown. The latter automaton has a stack that can be pushed or popped. Turing machines are another type of automaton. Each automaton involves reading a string of input characters, and for some, there is also memory to store the results of calculations. In this talk, the speaker will present the results of a class project on the topic of automata.

Sponsor: Edward Aboufadel

Beginning at 8:40

Padnos 168

Quality Auto Group: A Descriptive Research Study**Josh Bourke, April Decker, Dana Halonen, Jay Ofield, Steve Tuls**

The purpose of this research project was to find the best location and a target market for a used car dealership in the Grand Rapids area. After we identified the best location and target market, we explored ideal ways to advertise to the market. We gathered information by surveying 60 respondents and interviewing 3 dealerships.

Sponsor: Nancy Levenburg

Padnos 207

Childhood Coping in Chronic Illness: The Role of Occupational Therapy with Acute Lymphoblastic Leukemia**Nicole Rondini, Tami Thornton**

The purpose of this qualitative study was to provide a better understanding of patterns of coping in children with acute lymphoblastic leukemia (ALL). Research has shown that some children with ALL may be at high risk for developing psychosocial problems secondary to the physical illness. Examples of typical coping stressors have been identified through quantitative research, but little research is provided to describe how or why a child chooses specific methods to address being ill. Therefore, three semi-structured interviews were completed with children diagnosed with ALL between the ages of 8-12 to provide more in-depth detail about coping, routine interruption, and the role of occupational therapy in treatment of this illness.

Sponsors: Mary Bower Russa, Cynthia Grapczynski, Denise Meier

Padnos 209

The Effects of a Six-Week Hippotherapy Intervention on Thoracic Kyphosis in Clients with Neurological Deficits**Shannon Hammond, Stephanie Kupkowski, Terri Moore**

Hippotherapy is an alternative treatment that incorporates the use of horses with physical therapy interventions. There is a lack of quantitative research investigating hippotherapy's influence on posture. Therefore, the purpose of this study was to examine how a six-week hippotherapy intervention affected the degree of thoracic kyphosis in clients with neurological disorders. A convenience sample of eight subjects from the Cheff Center in Augusta, Michigan was used in the study. Each subject's thoracic kyphosis was measured using a kyphometer pre- and post- the six-week hippotherapy intervention. Data analysis using two-by-two tables and the Fisher's Exact Test examined the relationship between changes in degree of kyphosis and the number of hippotherapy sessions attended. Results of analyses and implications for future physical therapy practice will be discussed.

Sponsors: Barbara Baker, Teresa Beck, Dan Vaughn

Padnos 210

Frequency and Origin of Pyrite in Dolomite in the Mississippian Michigan Formation, Western Michigan**Jeremy Meyer**

The literature describes a link between pyrite (FeSO_4) abundance in dolomite, organic carbon concentration, and iron availability. The character, distribution, and concentration of pyrite in the Mississippian Michigan Formation is examined and described in polished thin sections of dolomite collected from a gypsum mine in Grand Rapids, Michigan. Pyrite in the dolomite indicates a low oxygen environment and a sufficient quality of reactive iron available for pyrite mineralization. In addition, the role of physical reworking processes such as bioturbation may have impacted the speed of the chemical reactions that led to pyrite formation in the dolomite.

Sponsor: Patricia Videtich

Padnos 211

Analysis of Baxter State Park Trails Using a GIS**Kevin Hollebeek**

Baxter State Park is a large backcountry area in Northern Maine. The park is a 204,000 acre backcountry destination with many recreational opportunities. The park also includes the northern terminus of the Appalachian Trail which starts in Georgia. My goal was to distinguish trails by their level of difficulty by using digital elevation models. I digitized all of the trails in the park located about 75 miles North of Bangor, Maine to determine if certain areas of the park were host to the most difficult trails. My presumption is that Mount Katahdin would harbor some of the steepest trails within the park because it is the highest point in Maine. Other trails in the park are also very steep and may prove to be steeper than Katahdin trails. These GIS maps will be useful to park visitors to see which trails will suit their level of recreation the best.

Sponsor: Shaily Menon

Padnos 261

Developing a Conservation Plan for a Landowner in Van Buren County**Kristian Williams**

The Natural Resources Conservation Service has a competitive program to provide monetary assistance to landowners who wish to implement conservation practices to improve wildlife habitat. A conservation plan must first be developed to meet Natural Resources Conservation Service (NRCS) standards before acceptance into a conservation program. This conservation plan will provide guidelines for the landowner to follow to improve habitat for the Eastern Massasauga, Blanchard's Cricket Frog, and the Spotted Turtle by using practices such as conservation cover planting, brush management, and shallow water management for wildlife. These species are listed on Michigan's Threatened and Endangered species list, which makes them a priority for the NRCS to work with. After acceptance into the program, the landowner will be reimbursed for a percentage of the cost of the practices.

Sponsor: Carol Griffin

Padnos 262

Skier Quest Business Plan**Angelo Blancato**

Full Business Plan for a new start-up company called "Skier Quest". The business plan for Skier Quest will have four basic objectives. First, it will identify the nature of the products Skier Quest will produce, the context of the business opportunity, and why the opportunity exists. Second, it will present the approach my partner and I will take so we can exploit the opportunities that our idea will bring. Third, it will identify why Skier Quest will be a winner. Finally, the Business Plan will be structured as a tool to help in raising necessary start-up capital ... it will be a selling document.

Sponsor: Robert Frey

Beginning at 9:00

Padnos 168

The Plate Tectonic Setting and History of Mystery Basin #1**Alissa Carlton, Shaun Lehman**

To understand past tectonic and mountain-building events, it is often necessary to take an indirect approach: to study the sediments that were eroded from now-missing tectonic highs and were deposited and preserved in nearby sedimentary basins. In GEO 495, we compiled data from three unknown sedimentary basins in order to interpret the tectonic events related to their development. The data include: lithology, paleocurrent analyses, sandstone petrography, biostratigraphy, clast counts, and radiometric ages. The data is used: (1) to track changes in the basin's depositional environment which indicate rising or falling water levels (and/or tectonic raising or lowering of the basin), and (2) to understand the composition and geometry of surrounding mountain ranges which would have contributed sediment to the basin. We interpret the tectonic setting of the unknown basin and relate its development to large-scale forces such as global plate motions, mountain-building, and climate change.

Sponsor: Angela Hessler

Padnos 207

Muscle Strength and Functional Performance in Active College Age Students**Chad Gravatt, Ed Heller, Derek Migazzi**

The purpose of this study is to determine if a relationship exists between lower extremity muscle strength and performance on two functional hop tests, the single-legged vertical jump and the single-legged hop for distance. A pilot study was conducted to determine the reliability of each tester in using the equipment.

Data collection has not yet been completed, but it is our intention to test 100 active GVSU students, 50 men and 50 women, ranging from 18-25 years of age. Data will be analyzed utilizing the Pearson Product Moment Correlation Coefficient to determine if a relationship exists between strength scores and functional performance. Differences between men and women will be analyzed in addition to a comparison of our results to published normative values.

Sponsors: Jolene Bennett, Barb Hoogenboom, Jann Jinn

Padnos 209

Effectiveness of Therapeutic Play for Improving Cognitive Functioning and Developmental Delay in Children: A Critical Review of the Literature**Sauna Boughey, Kathleen Brantley, Katie Rosene**

A critical review of the published literature was undertaken to determine the effectiveness of therapeutic play on improving cognitive functioning and developmental delay in children with physical impairments aged 0-5. An overview of methodology, results, and implications for therapeutic recreation practice will be presented.

Sponsor: Teresa Beck

Padnos 210

Core Study of the Washington 10 Niagaran Reef, Macomb County, Michigan**Paul Schmude**

A core from the Washington #6-17 observation well drilled in Macomb County, Michigan, contains a classic example of a Michigan Silurian Reef. Over 400 million years ago, reefs thrived in Michigan. These fossil reefs are preserved in the Niagaran Formation over 3,000 feet below the subsurface. The Washington #6-17 well penetrated the Washington 10 Reef, which has produced over 18 billion cubic feet of gas. This well was originally cored to study the potential of converting this reef into a gas storage field. In this study, the core will be described, facies identified, and porosity development within the reef examined. The cored interval is from 3198 to 3406 feet measured depth, and is held at the Western Michigan University Core Laboratory in Kalamazoo, Michigan.

Sponsor: Patricia Videtich

Padnos 211

Geographic Information Assessment of Contaminants within the Little Black Creek**Kenneth Hughes**

The Little Black Creek is a tributary of Mona Lake with a past history of excessive contamination as a result of industrial practices. It flows through industrial and residential zones of Muskegon Heights before entering Mona Lake. This poses a health concern to residents in close proximity to the creek. The objective of this project is to complete a GIS assessment of contamination within the creek and its wetlands that include a contaminant source inventory with concentration data. Areas with a high runoff potential will be identified utilizing land use, point and non-point pollution sources, and concentration data. Concentrations of heavy metals and semi-volatiles should be higher downstream of industrial areas. Identifying areas with high contaminant concentrations and locations with high potential runoff will provide an invaluable base of information for future research in detailing the effects of contaminants within the Little Black Creek and its wetlands.

Sponsor: Shaily Menon

Padnos 261

Mapping of Ionia State Recreation Area Through Digital Interpretations and Production**Andrew Haapala**

Very few State Parks in Michigan have comprehensive digital maps of their entire park property. I have chosen Ionia State Recreation Area to be the pioneer park for this project. Two objectives have been met with the information gathered and studied; a broad orientation of the park property is displayed for park users, and additional information is obtained for park employees and emergency/rescue personnel. Through geographic information systems (GIS) and map interpretation/research, I have created maps that can be used to obtain information about the park. Information included in these maps are: global positioning (GPS) reference point locations, land cover, land classification, emergency and maintenance routes, and a comprehensive map of the park campgrounds. The goal of the project is to improve the effectiveness of park management at Ionia State Recreation Area.

Sponsor: Carol Griffin

Padnos 262

Community Partnership Project**Dawn Johnson, Roberta Jordan, Amy McCalla, Patricia Sprick, Marcy Stonex, Rachel Vanderkolk, Susan VanderZouwen, Jennica VanHouten, Bridget Whelan, Rebecca Wiltjer**

The purpose of this community partnership presentation is to highlight the process and outcomes completed through a partnership with a community group. The partnership is an opportunity for community health nursing students to develop community health nursing role behaviors as provider of care, designer/manager of care, and member of the profession. The project involves analysis of community assessment data, literature review, incorporation of research findings, and collaboration with community members to determine nursing interventions and methods of evaluation. The project is based on the Public Health Nursing Standards of Practice and provides evidence of critical thinking, role development, and baccalaureate nurse competency in community health nursing.

Sponsor: Catherine Earl

Beginning at 9:20

Padnos 168

The Plate Tectonic Setting and History of Mystery Basin #2**Chance Bidelman, Brent Ritchie**

To understand past tectonic and mountain-building events, it is often necessary to take an indirect approach: to study the sediments that were eroded from now-missing tectonic highs and were deposited and preserved in nearby sedimentary basins. In GEO 495, we compiled data from three unknown sedimentary basins in order to interpret the tectonic events related to their development. The data include: lithology, paleocurrent analyses, sandstone petrography, biostratigraphy, clast counts, and radiometric ages. The data is used: (1) to track changes in the basin's depositional environment which indicate rising or falling water levels (and/or tectonic raising or lowering of the basin), and (2) to understand the composition and geometry of surrounding mountain ranges which would have contributed sediment to the basin. We interpret the tectonic setting of the unknown basin and relate its development to large-scale forces such as global plate motions, mountain-building, and climate change.

Sponsor: Angela Hessler

Padnos 207

Use of the Balance Master for Proprioceptive Training After Anterior Cruciate Ligament Reconstruction: A Case Report**Melinda Olson**

ACL reconstruction may cause a patient to develop balance deficits. The purpose of this case report is to describe how the Balance Master was integrated into a rehabilitation protocol for a patient who had an ACL reconstruction with a patellar tendon graft. The patient was a 23-year-old male who initially injured his knee by stepping down from a truck. After surgery he had moderate effusion, range of motion and strength deficits, and balance impairments. Along with the rehabilitation protocol, the balance master was used to give visual feedback to the patient regarding weight bearing, weight shifting, and balance reactions. Following 6 weeks of therapy, the patient regained full ROM and nearly full strength in the involved lower extremity. The patient's score on the Cincinnati Knee Rating System increased from 14 to 58 and the Berg Balance Scale score increased from 24 to 56. The results of the case report may support the use of the balance master for musculoskeletal rehabilitation.

Sponsor: Karen Ozga

Padnos 209

Effectiveness of Pet Therapy as an Intervention for Persons with Dementia: A Critical Review of the Literature**Carrie Cybulski, Kim Williams, Megan Zimmer**

A critical review of the published literature was undertaken to determine the effectiveness of pet therapy as an intervention for persons with dementia. An overview of the methodology, results, and implications for therapeutic recreation practice will be presented.

Sponsor: Teresa Beck

Padnos 210

Grain Size and Shape Analysis of a Lake Michigan Beach, Holland, Michigan**Brian Beach**

Grain size and shape analysis of beach and dune samples from a Lake Michigan beach in Holland, Michigan, will determine if beach sand can be differentiated from dune sand. Four samples from the surface of the beach, 50 meters apart, will be collected in an area near the swash zone, and four samples will be collected from the toe of the dune. The latter are predicted to be finer than the beach samples because the beach sand is closer to the sediment source. In addition, data will be collected pertaining to the shape and surface texture of the grains from both areas. Due to the lack of a water cushion in the dunes, the dune sand is predicted to be better rounded and more frosted than the beach sand. This study will test the predictability of depositional processes.

Sponsor: Patricia Videtich

Padnos 211

A GIS Database to Assess the Potential Spread of the Plum Pox Virus**Jennifer Bauer**

Plum Pox is a virus that is a fruit grower's worst nightmare. The disease affects stone fruit trees such as peaches, plums, nectarines and apricots to the extent that the fruit is inedible. To contain this virus the infected trees must be destroyed, putting a billion dollar industry in jeopardy. Precautions involving plant status survey work is being done by federal and state employees in all areas that bear these types of trees. I will use GIS to examine potential areas that could be affected in Northern Michigan; and also areas already affected worldwide. I compiled a GIS data base from available tabular data composed of information including but not limited to: locations of orchards and total acreage of orchards. These data will help us understand which areas could potentially be at risk to this deadly virus and address possible management strategies.

Sponsor: Shaily Menon

Padnos 261

Public Perceptions of Stormwater Sources and Effects**Angela Mrozinski**

A survey was created in order to test the public's knowledge of stormwater. This survey included questions regarding the origin and destination of stormwater, an individual's impact on stormwater, and general demographic information. The survey was distributed to willing participants at the local Home and Garden show. The collected data was compiled and statistically analyzed. A research report was generated and distributed to the city government, local state government - water quality department, and select environmental organizations. The results determined the public's level of stormwater knowledge in order to direct future stormwater education projects, as well as evaluate future educational progress.

Sponsor: Carol Griffin

Padnos 262

Community Partnership Project**Cecy Bailey, Wioletta Brechting, Kontarrow Bryant, Kristin Burgess, Megan Highhouse, Kristi Irelan, Lin Miu-Linda Ng, Anna Przekadzinska, Mary Rozneck, Theland Washington**

The purpose of this community partnership presentation is to highlight the process and outcomes completed through a partnership with a community group. The partnership is an opportunity for community health nursing students to develop community health nursing role behaviors as provider of care, designer/manager of care, and member of the profession. The project involves analysis of community assessment data, literature review, incorporation of research findings, and collaboration with community members to determine nursing interventions and methods of evaluation. The project is based on the Public Health Nursing Standards of Practice and provides evidence of critical thinking, role development, and baccalaureate nurse competency in community health nursing.

Sponsor: Susan Bosold

Beginning at 9:40

Padnos 168

The Plate Tectonic Setting and History of Mystery Basin #3**Michael Shelton, Matthew Weiss**

To understand past tectonic and mountain-building events, it is often necessary to take an indirect approach: to study the sediments that were eroded from now-missing tectonic highs and were deposited and preserved in nearby sedimentary basins. In GEO 495, we compiled data from three unknown sedimentary basins in order to interpret the tectonic events related to their development. The data include: lithology, paleocurrent analyses, sandstone petrography, biostratigraphy, clast counts, and radiometric ages. The data is used: (1) to track changes in the basin's depositional environment which indicate rising or falling water levels (and/or tectonic raising or lowering of the basin), and (2) to understand the composition and geometry of surrounding mountain ranges which would have contributed sediment to the basin. We interpret the tectonic setting of the unknown basin and relate its development to large-scale forces such as global plate motions, mountain-building, and climate change.

Sponsor: Angela Hessler

Padnos 207

Conservative Treatment of Snapping Iliopsoas Tendon in a Recreational Athlete: A Case Report**Michelle Kreusel**

Coxa saltans or snapping hip syndrome is defined by a snapping sensation felt in the hip with movement, and may be treated with physical therapy or surgical intervention. The purpose of this case report is to describe the identification and treatment of internal snapping hip syndrome in a recreational athlete. A 31-year-old female presented with mild pain/soreness in her left hip and a frequent "popping" noise during her normal activities of daily living. The patient's symptoms improved with a physical therapy program including hip stabilization exercises, iliopsoas stretching, and strengthening to the hip rotators. This case demonstrates the possible benefits of a conservative treatment approach to an unusual syndrome.

Sponsor: Karen Ozga

Padnos 209

Effectiveness of Humor for Reducing Pain Associated with Arthritis: A Critical Review of the Literature**Kelly Hoff, Andrea Monroe, Angela Noelke**

A critical review of the published literature was undertaken to determine the effectiveness of humor as an intervention to pain associated with arthritis. An overview of methodology, results, and implications for therapeutic recreation practice will be presented.

Sponsor: Teresa Beck

Padnos 210

Grain Size Analysis of Sediment from Sand Creek in Ottawa County, Michigan**Nick Spicer**

Sand Creek travels 20 miles through Ottawa County and empties a drainage basin that is approximately 55 miles square. Using a sieving technique a grain size analysis was done on samples from five point bars along the creek. The purpose of the study was to determine if grain size changes progressively from larger grains upstream, to smaller grains downstream. Also, grain shape and surface texture were examined to see if Sand Creek sediments are angular and polished, which is typical of many river sediments. The data was compared to a study of sediments collected at the same localities in 1996 by the GVSU Annis Water Resource Institute (Sand Creek Watershed Assessment).

Sponsor: Patricia Videtich

Padnos 211

Multi-Use Trail Systems: Will Mountain Biking be the Death of It All?**Benjamin A. Mathew**

The North Country Trail in Manistee County, MI, is home to a section of trail and loops off of the main trail that are open to mountain biking as well as traditional uses such as hiking, backpacking, and camping. Negative impacts resulting from trail maintenance and allowable use have arisen among users and recreational resource managers. Data layers containing information of soil type and location, erosion characteristics, and geology, as well as trailside ecosystems, and trail location based on topography and durable soils will be utilized by way of overlays, and visible buffer zones, to aid in the possible construction of new trails or a better system that will allow multiple users access to the trail systems at any given time. The results could provide useful inputs into alternative ways to construct, maintain, and manage trails that will be suitable for all users as well as conducive to the environment.

Sponsor: Shaily Menon

Padnos 261

Steelhead Diet in the Muskegon River After the Introduction of Zebra Mussels**Dustin Hormann**

The introduction of zebra mussels has changed aquatic ecosystems throughout the Great Lakes. The introduction of zebra mussels in Croton Pond in the late 1990's and the Muskegon River below Croton in 2000 has caused significant change in the species composition of aquatic invertebrates in the river. Before zebra mussels were established the predominant invertebrates were caddis larvae; after establishment of zebra mussels communities were dominated by midge larvae and zebra mussels. Potamodromous steelhead use this waterway as a spawning/natal habitat. Prior to the establishment of zebra mussels primary food for young steelhead were caddis larvae. This study was conducted to evaluate steelhead fry diet following the introduction of zebra mussels and change in aquatic invertebrate communities.

Sponsors: Carol Griffin, Mark Luttenton

Padnos 262

Community Partnership Project**Terre Buck, Meranda Lamoreaux, Kelli Leask, Erin Macklin, Kurt Phillips, Michelle Riemersma, Rebecca Stevens, Jessica Tkach**

The purpose of this community partnership presentation is to highlight the process and outcomes completed through a partnership with a community group. The partnership is an opportunity for community health nursing students to develop community health nursing role behaviors as provider of care, designer/manager of care, and member of the profession. The project involves analysis of community assessment data, literature review, incorporation of research findings, and collaboration with community members to determine nursing interventions and methods of evaluation. The project is based on the Public Health Nursing Standards of Practice and provides evidence of critical thinking, role development, and baccalaureate nurse competency in community health nursing.

Sponsor: Barbara Coté

Beginning at 10:00

Padnos 168

Tyrosine Kinase Substrate Analysis and Fluorescence Assay Development**Jaime Curtis**

The goal of this research project is to develop a fluorescence assay to measure the interaction of the protein kinases Fyn and Src with several synthesized potential peptide substrates. This involves the use of solid phase peptide synthesis, in which fmoc-protected amino acids are used to assemble the peptide substrate on a resin bead. An environmentally sensitive fluorescent probe has been attached to the thiol group in a cysteine residue of the peptide. Fluorescence spectroscopy will be used to measure changes in substrate fluorescence as the enzyme-catalyzed phosphorylation reaction progresses, instead of the traditional method of using radioactivity. The effect of the fluorescence tag on the potential phospho-acceptor substrate peptide activity will also be studied. Both the tagged and untagged peptides will be reacted with the kinases in the presence of radioactive ATP and the phosphorylation determined by the presence of the P32 on the tyrosine residue of the peptide.

Sponsors: David Leonard, Laurie Witucki

Padnos 207

The Comparative Effectiveness of Proprioceptive Neuromuscular Facilitation Stretching Techniques and Static Stretching in Increasing Acute Hamstring Flexibility**Erin Burgess, Mindy Huhn, Christina Mokienko**

To improve patient hamstring flexibility, clinicians commonly utilize static stretching (SS) and proprioceptive neuromuscular facilitation (PNF); however the relative effectiveness of these two methods has not been clearly established. The purpose of this study was to compare the effectiveness of these stretching techniques while applying a more stringent methodology than used in previous studies. In this single-blinded randomized block design study, 30 healthy GVSU students between the ages of 20 and 28 were randomly assigned into PNF, SS, and control groups. An inclinometer was used to measure hamstring flexibility using an active knee extension protocol both before and after each 30-second treatment session. Group differences in flexibility were analyzed using a one-way ANOVA. Influence of subject age, regularity of stretching, and exercise schedules were also analyzed. Study results, as well as implications for future research and clinical practice will be discussed.

Sponsor: Dan Vaughn

Padnos 209

Effectiveness of Community Reintegration for Persons with Mental Illness: A Critical Review of the Literature**Heather Adame, Kenny Riley, Brainne Taylor**

A critical review of the published literature was undertaken to determine the effectiveness of community reintegration for persons with mental illness in the areas of social interaction skills, social appropriateness and knowledge of community resources. An overview of methodology, results, and implications for therapeutic recreation practice will be presented.

Sponsor: Teresa Beck

Padnos 210

Mississippian Coprolites from the Michigan Formation, Western Michigan**John Van Regenmorter**

Numerous coprolite-like bodies are found in the Mississippian Michigan Formation in the subsurface of western Michigan. The coprolites range from 1- 30 mm in size, and have been found in greatest abundance at the contact between gypsum unit 2 and the overlying shale. As numerous as these objects are, no detailed study has been published on them. These objects are inferred to be coprolites based on their coexistence with fish teeth and scales, as well as the presence of a fish jaw, and shark teeth and spines. An attempt will be made to identify the coprolites based on shape, size, and comparison to the known vertebrate biota. In addition, thin section observations may provide information as to the diet of the organisms that deposited the coprolites.

Sponsor: Patricia Videtich

Padnos 211

Identification of a Nature Preserve to Aid in the Restoration of the American Bald Eagle Population in Ottawa County Michigan**Jennifer Boller**

The use of DDT and other organo-chlorine pesticides contributed heavily to the reproductive crisis which led to the dramatic decline of bald eagle numbers in Michigan. Since the passing of legislation to ban the use of DDT in 1972, the eagle populations in Michigan have steadily risen. As of 2003, Ottawa County maintained the highest eagle population in the Lower Peninsula. The goal of this project is to utilize GIS to determine the most optimal location for the creation of a protected area in Ottawa County. The following GIS layers will be employed: ground cover, adjacency to water (location of prey) and proximity to urban areas. Results will be calculated by using both overlays and buffers. The creation of this preserve will aid in the preservation and restoration of bald eagle populations in Ottawa County.

Sponsor: Shaily Menon

Padnos 261

Cougar Habitat Assessment for Huron-Manistee National Forest**Jason Okuly**

Identifying habitat fragmentation, road frequency, diurnal vegetation coverage, prey selection and densities, home range, and human developments such as building, trails, roads and houses can indicate habitat conditions of *Puma concolor* (cougar) in Huron-Manistee National Forest. Terrain and water frequency will affect overlapping home ranges via competition for resources resulting in limitations of population size and gene flow. Evaluating the landscape, forest cover types, and patch size of the forest will influence translocation rates and gene flow.

Sponsor: Carol Griffin

Padnos 262

Community Partnership Project**Kathryn Ballantine, Stacy Becker, Carrie Germain, Carrie Gillette, Wendy Goodfellow, Andrea Hoffman, Katie Pemberton, Kristi Stewart, Beth Welliver**

The purpose of this community partnership presentation is to highlight the process and outcomes completed through a partnership with a community group. The partnership is an opportunity for community health nursing students to develop community health nursing role behaviors as provider of care, designer/manager of care, and member of the profession. The project involves analysis of community assessment data, literature review, incorporation of research findings, and collaboration with community members to determine nursing interventions and methods of evaluation. The project is based on the Public Health Nursing Standards of Practice and provides evidence of critical thinking, role development, and baccalaureate nurse competency in community health nursing.

Sponsor: Marilyn Vander Werf

Beginning at 10:20

Padnos 168

The Binding of CDC42Hs and the CRIB-72 Domain of mPAK-3**Paul Cook**

MPAK-3 acts as a molecular messenger in mammalian signal transduction pathways that are responsible for cytoskeletal rearrangements. It is activated by Cdc42Hs, which when bound to GTP, is properly conformed to bind to the CRIB domain of mPAK3. MPAP3 is then activated and can send the signal downstream. We have developed a protocol for the expression and histidine-tag purification of CRIB-72 that has yielded up to 10 mg of protein per liter of medium. In order to characterize the interaction of CDC42Hs and mPAK-3, six mutations of the CRIB-72 domain have been produced: D85A, H81A, V82A, H78A, E77A and F76A. The binding affinities of each of these mutants and CDC42Hs were measured using fluorescent MANT (N-methylanthraniloyl) guanine nucleotides. Both direct titration and a guanine nucleotide dissociation inhibition (GDI) assay were used to measure the binding affinities.

Sponsor: David Leonard

Padnos 207

Nutritional Knowledge and Dietary Habits of Female, Collegiate Basketball Players**Allison Bailey, Wendy Hintz, Kathleen McCauley**

Research suggests that athletes may be undereducated concerning proper nutrition. Specifically, females have been shown to be at an increased risk for poor eating habits. This study examined the nutritional knowledge of female collegiate basketball players and how effectively they apply their nutritional knowledge to their everyday eating habits. Six collegiate basketball teams, two from each of the three NCAA divisional levels, were given a nutritional knowledge questionnaire and also completed a 3-day dietary food log. The results of the study, including statistical analyses and clinical application, will be discussed in the student scholarship day presentation.

Sponsors: John Gabrosek, Barb Hoogenboom, Laurie Zawila

Padnos 209

Effectiveness of Relaxation Techniques in Reducing Anxiety: A Critical Review of the Literature**Katie Banner, Rachel Roback, Amy Schlichter**

A critical review of the published literature was undertaken to determine the effectiveness of relaxation as a coping mechanism for persons experiencing anxiety. An overview of methodology, results, and implications for therapeutic recreation practice will be presented.

Sponsor: Teresa Beck

Padnos 210

Mississippian Plants in the Michigan Formation, Subsurface of Grand Rapids, Michigan**Rachael Czechowskyj**

Plant debris is found preserved in dolomite that directly overlies shale in the Mississippian Michigan Formation in a gypsum mine in Grand Rapids, Michigan. The plants have not been identified beyond the class lycopsida, an ancient, tropical plant that thrived during the Carboniferous period. The fossils range up to 0.73 meters long and have pear-shaped openings in the bark. The plants are not found in growth position, but probably were floating in a near shore environment, became water logged, sank, and were preserved. Identification of these plant fossils will help infer the environment of deposition of the dolomite and shale layers.

Sponsor: Patricia Videtich

Padnos 211

GIS Applications to Assess Groundwater Sensitivity in Kent County, MI**Angela Mrozinski**

Groundwater is affected by surrounding land features including soil type and land use, as well as hydrologic features such as water table height. A map will be created using GIS mapping systems to establish areas of high groundwater sensitivity to pollutants. This map will be based on the overlay of soil hydrologic groups, land use, and groundwater flow contours for a portion of Kent County, MI. Areas of highest sensitivity will be found in urban areas. These results will be compared with groundwater uses, such as drinking water wells, in the area. A report will make recommendations to persons using the groundwater in the areas of high groundwater sensitivity in order to reduce possible health hazards.

Sponsor: Shaily Menon

Padnos 261

Increasing Aesthetics and Wildlife Habitat to Meet Land Owner Objectives**Greg White**

Increasing wildlife use and aesthetic values are land owner objectives that will be used to create a management plan. Managing land to increase avian habitat can be done by increasing habitat diversity. Different topographical features allow for diversity in vegetative cover. Wetland vegetation can be planted to attract waterfowl and upland species as well. Managing upland areas with different treatments may also increase use by wildlife. Planting boundaries with trees and shrubs will create wildlife corridors and increase aesthetic values. Leaving the interior open and incorporating native grasses, forbs, and shrubs will help in achieving land owner objectives. Invasive species are also a concern that will be addressed in the management plan. Restoring American chestnut to the landscape is a land owner objective that will also be incorporated into the management plan.

Sponsor: Carol Griffin

Padnos 262

Community Partnership Project**Stacy Anderson, Nicole DeYoung, Tammi Donker, Christian Kessler, Jackie Lefere, Heather Parmelee, Lindsey Reck, Kristy Wheeler**

The purpose of this community partnership presentation is to highlight the process and outcomes completed through a partnership with a community group. The partnership is an opportunity for community health nursing students to develop community health nursing role behaviors as provider of care, designer/manager of care, and member of the profession. The project involves analysis of community assessment data, literature review, incorporation of research findings, and collaboration with community members to determine nursing interventions and methods of evaluation. The project is based on the Public Health Nursing Standards of Practice and provides evidence of critical thinking, role development, and baccalaureate nurse competency in community health nursing.

Sponsor: Michelle Datema

Beginning at 10:40

Padnos 168

Living Under Suspicion: Investigating the Impact of September 11, 2001 on Arabs and Arab Americans
Emily Vander Woude

This paper examines the aftermath of the September 11 terrorist attacks on Arabs and Arab Americans. It will analyze the atmosphere of fear and suspicion in America after the attacks and will suggest that a combination of government policies and negative representation in the media appear to have contributed to the perpetuation of hate and violence toward Arabs and Arab Americans. It will propose that the current administration's policies appear to be counterproductive to the effort to sustain America's unity and values. The paper will argue that measures initiated by the government such as the manipulation of the justice system, the use of secret detentions and trials, the Alien Registration Program, FBI/INS misconduct, and the Patriot Act have alienated a particular group of people and threatened democracy in the United States. This paper documents the events that have occurred, the actions and rhetoric of the government, and the vilification of Arabs the media. Through my research, I found out that life for an ordinary Arab or Arab American has become extremely complex and difficult-more so than any time in the past.

Sponsor: Majd Al-Mallah

Padnos 207

The Effects of a Supplemental Aquatic Physical Therapy Program on Grades I and II Lateral Ankle Sprains in Collegiate Athletes**Lisa Hartman, Jessica Kirchner, Stephanie Shamus**

Due to the high incidence of lateral ankle sprains in the athletic population, it is essential to provide an efficient and effective form of rehabilitation to athletes who have sustained this type of injury. Aquatic therapy has been shown to be an effective rehabilitation method for musculoskeletal injuries and post-surgical conditions, based on the properties of water. This research examined the effects of a supplemental aquatic therapy program on grades I and II lateral ankle sprains in Division II collegiate athletes. Measurements of single limb stance and ankle girth were used to examine balance and edema. Results of statistical analyses between groups will be presented, along with conclusions and implications for clinical practice.

Sponsors: John Gabrosek, Barb Hoogenboom, Todd Jager

Padnos 209

Effectiveness of Aquatic Therapy for Improving Physical Functioning in Older Adults: A Critical Review of the Literature**Courtney Cook, Dara Smith, Valerie Tuomi**

A critical review of the published literature was undertaken to determine the effectiveness of aquatic therapy for functional improvement (strength, endurance, range of motion, and balance) in persons aged 55+. An overview of methodology, results, and implications for therapeutic recreation practice will be presented.

Sponsor: Teresa Beck

Padnos 210

Petrology of Celestite in Dolomite in the Mississippian Michigan Formation in Western Michigan**Matthew Weiss**

The Mississippian Michigan Formation in western Michigan contains small amounts of lath shaped celestite (SrSO_4) that is believed to be a replacement mineral within dolomite (CaMgCO_3)₂. Celestite is commonly a secondary mineral associated with evaporate deposits. Point counts, description of crystal orientation, grain size measurements, and a statistical analysis will help determine the amount of celestite present and its origin. At least two origins for the celestite are possible: (1) strontium in seawater replaced calcium in gypsum ($\text{CaSO}_4 + 2\text{H}_2\text{O}$) which provided the sulfate; and (2) strontium originated as an impurity in the precursor aragonite (CaCO_3) sediment and gypsum provided the sulfate.

Sponsor: Patricia Videtich

Padnos 211

Can GIS Predict Water Quality in Streams?**Dustin Hormann**

Stream water quality can tell you a lot about the health of a watershed, but can the land uses in the watershed tell you about water quality? There are several protocols for assessing critical areas within a watershed. The purpose of this research is to take three streams that vary in water quality and see if there is a relationship between actual water quality and predicted water quality using constructed critical areas maps. This will involve using different protocols and comparing land use, proximity to watercourse, and soil erodability to the measured water quality in the streams. This would enable watershed managers to assess watershed conditions before actual water samples could be taken.

Sponsor: Shaily Menon

Padnos 261

Increasing the Usefulness of a Nature Trail at the Home for Veterans**Anna Whitmore**

School groups from the Grand Rapids area, as well as residents of the Grand Rapids Home for Veterans (GRHV) frequent the nature trail on the premises. The purpose of this project is to provide a better environment for learning and exploring nature. A lesson plan was created incorporating activities on the trail geared towards children in grades K-5, with suggestions to aid teachers in supplementing their lessons in the classroom. Trees along the trail were identified, tagged, and mapped using GIS. Additional native plants were proposed in order to enhance diversity, wildlife, and aesthetic beauty. Finally, management practices to care for the proposed plant species were suggested. These improvements were made in order to encourage use of the nature trail, provide an educational program to supplement classroom work with an interactive experience, and enhance the ecological value of the existing environment for the benefit of students, residents of GRHV, and the community.

Sponsor: Carol Griffin

Padnos 262

The Sahara Cooler Venture**Ben Beaudou, Johnny Clauson, Sanja Petrovic, Shannon Phenicie, Lindsey Shepard, Christine Werner**

This market research will provide information on the market potential of the Sahara Cooler. The research conducted will be used to identify the market demand and the price consumers are willing to pay. This presentation will show data we found and analyzed using the SPSS data software to forecast the success of this new to market product.

Sponsor: Nancy Levenburg

Beginning at 11:00

Padnos 168

A Nuyoricana Looks Back: Reflections in Words and Images**Bennie Beretta**

A Nuyoricana Looks Back is an artistic project that draws upon my experiences as a young Latina immigrant in New York City in the 1950's and 1960's and addresses the issues of memory, identity, ethnicity, gender, culture, community, and family. The piece, composed of original images, text, and performance, is presented via a multimedia project and was inspired by the work of author and photographer Wright Morris. Morris introduced the idea of the photo-text; a hybrid artform of images and words that create a fictionalized account of his personal memory and demonstrate how an individual can discover meaning in their life through the creation and reception of art - most notably in *The Inhabitants* (1946), and *The Home Place* (1948). With this project, I hope to inspire others to use artistic expression to reflect upon the challenges and successes of discovering both their own cultural uniqueness and our universal human desires.

Sponsor: Anthony Thompson

Padnos 207

The Effects of Music on the Motor Learning Task of Keyboarding in Nine and Ten-year-old Children**Jill Arnold, Deanna Bondie, Julie Tetreau**

Background and Purpose: Previous research has shown the therapeutic qualities and uses of music in such areas as gait training, cardiac rehabilitation, and neonatal intensive care. The purpose of this study was to investigate the effect of music on the motor learning task of keyboarding in nine to ten- year-old children. Subjects and Methods: 68 fourth grade students at Our Lady of Good Counsel School in Plymouth, Michigan participated in this study. Students were assigned to two groups, control and experimental. The experimental group listened to a classical music selection during typing class for three weeks. The control group attended typing class with no music. Words per minute (WPM) and accuracy were recorded at week 0 and week 3 for each student. Results: data to be analyzed. Conclusion and Discussion: data to be analyzed.

Sponsors: Barbara Baker, Phyllis Curtis, John Peck

Padnos 209

The Riegle-Neal Act and Bank Competition**Trevor Lyon**

The Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994 greatly transformed the American banking system by allowing the widespread establishment of interstate bank branching networks. This paper examines possible effects on local banking market concentration that may have arisen from the provision in the Riegle-Neal Act that allowed states to opt-in to the establishment of "de novo" interstate branches. Regression analysis using data from more than seven hundred cities does not provide any evidence that allowing the establishment of "de novo" interstate branches caused increases in local banking market concentration. These results should help alleviate some concerns that passage of the Financial Services Regulatory Relief Act currently pending in Congress will result in lessened competition in local banking markets.

Sponsor: Daniel Giedeman

Padnos 210

Grain Size Distribution of Beach Sand from Two Locations Along the Eastern Shore of Lake Michigan
Chance Bidelman

Michigan's current geography was carved out from glacial events during the last tens of thousands of years. In this project sand from two Lake Michigan beaches will be studied. The sand at each beach was derived from till that was deposited by a glacial lobe that blanketed Michigan during the Pleistocene ice age. The study areas of Traverse City and Grand Haven were both in the region covered by the Lake Michigan lobe. This study will investigate the differences in grain size distribution, shape, and texture of beach sand from the berm areas in these two locations. The purpose of the study is to determine if the sample location had an effect on the sand grain size and to hypothesize as to what effect glaciation may have had.

Sponsor: Patricia Videtich

Padnos 211

Deposition of Pollutants into Waterways Surrounding Ski and Golf Resorts and Resulting Environmental Alterations**Heather Jahr**

Heather Jahr Shanty Creek Ski Resort in Antrim County surrounds its hills with golf courses to increase summer business. The purpose of this study is to determine the resulting effects of pollutants deposited to surrounding waterways. The following GIS layers will be used, topography, land use, soil quality, watersheds, waterways, water table, etc. We can determine the extent of damage done by the non-point deposition of melt water by looking at water quality and infiltration of pollutants into surrounding soils and groundwater. This study plans to highlight future problem areas if these land management practices continue unchanged.

Sponsor: Shaily Menon

Padnos 261

Lyme Disease Spread Across Southwestern Michigan**Aaron Rydecki**

Utilizing locational data collected from a number of research sites in Southwestern Michigan, an analysis will be performed studying currently infected deer tick populations. Data obtained will be from the last two years of research, including field work on deer tick populations. Data will be processed to monitor the spread of deer tick populations across southwestern Michigan. Furthermore, sites that exhibit high volume deer tick activity will be assessed to determine a risk factor of potential exposure of the vector-borne Lyme disease to neighboring human populations.

Sponsor: Carol Griffin

Padnos 262

Challenge Machinery**Brian Chan, Chris DeWinter, Tara Fairchild, Cherie Latva, Jon Schultz**

Challenge Machinery is a major manufacturer in the paper cutting industry. A descriptive, cross-sectional research study was designed and conducted for Challenge Machinery. The objective of this study was to gain qualitative and quantitative information based on the satisfaction of their customers. The manufacturer's dealers were contacted via telephone to gain the pertinent information. Data was analyzed using SPSS data software leading to the findings and recommendations to be discussed in this presentation.

Sponsor: Nancy Levenburg

Beginning at 1:20

Padnos 168

Community Partnership Project**Jennifer Alavarez, Laura Bloomfield, Jill Chamberland, Kimberly De LaCruz, McKensay Hourtienne, Molly McGee, Tina Marie Padron, Becky Roobol, April Vaughan**

The purpose of this community partnership presentation is to highlight the process and outcomes completed through a partnership with a community group. The partnership is an opportunity for community health nursing students to develop community health nursing role behaviors as provider of care, designer/manager of care, and member of the profession. The project involves analysis of community assessment data, literature review, incorporation of research findings, and collaboration with community members to determine nursing interventions and methods of evaluation. The project is based on the Public Health Nursing Standards of Practice and provides evidence of critical thinking, role development, and baccalaureate nurse competency in community health nursing.

Sponsor: Michelle Datema

Padnos 209

Swarm Intelligence: Investigating Emergent Behavior**Jeffrey Fuller**

An examination of the collective behaviors that develop through the stochastic interactions of unsophisticated agents; known as swarm intelligence. The benefit of studying swarm intelligence is that it allows us to explore problem solving without centralized control or global modeling. In order to facilitate the understanding of swarm intelligence, we present an overview of RePast, a system used to provide visualizations of emergent behavior in multi-agent systems. In addition, we describe our efforts to incorporate fundamental genetic algorithm support into the RePast system.

Sponsor: Greg Wolffe

Padnos 210

Grain Size and Shape Analysis of Scott Creek between Scott Lake and the Grand River, Kent County, Michigan**Lisa Raterink**

The headwaters of Scott Creek is Scott Lake near Pine Island and Post Drive in Kent County, Michigan. The creek then flows under US 131 and through an uninhabited, wooded area. Subsequently, it flows through suburbs and under Samrick Road and then under West River Drive. Ten to fifteen samples will be collected along the creek from the inside of meanders. These samples will be analyzed for changes in size and shape as the creek flows through the different environments. The grain size is expected to be relatively poorly sorted downstream from the roads due to eroded sediment entering the creek at these points.

Sponsor: Patricia Videtich

Padnos 211

Using Gis To Compare the Pigeon River Watershed and Associated Sub-Watersheds**Jacob Hargrove**

Using GIS to Compare the Pigeon River Watershed and Associated Sub-Watersheds J.R. Hargrove Water quality of the Pigeon River in Ottawa County, Michigan is affected by point source pollution (E.G. Bil Mar Inc.) as well as non-point source pollutions (surrounding agricultural lands). The tributaries (i.e. Sawyer Creek, Walter's Drain, Post Drain, and Ten Hagen Creek) that empty into the Pigeon can also affect its water quality and are influenced by watershed conditions such as urban, forested, or cultivated lands. The objectives of this study are to compare watershed conditions in the Pigeon with those in the tributaries. Specifically, I examined the land use and soil curve numbers (indicator of runoff) of each watershed by examining aerial photos and overlaying data layers of soil type using GIS. Results give a picture of the current watershed conditions and show that the Pigeon River is fed by sub-watersheds consisting of poor, moderate, and relatively good water quality.

Sponsor: Shaily Menon

Padnos 261

Woodcock Habitat Management Plan for 20 acres in Muskegon County, MI**Daniel Mays**

The purpose of this project is to create a plan to manage woodcock habitat and increase the woodcock population on a 20 acre parcel of private land in Muskegon County, MI. An evaluation of the current land status includes an assessment of the current habitats, soils, and the plant and animal communities within the 20 acre parcel and the surrounding regions. The research consists of a biological review of woodcock and their suitable habitat for nesting, brooding, courtship and food production. The overall goal is to produce a management plan focusing on the development, protection, and maintenance of suitable woodcock habitat and promote a greater woodcock population.

Sponsor: Carol Griffin

Padnos 262

Using Grid-based Computing to Perform Distributed Data Mining of Large Biological Databases**Melissa Copley, Katherine Lee**

Mining and analyzing biological databases takes an enormous amount of computing power, and would not be feasible without the recent development of computational grids. Grid computing utilizes an infrastructure that facilitates harnessing the combined processing power of remote computing systems, networks, and data archives. We use the computational power embodied in Grid computing to perform a graph-theoretical analysis of the gene regulatory networks governing cellular metabolic pathways. Our hypothesis is that complex biological networks may resemble those found in "small world" network theory. Our research attempts to validate this hypothesis by using Grid computing to perform data mining of large, public databases.

Sponsor: Greg Wolffe

Beginning at 1:40

Padnos 168

Use of Math in Accounting**Maria Ivantchenkova**

The purpose of this study was to investigate the use of algebra, statistics and other disciplines in accounting and finance. For example, the dual entry nature of accounting provides an opportunity to identify how algebra interacts with the accounting equation and develops an understanding of financial statements through the use of mathematical equations, thus providing cause and effect relationships. The study was based on various accounting, algebra and statistics books in order to develop relationships among components of financial statements, as well as on the analysis of the financial statements of a number of companies.

Sponsor: Stephen Goldberg

Padnos 207

Descriptive Study of Medical Transcription Industry**Justin Hardy, Crystal Jewett, Joe Martinez, Andrea Resovsky, Kelly Wisniewski**

SuperScript Medical Transcription, a descriptive study of medical transcription was conducted Winter semester, 2004. The marketing problem that this company was faced with was, how to effectively gain clients given a lack of market research in the transcription industry. The research conducted has demonstrated that there were effective ways to influence new clients. Documented visits were determined; company prices were identified based on the hour, line, and the page. Furthermore, outsourcing fees were understood, in addition to exploring physicians like and dislikes. The purpose of this study was to gain a greater amount of knowledge to better compete in the industry.

Sponsor: Nancy Levenburg

Padnos 209

Hunting Viral Fossils in the Sheep Genome**Frank Durante**

All animal genomes that have been closely analyzed have been found to contain viral genomes. Our studies on a particular retroviral family, JSRV-endogenous viruses indicate that sheep and goats all contain from 15 to 20 copies of this family integrated at different points in the sheep genome. We have successfully isolated the integration site of one of these viruses from a sheep genome. Our studies will show how we hope to use such integration sites to study the spread of such viruses through time and how they might show historical events in viral-host infection events.

Sponsor: Steven Hecht

Padnos 210

Suspended Load Analysis of a Stream on the Grand Valley State University Campus, Allendale, Michigan**Ryan Sleeper**

A stream located on the campus of Grand Valley State University in Allendale, Michigan, flows through ravines cut into glacial till. Campus urbanization has resulted in many parking lots and sidewalks around the stream and a variable discharge. Samples were collected and analyzed periodically to better understand the relationship between suspended load, snowmelt, and rainfall. A laser particle counter was used to analyze the samples to determine grain size and the number of grains present in the suspended load of the stream. Conductivity of the water in the stream was also measured to determine the effect of road salt on water quality.

Sponsor: Patricia Videtich

Padnos 211

Habitat Suitability Models for Amphibians at Bass River State Recreation Area**Michael Calkins**

Little is known about the distribution and habitat requirements of amphibians. I developed species specific habitat models for Blanchard's Cricket Frog (*Acris crepitans*), a species of special concern, and Northern Leopard Frog (*Rana pipien*) at Bass River State Recreation Area. I classified aerial photos and satellite imagery to generate maps of suitable habitat and incorporated existing species distribution data from visual encounter and calling surveys. I incorporated landscape variables such as wetland type and vegetation types associated with them, and life history traits of amphibian's species to create predictive models using multivariate statistics. Information gained from these models can help in developing conservation plans, targeting field surveys, and locating areas of potential frog populations.

Sponsor: Shaily Menon

Padnos 261

GIS Applications and Management Plan for Red Pine at Ottawa County Parks**Josh Brinks**

Rapid 19th century growth increased pressures on America's timber resources. As forest reserves were heavily logged in the east, timber companies moved west, and by 1860 Michigan was the most heavily logged state in the Union. Extensive replanting by the Civilian Conservation Corps throughout 1930-1950 was dominated by red pine, because of its extensive landscape suitability, economic value, and accelerated growth. Ottawa County Parks manages several of these red pine plantations. Management plans will be derived by use of a linear weighted GIS model, which ascertains ecological, economic, disease, and social suitability of several OCPR properties. Management will economically, biologically, and socially diversify OCPR red pine stands through harvest, regeneration, and increased recreational opportunities. In addition, GIS habitat classifications will aid personnel in future land acquisitions by targeting areas of higher biologic, economic, and social value.

Sponsors: Carol Griffin, Shaily Menon

Padnos 262

A Performance Evaluation of Implementations of Distributed Shared Memory**Josh Rowe**

The idea behind Distributed Shared Memory (DSM) is to share the main system memory of multiple, physically distributed computers. In such a system, processes "see" one large bank of memory or address space. Our investigation of DSM involved the following goals: 1) to research different forms of DSM: page-based, object-based, and hardware-based methods; 2) to install several of the software-based implementations on a 4-computer cluster; 3) to conduct a performance evaluation of the installed systems; and 4) to conduct a basic usability evaluation comparing the different methods.

Sponsor: Greg Wolffe

Beginning at 2:00

Padnos 168

Men and Their Tools**Grant Berry**

I have a blue-collar background. My father was a member of the UAW Labor Union for many years, and I have worked for several years as a meat-cutter in local grocery stores and at a meat processing plant. I will be presenting poems that reflect my blue-collar background. I admire men who work with their hands, men who know how to use tools and their muscles. I try to capture the working class experience through my poetry, and I will be using that theme for this presentation.

Sponsor: Patricia Clark

Padnos 207

The Structure of Variability in Motor Learning for Children with Learning Disabilities**Cara Accivatti, Kathleen Graham, Korrie Knoper, Amanda Travis**

The purpose of this study was to investigate the effects of the structure of a practice session on the accuracy and transfer of a simple throwing task in children with learning disabilities. Fifty-six children were assigned to one of four practice groups which included constant, random, random-blocked, and blocked. Subjects were blindfolded and required to throw weighted beanbags to a target using their non-dominant arm. Each subject completed 24 practice trials tossing different weighted beanbags in varying orders according to their assigned groups. Subjects also completed a pre-test and a post-test transfer task. Distance from the target was measured to determine accuracy of each toss. Data will be analyzed to determine if subjects from one of the four practice groups were better able to transfer learning of the task. The researchers hypothesize that random and random-blocked groups will perform the transfer task with greater accuracy.

Sponsor: Barbara Baker

Padnos 209

Early Physical Therapy Intervention for an Infant With a Rare Genetic Disorder**Maureen Michalski**

The purpose of reporting this case study was to promote awareness about a specific genetic syndrome and describe the use of early intervention services for a needy pediatric patient. This case presentation focuses on a 20 month-old boy diagnosed with a rare chromosomal rearrangement concerning chromosome 8, described as 46,XY,der(8)del(8)(p23.2)inv dup(8)(p23.2p12); or primary trisomy 8p and partial monosomy 8p. This child received early intervention home-based therapy, including physical therapy once a week and occupational therapy once every other week. Interventions emphasized work on developmental and motor skills necessary for progression towards age-appropriate functional activities.

Sponsor: Gordon Alderink

Padnos 210

Characteristics of Limestone Clasts within a Cambrian-Ordovician Conglomerate from Cow Head, Newfoundland**Kelly Heid**

Thin sections of limestone clasts were examined microscopically in order to determine the origin of an outcrop of Cambrian-Ordovician conglomerate from the Cow Head Formation located in western Newfoundland. The conglomerate is composed of fragments from a shallow carbonate shelf and slope sediments that mixed together as the material flowed down slope, and is thus thought to be the result of a submarine debris flow. Laminations, grain size, fossils and other characteristics will be analyzed in order to determine the environment in which the limestone clasts formed.

Sponsor: Patricia Videtich

Padnos 211

Geospatial Analysis of Land and Water Features of the White River Watershed**Elaine Sterrett Isely**

The White River watershed is an important part of the Great Lakes ecosystem. Its riparian forests, wetlands, and flowing waters provide diverse habitat for fisheries and wildlife resources of regional and national significance. The White River is a designated Natural River that flows for 120 miles through Newaygo, Oceana, and Muskegon counties before discharging into Lake Michigan. This study will determine differences in the existence and size of riparian buffers between designated and non-designated river corridor areas. I will collect, digitize, rectify and analyze GIS data, including watershed boundary, land use, land cover, soils, topography, political boundaries, river and stream corridors, water features, and parcel divisions. Watershed maps, developed from this analysis, will highlight notable differences and aid the White River Watershed Partnership's educational and resource management efforts.

Sponsor: Shaily Menon

Padnos 261

Creating a GIS Map of Trail Data in Baxter State Park, ME**Kevin Hollebeek**

The purpose of this project is to modernize the trail maintenance data for Baxter State Park located in central Maine. By creating a geographic information system (GIS) map of all of the trails, and then adding attribute data to each trail, park officials will get a better idea of where and when to do trail maintenance. To do this, I digitized a map of the trails of Baxter State Park into a GIS program, and then used hard copies of trail data to enter as attribute data. The advantage of a GIS map for Baxter State Park will be the ease of querying the GIS map of where and when work has been done or needs to be done instead of going through hundreds of pages of typed data. In the future, the park can add current trail report data directly into the computer database instead of adding to the stack of files.

Sponsor: Carol Griffin

Padnos 262

A Statistical Consulting Learning Experience: Evaluating the Structured Learning Assistance Program**Beth Lathers**

The Structured Learning Assistance (SLA) Program is coordinated by Karel Swanson from the Science and Mathematics Advising, Resource, and Transition (SMART) Center. This program was implemented at GVSU for the first time during the Fall 2003 semester. The purpose of the SLA Program is to provide additional assistance, via a trained facilitator, to students in designated sections of targeted science and mathematics courses. My role as a statistical consultant was to analyze data and compare the SLA sections with comparable non-SLA sections in order to assess the effect of the program. I will explain my role and share some preliminary results.

Sponsors: Karel Swanson, Neal Rogness

Beginning at 2:20

Padnos 168

Jones Fractures, a Possible Sequela of Idiopathic Pes Cavus**Matt Dundon, Mike Parniske**

Jones fractures have a significant clinical impact for two primary reasons. First, these fractures often cause extended periods of pain and inactivity. This is possibly due to mechanical and physiological processes that impair normal bone healing. Secondly, this fracture most often occurs in the younger, athletic population. As a result, participation in athletic events is missed or restricted. There is an abundance of literature published on how to effectively treat a Jones fracture, however research concerning prevention is quite limited. The objective of this retrospective study was to identify high arched feet (pes cavus) in subjects with an established history of a Jones fracture. The goal of this study is to increase identification of high risk patients so that preventative measures may be taken to decrease the occurrence of these fractures.

Sponsors: Mike Taylor, Diann Reischman

Padnos 207

Connecting Communities: Grand Rapids Neighborhoods on the Internet**Pennie Alger, Andrew Doren, Rachel Lee, Meghan Wieten**

Neighborhood association web sites in West Michigan were evaluated based on a standard set of criteria developed for this project, including the availability of information, interactivity of services, opportunity for on-line donations, ease of navigation, aesthetics, privacy, security, and disability access.

Sponsor: Mark Hoffman

Padnos 209

Dissociative Identity Disorder - Public Opinion and Awareness**Mary Bakker**

Dissociative Identity Disorder is a controversial diagnosis. Opinions vary regarding its validity, based often on inaccurate information. Focus of the research will be a survey of university students and the general public regarding opinions and awareness of DID. Results look to identify levels of knowledge and sources of information. It is expected that sources of information for the general public and non-social science majors will be media and for students majoring in social sciences, formal education. However, no group is expected to reflect accurate knowledge regarding multiple personalities.

Sponsor: Don Williams

Padnos 210

Market Research for Bayer CropScience Regarding Biodiesel**Jennie Cooper, Dylan Fox, Nic Miller, Darren Rehfeld, Albert Samuels, Keri Vosburg**

Bayer CropScience is a Muskegon based company that currently produces intermediates for an insecticide and formulates herbicides. Bayer was interested in learning if there was a market for a new product, biodiesel, in Michigan. We were able to gather the necessary data to inform Bayer on the market for the alternative diesel fuel. With the information we gathered Bayer was able to better decide to go ahead with the production of the biodiesel at the Muskegon plant.

Sponsor: Nancy Levenburg

Padnos 211

Determining the Uniqueness of Blue Ribbon Trout Streams: A Landscape Scale Approach**Mary Sievert**

Michigan supports 61,155 kilometers of lotic ecosystems, of which 2% are specially classified as high quality Blue Ribbon Trout Streams (BRTS). To enhance stream protection and restoration strategies, understanding the unique characteristics of BRTS is crucial. My goal is to quantify and evaluate the landscape scale features of BRTS and non-BRTS watersheds. BRTS and non-BRTS study sites within the AuSable, Manistee and Pere Marquette River watersheds will be paired based on gradients and geologic origin. I will delineate subwatershed boundaries for each stream reach and will analyze each based on vegetative cover, land use, geology, soils, number of road stream crossings, percent impervious area and width of forested riparian buffer. These analyses will allow identification of landscape scale features most important in distinguishing BRTS. The results of this study can serve as important baseline data, to develop goals for salmonid habitat restoration projects in the future.

Sponsor: Shaily Menon

Padnos 261

Survey of Farmers About Erosion and Surface Water Quality Effects**Joel Walen**

Erosion affects surface water quality, which can cause increased temperature and lead to lower oxygen holding capacity of the water; erosion can also cause an increase in turbidity. These and other effects can impact aquatic organisms and human uses of surface water. Agriculture, which is a large part of the land use in Ottawa County, can exacerbate erosion. A survey was distributed to farmers to get a snapshot of what is being done in Ottawa County to control and/or minimize agricultural erosion. Best management practices for row crop farming were compared and contrasted to current practices. From the erosion data collected, impacts to surface water quality in Ottawa County will be inferred. The purpose of this project was to find out how farmers think they personally, on their land, and agricultural erosion as a whole, affect surface water quality.

Sponsor: Carol Griffin

Padnos 262

Non-visual Navigation of Web Pages**Justin DeWind**

For most people, browsing the Web is done with ease. However, Web browsing is not easy for visually impaired users, especially given the graphical nature of most web sites. One alternative is to use expensive screen readers, but many blind users cannot afford it. Furthermore, screen readers typically read left-to-right, top-to-bottom, giving no indication of the structure of the web page. We propose to create a web browser specifically designed for the visually impaired community. Since web pages are not built for left-to-right reading, our browser presents the structure of a web page and allows the user to navigate through it. The browser itself is designed to run on Apple Computer's MacOSX" since it provides built-in voice synthesizers and voice recognizers.

Sponsor: Robert Adams

Beginning at 2:40

Padnos 168

Adderall vs Concerta in Treatment of Adult ADHD**Jeff Geissler, Scott Lawrence, Stacy Schwalm, Kurt Vander Veen**

No abstract provided.

Sponsor: Theresa Bacon-Baguley

Padnos 207

Revalidation and Reliability of a Fall Risk Screening Tool for Community Dwelling Elderly**Josh Kipker, Tracy Smith, Wayne Ward**

Adequate fall risk screening tools are needed to help identify individuals at risk of falls. The Fall Risk Screening Tool (FRST) was validated as a multifactorial fall risk screening tool in 2000, but modifications have been made. **PURPOSE:** To examine the inter-rater reliability and validity of the FRST in a population of community dwelling elderly. **METHODS:** The FRST will be performed on 50 subjects. Inter-rater reliability will be determined via simultaneous FRST scoring on 10 subjects by two raters blinded to subjects' fall history. Construct validity will be analyzed by comparing total FRST scores of fallers versus nonfallers based on retrospective fall report. **ANALYSIS:** Inter-rater reliability will be analyzed using the intraclass correlation coefficient. The Mann-Whitney U-test will be used to determine construct validity. Graphical analysis will be used to determine an appropriate FRST cutoff score. Sensitivity and specificity of the FRST will be calculated based on the cutoff score.

Sponsor: Cathy Harro

Padnos 210

Foundations**Jennifer Schenk**

I will be discussing the importance of structure in poetry. Structure helps to create tone. And the tone of a piece helps to create meaning. As an example, I will be looking at the poetry of Anne Bradstreet and Roger Williams. I will discuss the way the structure of their poetry revealed the tone of their pieces and the meaning thereof. I will also be looking at what the structure of their pieces can tell current audiences about the Puritan society and Puritan individuals.

Sponsor: David Ihrman

Padnos 211

Core Cougar Habitat in Huron-Manistee National Forest**Jason Okuly**

Once ranging free, from Mexico to Canada, cougars were an important aspect of our lands and are now extirpated from Lower Michigan. Potential habitat for cougars and the carrying capacity of Huron-Manistee National Forest can be influenced by many different factors. Human developments, roads, and vegetation variations limit the carrying capacity of the ecosystem being studied. By looking at changing land use and land cover via Arcview vector maps I will have identified potential core habitat based on home range requirements, minimal distance from human populations, vegetation cover, and ability to sustain more than one population to ensure gene flow. This information allows me to estimate potential population densities in certain forested patches and potential populations size in Huron-Manistee National Forest.

Sponsor: Shaily Menon

Padnos 261

Comparison of Similar Habitat for Macro-Invertebrates and Water Quality in the Pigeon River and its Tributaries**Jacob Hargrove**

The Pigeon River in Ottawa County Michigan has point source pollution in (Bil Mar) as well as non-point source pollutions from surrounding agricultural lands that have negative effects on water quality. This study was done to determine the relationship between macro-invertebrates and water quality in the Pigeon River watershed by comparing four its tributaries. Collections and water quality samples were taken within the tributaries as well as upstream and downstream of where they enter the Pigeon River. Improvements in water quality produced greater species diversity as well as number of individuals in certain orders of aquatic insects. These increases may be due directly to improvements in water quality but woody debris and improvements in habitat may be the reason for the increase in species diversity and greater number of individuals.

Sponsor: Carol Griffin

Padnos 262

A Discussion of the Utilization of Intraclass Correlation Coefficients**LeAnna Lowe**

During clinical studies, one is often interested in measuring the test-retest, instrumental, and/or rater reliabilities. Intraclass correlation coefficients (ICCs) are statistics that measure the reliability of the rater or instrument used to collect the data. In this talk, the author will briefly introduce the field of reliability and some of the statistical measures used to calculate reliability. Six different forms of ICCs will be introduced, and guidelines will be given for choosing among them. Finally, the author will demonstrate the utilization of ICCs in a Physical Therapy student research project.

Sponsor: Paul Stephenson

Beginning at 3:00

Padnos 168

The Incidence of Colon Cancer in Previously Diagnosed Breast Cancer Patients**Han Vu, Kathryn Zagel**

The average U.S. woman has a 12.6% lifetime risk of breast cancer. This percentage has continually risen in recent years. Cancer of the large bowel is the second most common cause of cancer deaths. There is a 1 in 20 lifetime risk of developing colorectal cancer. Many risk factors can be cross-referenced between breast cancer and colorectal cancer. This retrospective cohort study looked at the incidence of colorectal cancer in patients previously diagnosed with breast cancer over a specific period of time. The data will be analyzed, determining the incidence of developing colorectal cancer in breast cancer patients; thus, helping to validate the need for increase screening of patients previously diagnosed with breast cancer.

Sponsor: Theresa Bacon-Baguley

Padnos 207

Aquatic Physical Therapy's Effect on a Patient with Polymyositis: A Case Report**Marsha Whalen**

Polymyositis is a subacute, inflammatory myositis, of unknown origin that presents with proximal muscle weakness. Aquatic physical therapy has been shown to be beneficial for gaining strength and functional abilities in various patient populations. The purpose of this case study was to determine the benefits of an aquatic physical therapy program for a patient with polymyositis. A 21-year old female presented with decreased trunk and proximal lower extremity weakness. She was unable to ambulate, needed maximal assistance for transfers and was dependent for activities of daily living. After participating in an aquatic therapy program the patient demonstrated increased functional abilities prior to an exacerbation of the polymyositis near the end of the treatment. This case demonstrates the possible short-term benefits of aquatic physical therapy for a patient with Polymyositis.

Sponsor: Barbara Baker

Padnos 209

A Statistical Consulting Experience: Studying The Effectiveness of an Academic "Bridge Program"**Nathan Hillila**

"Bridge" programs are designed to assist students with the social, emotional and academic challenges faced by many students, during the transition from high school to college transition. This presentation will highlight my role as a statistical consultant and the statistical techniques used in analyzing the academic performance of "Bridge" participants.

Sponsors: Stacy Stout, Neal Rogness

Padnos 210

Statistical Models for Baseball**Tom Kennedy**

Many baseball fans spend hours arguing the relative merits of players and teams. They often rely upon the statistics of baseball to bolster their arguments. When baseball fans think of statistics they think of numerical summaries such as home runs, strikeouts, wins, losses, stolen bases, etc. When a statistician thinks of the application of statistics to baseball, he is thinking beyond merely cataloguing numerical summaries. He is thinking of applying a collection of techniques for the analysis of sports data to help inform decision-making. In this talk we apply statistical methods to the analysis of baseball data. We develop models to describe the distributions of various baseball statistics such as batting averages, home runs, and earned run averages.

Sponsor: John Gabrosek

Padnos 211

Monster Trucks are the Path of the Wakened Buddha**Derrick Mund**

derrick's work is an exotic fusion of mangos, kiwis, strawberries, and starfruit blended to perfection in our secret labs and then fused with hair follicles so it's vitamin rich in calcium, zinc, and iron. One taste and you'll agree that monster trucks truly are the path of the wakened bhudda. And you know what? The kids like it too. Just ask little Mikey Shingali of Dayton Ohio. "I never really cared for food with hair follicles, and to be honest I've never really been one for mangos either. But god as my witness I really, really, with the all consuming passion of a thousand suns LOVE derricks work. My love for his exotic juice blends takes me to heightened planes of transcendence coated with zen flavored dissolance." "It's good for the kids and the whole family" says Robyn Ranthum of Medesto California. Wow SUREFS UP Robyn. California's groovadelic. Seriously though folks derrick's work will lull you to sleep by night and love you tenderly until the sun rises.

Sponsor: Patricia Clark

Padnos 261

Salmon-Derived Nutrients in Terrestrial Ecosystems: Conservation, Ecological, and Managerial Implications**Josh Brinks**

Traditional riparian ecology has focused on the manner in which riparian vegetation mediates adjacent streams. Recent studies have shown that relationships between riparian and stream systems are not unidirectional. Researchers have begun to quantify the effects of salmon-derived nitrogen in terrestrial ecosystems. In this study I will examine the influence of brown bears on terrestrial ecosystems by transferring salmon from streams to upland systems. There are a number of environmental, social, and managerial practices, which have potential for disrupting interactions between salmon, bears, and terrestrial ecology. Using a conceptual frame work I will explore how changes in anthropogenic activities alter interactions between system components.

Sponsor: Heather Rueth

Padnos 262

A Statistical Consulting Experience: GVSU Financial Aid Department Phone Call Logs**LeAnna Lowe**

The Financial Aid Department at GVSU receives a multitude of phone calls on a daily basis, and there is often limited staff available to answer the calls. In response to this dilemma, a study was conducted by JoAnn Litton and Vicky Powers from GVSU's Financial Aid Department, in which the staff began recording the number of daily calls. As the statistical consultant working on this project, my task was to analyze the data and determine whether certain time periods could benefit from having an increased amount of staff in the office in order to provide optimal service to students who call the office.

Sponsors: Jo Ann Litton, Neal Rogness

Beginning at 3:20

Padnos 168

Testicular Cancer Research**Rebecca Eversdyk, Steve Heckel, Melissa Van Tol**

Testicular cancer accounts for approximately 1% of all cancers that affect men. In addition, it is the leading solid tumor cancer killer in men ages 15 to 35. Like breast cancer, the earlier the tumor is detected the better the prognosis. The purpose of this study was to determine the knowledge of testicular cancer and to determine the knowledge of testicular self examination (TSE) in college aged males enrolled at Grand Valley State University. The males participated in the study by completing a validated testicular cancer questionnaire. Results showed that 83.3% (n=35) of the male subjects did not check themselves regularly for testicular cancer and that 78.6% (n=33) of the male subjects reported that they do not practice TSE. There was a correlation ($p=.008$) between knowledge of TSE and having seen a doctor in the past year. Furthermore, there was a strong correlation ($p<.001$) with total knowledge of TSE and our subjects' self-rated knowledge of testicular cancer.

Sponsor: Theresa Bacon-Baguley, Diann Reischman

Padnos 207

Physical Therapy Intervention in a Patient with Aicardi's Syndrome in a School Setting**Christy Puite**

The purpose of this case report is to describe a physical therapy intervention with an 8 year old child who has Aicardi's syndrome. Secondary to Aicardi's this patient has many developmental delays, severe mental impairments, visual impairments, and seizures. She attends a center-based school program where physical, occupational, and speech therapies are integrated into classroom activities. Interventions used included tall kneeling activities, balance training, transitioning, ambulation with an assistive device, and stair training. This patient showed improvements in many of her physical abilities as documented on her MOVE milestone test update. Areas of improvement included: transitions, ambulation, and walking up/down stairs and slopes. Physical therapy interventions may be very beneficial to patients with the diagnosis of Aicardi's syndrome, however there is very little in the literature to support this theory.

Sponsor: Barbara Baker

Padnos 209

Genetic Analysis of Ranid Frog Populations in Three West Michigan Localities: A Possible Tool for Conservation Decisions**Kati Smith**

Preserving biodiversity is a priority when land use change destroys habitats. The important aspect of biodiversity to conserve is genetic variability because this protects species from extinction and allows them to continue evolving. To study the genetic diversity of frogs tissue samples were collected from three areas in Ottawa County. mtDNA was extracted from: *Rana clamitans*, *R. palustris*, *R. pipiens* and *R. sylvatica*. The cytochrome b and the 12S rRNA genes were used to study the impacts of wetland loss in West Michigan. Two years of data confirm that cytochrome b is more variable than 12S rRNA in all species studied. The distribution of sequence variability for both genes indicates that the wetlands under the M-45 bridge on GVSU's Campus are a key reservoir of genetic diversity in West Michigan. Historically frogs dispersed along the Grand River and crossed land by wetland hopping. Wetlands lost in the last 100 years were likely a critical corridor for dispersal from the Grand River.

Sponsor: Karel Rogers

Padnos 210

Building a Data Driven Web Site Using PHP and MySQL**Shane Wolf**

The purpose of this project was to create a digital library of resources for instructors to use and share in an effort to support computer science education. The positives and negatives of traditional web design methods, vs. dynamic methods utilizing PHP, MySQL, and CSS to display data were weighed in an effort to ensure compatibility as well as functionality.

Sponsor: Scott Grissom

Padnos 211

DynaCon: Powder Finish vs. Anodized Leg Supports**Stacy Dixon, Laurel Pfister, Jake Silcox, Kelly Veenstra, Jay Walker**

During the winter 2004 semester, a descriptive research study was conducted for Dynamic Conveyor Company of Muskegon, MI. The purpose of the study was to investigate how current customers would feel about the powder finish leg supports being replaced with an anodized chemical treatment finish. The anodized finish has the advantage and ability to cover up nicks and scratches. We also explored how important color and aesthetically pleasing conveyor systems are to DynaCon's existing customers, and if there would be any effect to DynaCon replacing the powder finish with the anodized chemical treatment.

Sponsor: Nancy Levenburg

Padnos 261

Assessment of Environmental Racism in Grand Rapids: A GIS Database**Josh Brinks**

Discrimination runs rampant in today's society. In the past thirty years a new type of racism has been identified; Environmental Racism. Studies show that sites which handle or generate environmental hazards such as toxic materials, water emissions, and air emission are disproportionately placed among neighborhoods with high minority concentration. This is a sign of institutional racism. Many emitted toxins that are known to have adverse human health effects. Public health records show higher rates of disease and illness within minority populations. Does Environmental Racism exist in the Grand Rapids? I will use GIS and public data to analyze the presence of Environmental Racism in Grand Rapids.

Sponsor: Jennifer Stewart

Padnos 262

Economic Impact of President Bush's proposed changes to immigrant policy**Tara VanderStelt**

No abstract provided.

Sponsor: John Nader

Beginning at 3:40

Padnos 168

The Effect Of Race On Second Stage Labor And Pushing Duration**Brandi Britton, Ebony Grisby, Robin Loubert, Beth Way**

This study is a quantitative, retrospective chart review designed to determine the differences in length of second stage labor and pushing duration between Hispanic, African American, and Caucasian women. Our data was collected from May 2003 to November 2003 at St. Mary's Mercy Medical Center, focusing on nullipara women, and taking into consideration epidural use, pitocin augmentation, and method of rupture. While the literature shows that African American women have the shortest length of labor, we hypothesized that Hispanic women have the shortest second stage labor and pushing duration and that African American women have the longest. This belief is based on the clinical experiences of the researchers, and is consistent with the opinions of area labor and delivery staff. Our goal was to bring these views into a more objective light.

Sponsor: Theresa Bacon-Baguley

Padnos 207

Comparison of Keyboarding Activity Under Static and Continuous Passive Motion Conditions**Kristen Esparza, Stephanie Gravelle, Kristy Kerkela**

Individuals who perform keyboarding tasks (e.g., data entry or typing) for long periods of time through the day, or who perform sustained task production over weeks or months, increase the risks of developing upper extremity problems. The purpose of this study was to compare keyboarding activity under two conditions - a static keyboard platform and a continuous passive motion keyboard platform that moves through a 20-deg arc over 3 min - on typing proficiency, self-report, and nerve conduction velocity. Subjects consisted of 30 volunteers who performed timed typing tests under both conditions in a randomized order. NCV data was collected both before and after the tests, typing efficiency was measured throughout, and subjects responded to questions following the tests. Independent t-tests were used for condition comparisons. Results of this study provide a better understanding of the use of CPM as an ergonomic technology for prevention of injury or improved performance for typing tasks.

Sponsors: Gary Brooks, John Stevenson, Dan Vaughn

Padnos 209

"Guided by Faith and Matchless Fortitude": Milton's Portrayal of the Son in Paradise Lost**Ryan McCarty**

Though he was Secretary of Language during Oliver Cromwell's Puritan rule of England, John Milton never referenced the authoritarian figure in his greater works. Through examinations of texts discussing *Paradise Lost*, in reference to seventeenth-century British history, this essay seeks to show the placement of Cromwell as the Son. Although several dominant figures in the field of Milton studies have produced works that support this thesis, there has been no direct connection between the two militant figures of Christ and Cromwell. Investigating Milton's philosophies regarding the timeless nature of his work, the significant anthropomorphic intentions of *Paradise Lost* become apparent.

Sponsor: James Persoon

Padnos 210

Allelopathy of Chara**Fahmy Mamuya**

Casual observation of ponds containing the aquatic plant, *Chara vulgaris*, led us to think that *Chara* might produce chemicals to inhibit the growth of other plants, i.e. that it might be allelopathic. To test this hypothesis, we germinated lettuce and radish seeds with and without *Chara corallina* extracts. In addition, we monitored the germination of seeds that have been exposed to *Chara* extract within different time intervals. We found that *Chara corallina* extracts successfully inhibits 100% the germination of both lettuce and radish seeds. Results show that the more time the seeds are exposed to the extract the more they are inhibited. Seeds exposed in *Chara* 3 days or less will recover their germination if washed and switched to a *Chara* free environment, but their root lengths will be significantly shorter. On the other hand, seeds that are exposed to *Chara* after being in a *Chara* free environment will have significantly shorter shoots.

Sponsor: Mark Staves

Padnos 211

Using CT/MRI Data to Develop Computer Models for Use in Prosthetic Design**Greg Sturgeon**

The need for advancing prosthetic and orthotic designs is increasing. This is evidenced by the report that over 3.5 million Americans currently use prosthetic/orthotic devices. The advances in materials and newer designs will likely increase the usage of prosthetics by amputees. The research being performed involves a technique for recreating structural anatomy from MRI/CT scan data. The technique will allow designers to custom design prosthetic/orthotic appliances using advanced surface modeling and rapid prototyping methods. The results of the research will allow a custom fit for the end user.

Sponsor: Jeffrey Ray

Padnos 210

Investigating Students Understanding of Newton's Laws in the Context of Fluids**Kevin Trebesh**

Over twenty years of research in physics education has shown that traditional lecture instruction fails to address conceptual difficulties in understanding forces and Newton's laws. The purpose of this project is to compare and contrast these difficulties in Newtonian mechanics to those that arise in the context of fluid mechanics. The primary method of investigation will be through the analysis of pretests and posttests in each area. These tests ask students to make comparisons and ranking among different quantities, and explain their reasoning. From our analysis we aim to pinpoint specific ways in which instruction may be modified in each area in order to increase student understanding.

Sponsor: Brad Ambrose

Padnos 211

Though Many Have White Skin, Their Veins Flow of Black Blood Afro-Argentine Culture and History During the Twentieth Century**Erika Denise Edwards**

Although the Afro-Argentine population continued to decline during the twentieth century, they played an integral role in shaping Argentina's culture through their contributions in the fields of dance, literature, and religion. Unfortunately, their vibrant culture and history are often ignored and overlooked because of Argentina's subtle efforts to whiten its population. The purpose of this project is three-fold. First, it aims to recognize the survival of the Afro-Argentine community during the twentieth century. Second, it seeks to recapture the means used to preserve their African traditions. Finally, it will reveal the efforts of Afro-Argentine groups such as La Fundacion Africa Vive that have dedicated themselves to reconstructing the Afro-Argentine role in Argentina's culture and history.

Sponsor: David Stark

Padnos 261

Does Parental Size Influence Parental Investment in Largemouth Bass? A Multivariate Approach**Danielle Jarois**

Growth & development affect expression of phenotypic traits, including behavior. Fish grow throughout life, such that larger individuals are older & more experienced. Larger individuals are also nearer to death (i.e., end of their breeding opportunities) and should invest more in current broods compared to smaller individuals. We observed parental behavior of 76 largemouth bass, recording length (TL), rates of vigilance & aggression, brood-site fidelity, brood age, number of intruders, and environmental features (e.g., light intensity, mesohabitat). We analyzed these data using multivariate statistical analyses on SPSS. Larger males nested farther offshore & near larger cover, experienced higher rates of intrusion, and exhibited more parental aggression & vigilance, and higher levels of overall activity. Smaller males nested in shallow, nearshore habitat where they could avoid large fish, avian predators and anglers.

Sponsor: Jodee Hunt

Padnos 262

The Value of Standardized Patient Interaction in Physical Therapy Education: Students' Perceptions of Two Clinical Education Models**Trisha Tkach, Kelly VanDriel, Katie Yates**

This qualitative study examined the use of Standardized Patients (SPs) in providing mock clinic training to first-year PT students before their initial clinical internship experience in an entry-level physical therapy professional education program. The purpose of this study was to determine if students found value in utilizing SPs in their educational program as compared to a traditional approach of role-playing by peer students. Semi-structured interviews were conducted with 14 students (7 with SP use, 7 with none) on three occasions during a 12-month period of education that included an initial and subsequent clinical internship experience during which students evaluated and managed genuine patients in various clinical settings. All interviews were recorded, transcribed, then analyzed for thematic content and clusters. Results suggest that students who utilized SPs perceived benefits in terms of their preparation to evaluate, assess, and treat genuine patients.

Sponsors: Barbara Hooper, Pamela Ronning, John Stevenson

Beginning at 4:20

Padnos 168

Diabetic Adherence and the Patient-Provider Relationship**Aaron Hunt, Jennifer Pierce, Tamara Springberg**

Non-adherence to diabetic treatment regimens is an obstacle for clinicians and patients alike to overcome during treatment of this disease. Treatment non-adherence can lead to consequences, such as heart disease, peripheral vascular disease, neuropathy, retinopathy, and renal disease. Previous studies involving diabetic patients reveal that the strength of the patient- provider relationship correlates to patient adherence with treatment. The purpose of this study is to support a correlation between these two variables. This study measures the patient- provider relationship using the Patient Reaction Assessment Survey(PRA) and assesses treatment adherence by the hemoglobin A1c value, which measures diabetic control over the previous three months. Correlational statistics were used to determine the relationship between the strength of patient-clinician relationship (PRA) and adherence with treatment (hemoglobin A1c value.)

Sponsors: Theresa Bacon-Baguley, Soon Hong

Padnos 207

Evaluating E-Philanthropy in West Michigan: Foundation and United Way Web Sites**Molli Herth, Geri Lewis, Monica Rainer**

Foundation and United Way web sites in West Michigan were evaluated based on a standard set of criteria developed for this project, including the availability of information, interactivity of services, opportunity for on-line donations, ease of navigation, aesthetics, privacy, security, and disability access.

Sponsor: Mark Hoffman

Padnos 209

Coverage Tools and Unit Testing in Java**Chris Gaffney**

Study on the limitations of current test coverage tools in Java.

Sponsor: Christian Trefftz

Padnos 210

Motivation for Work and Meanings of Education**Michelle Smith, Jessica Sobanski**

The purpose of this study was to determine the meanings that undergraduate students attribute to their education and how this relates to their motivational style. Participants completed a Meaning of Education questionnaire. Items from the questionnaire loaded on eight meanings factors, such as the opportunity for a liberal education, gaining independence, education as a barrier, and a means for making a difference. They also completed a Work Preference Inventory that measured two specific types of intrinsic and extrinsic motivation of the participants. Among the findings was a significant relationship between seeing the undergraduate experience as an opportunity for liberal education and working for enjoyment (one type of intrinsic motivation). Findings will be discussed in terms of their implications for student performance.

Sponsor: Donna Henderson-King

Padnos 211

Timber Wolf and Deer Interactions Throughout Selected Counties in the Upper Peninsula**Josh Loyd**

Wolf populations in the Upper Peninsula constantly fluctuate due to land use, prey population, and human development. GIS maps will be produced using distribution data of wolf and deer populations, land use cover, and human population data. Census and land cover data will be overlaid in an effort to better understand the relationships of wolves to their environment. I will use this GIS data to answer the following questions: 1) How is the distribution of wolves related to the spatial distribution of deer? 2) How does loss of habitat effect wolf/deer populations? I will also identify remaining habitat that is suitable for deer versus wolves. This study will be used to better understand the relationship of wolves and humans in the Western U.P.

Sponsor: Shaily Menon

Padnos 261

The Effects of Zebra Mussels on the Downstream Transport of Primary Production**Angelica Fuentes**

No abstract provided.

Sponsors: Dolli Lutes, Mark Luttenton

Padnos 262

Factors Influencing Physical Therapists Intentions of Pursuing a Transitional DPT Degree: A Survey of Clinicians in Three States with Varying Direct Access Regulations**Joshua Fisher, Craig Stasio**

The purpose of this qualitative study is to determine the motivating factors for practicing physical therapists to upgrade their education to a transitional doctorate of physical therapy degree (t- DPT). The researchers believe that there may be a difference in responses to questions designed to identify motivators and perceptions of acquiring a t- DPT depending on the state of practice with varying direct access regulations. In order to determine if the state of practice could be a motivating factor, the results of a questionnaire sent out to therapists in Michigan (partial-direct access), Indiana (non-direct access), and Massachusetts (full-direct access) will be compared. A data analysis will be performed and statistical findings will be presented.

Sponsors: Cynthia Grapczynski, Karen Ozga, Dan Vaughn

Beginning at 4:40

Padnos 168

Does the Metabolic Energy Base in Sand-Impacted Streams Differ as Nutrient, Riparian, and Land-Use Conditions Change**Patrick Roth**

Our research objective was to compare the autotrophic energy supply in Black and Cedar Creeks; two sand-dominated streams in Western Michigan. Black Creek is significantly impacted by agriculture and urbanization. Cedar Creek is largely forested from headwaters to mouth. Metabolism rates (dissolved oxygen rate-of-change) were measured by taking water and substrate samples from each site (n = 3 each, in up-, mid-, and down-stream reaches) and placing them in situ into recirculating plexiglass chambers. Contrary to our expectations metabolism rates were comparable between systems with relatively low autotrophic productivity and very low respiration rates. Results suggest that functional differences in land use and therefore nutrient regimes between river systems were masked by the effect of the sandy substrate. In addition, exceptionally low respiration rates are possibly the result of the shifting, unstable nature of the sand, which maintained periphyton communities at early successional stages.

Sponsors: Bopi Biddanda, Eric Snyder

Padnos 207

Evaluating E-Government in West Michigan: County and Regional Web Sites**Chasciti Bell, George Kipkosgeik, Lauren Kruer, Heather Mack**

County and regional government web sites in West Michigan were evaluated based on a standard set of criteria developed for this project, including the availability of information, interactivity of services, opportunity for citizen participation, ease of navigation, aesthetics, privacy, security, and disability access.

Sponsor: Mark Hoffman

Padnos 209

Direct Marketing as an Alternative to the Industrial Food Systems: Consumer Motivations at the Holland Municipal Farmers Market**Jayson Otto**

"Direct Marketing as an Alternative to the Industrial Food System" concentrates on the idea that most people in Western cultures do not have intimate (if any) contact with the producers of their food. Transactions within the dominant food system are based on capitalist ideals that have erased the interaction between producer and consumer. Food acquisition has been relegated to what Marx refers to as a 'callous cash payment' based on self-interest. Alternatives such as the Holland Municipal Farmers Market challenge the industrial food system with their popularity throughout the US and other industrialized societies. Our study of the market tries to help explain why consumers consciously decide to take advantage of a direct-marketing opportunity which stands in stark contrast with the dominant agroindustrial system.

Sponsor: Russell Rhoads

Padnos 210

Social Problems From A Global Perspective**Adam Channells**

The purpose of this presentation is to raise awareness of the economic force (capitalism) that is shaping the course of the global community and the social problems that is produced and reproduced through the capitalist economic system. Social problems is a reality of everyday life not only here but also abroad. We see many similarities across various cultures and nations due to the effects of corporate capitalist globalization that is championed throughout the world by the United States and its subsidiaries. Making for greater awareness in turn will give us the tools to have meaningful, logical, and fruitful discourse about these issues that effect humanity and hopefully raise the spirit of solidarity for everyone.

Sponsors: Michael Ott, Yan Yu

Padnos 211

Conservation of the Vulnerable Beautiful Nuthatch, Sitta Formosa: A Preliminary Analysis of Species Distribution and Habitat Requirements**Jill Mihelich**

The Beautiful Nuthatch, *Sitta formosa*, occurs in high altitude evergreen and semi-evergreen forests throughout the eastern and southeastern extent of the Himalayan Mountains. Populations of *S. formosa* are small, declining, and severely fragmented as a result of habitat degradation and fragmentation. The Birdlife International Red Data Book designates *S. formosa* as a Vulnerable species and recommends its protection throughout its range. I will use known field observations of *S. formosa* and museum specimen as well as the following layers to create a GIS database: political boundaries, elevation, slope, aspect, vegetation type, land-use and protected areas. This database will be used to create a species distribution map and a preliminary habitat suitability model for *S. formosa*. I will discuss the usefulness of the species distribution map and habitat suitability model in identifying habitat requirements and delineating key areas for the conservation of this species.

Sponsor: Shaily Menon

Padnos 261

Characterization of a mRNA Coding For a Putative Soybean Vegetative Storage Protein**Kaleena Bernardi, Sarah Taylor**

Vegetative storage proteins (VSPs) are produced by plants upon stress stimuli such as attack by foraging pests, lack of soil nutrients, or adverse weather conditions. They are responsible for storage of nitrogen in nitrogen sinks to be utilized for DNA, RNA, or amino acid syntheses under the aforementioned stress conditions when the nitrogen will presumably not be available to the plant. It has previously been demonstrated that methyl jasmonate will act as an enhancer for VSP gene promoters, inducing the transcription of VSPs. We have cloned a presumed VSP from soybean and utilized the reverse transcriptase PCR method to monitor the presence and quantity of our VSP transcript following treatment of soybean with methyl jasmonate.

Sponsor: Margaret Dietrich

Padnos 262

Wellness Needs in Adolescence**Christina Burch, Breanna Chycinski, Melissa Lesniak**

A qualitative study using a series of three focus groups to identify areas of wellness needs in adolescents. An investigation of ten freshman students' perceptions of issues that promote and prevent overall wellness was performed. Information gained from this study is intended to add to the current knowledge base in the field of Occupational Therapy to enable practitioners to develop appropriate and effective wellness programs for adolescents.

Sponsors: Cynthia Grapczynski, William Sisco

Beginning at 5:00

Padnos 168

The Role of Tumor Necrosis Factor Alpha in Atherosclerosis**Allison Pukey**

Atherosclerosis is the leading cause of death in the United States. Oxidized low density lipoproteins (Ox-LDL) play a central role in the pathogenesis of atherosclerosis. Ox-LDL induces Tumor necrosis factor alpha (TNF alpha). TNF alpha promotes atherosclerosis through different mechanisms including stimulation of vascular smooth muscle cell (VSMC) proliferation and migration through activation of MAP kinase. MAP kinases are involved in signaling pathways involved in cell growth, differentiation and apoptosis. TNF alpha also stimulates activation of sphingomyelinase leading to ceramide accumulation which causes VSMC development. The specific aim of this study is to demonstrate the role of TNF alpha and ceramides in Ox-LDL- induced MAP kinase activation and proliferation of VSMC. Elucidation of signal pathways for Ox-LDL- induced propagation of VSMC will lead to novel therapeutic strategies to effectively treat coronary heart disease.

Sponsor: Atef Hanna

Padnos 207

Evaluating E-Government in West Michigan: City and Village Web Sites**Marnika Gibson, Brian Gripentrogg, Lindsey Simmons, Kyle Wartella**

City and village government web sites in West Michigan were evaluated based on a standard set of criteria developed for this project, including the availability of information, interactivity of services, opportunity for citizen participation, ease of navigation, aesthetics, privacy, security, and disability access.

Sponsor: Mark Hoffman

Padnos 209

The Relationship of Polyimide Foam Properties to Monomeric Structure**Sarah Barnhard**

Through a partnership with Unitika Ltd., NASA's Langley Research Center has synthesized foam based on high temperature resistant polyimide chemistry. Licensed to Sordal Inc., the low density foam, SOLREX®, utilizes a salt-like monomeric solution to yield a homogeneous polyimide precursor solid residuum. The polyimide can be processed into neat or syntactic foams. SOLREX® materials can be in either a closed cell or open cell configuration. This unique polyimide foam offers insulation and support qualities with heat, flame, and other resistance capabilities. SOLREX® is a practical selection for many industries with numerous applications. This presentation will focus on a series of studies comparing the SOLREX® precursor to another salt-like monomeric solution which can also be utilized to yield a homogeneous polyimide low density foam precursor solid residuum. The relationship of the monomer to open and closed cell configurations of the low density foam will be reviewed.

Sponsor: Robert Smart

Padnos 210

So This is Life...: Writings by Michael Kohlenberger**Michael Kohlenberger**

I view my work in different ways. When I write poetry I tend to explore darker themes and subjects, often taking the most innocent image and turning it into something sinister. When I write prose I tend to write from life and my experiences, often taking the most everyday occurrence and turning it into something that can shatter the environment of each character. Or at least I'd like to think so. Others may view my work differently. My work is always in process. Any feedback or criticism can cause me to alter a poem or story into another work altogether. I try not to tie myself down, in order to open up to any necessary revision; but I cherish every word, paragraph, or stanza I write--I don't easily part with anything.

Sponsor: Patricia Clark

Padnos 211

GIS and Natural Resource Management Evaluation of Millennium Park**Andrew Moore**

Millennium Park is a new 1,500 acre development in the Grand Rapids metro area. The objective of this study is to determine if the park is going to improve or degrade the environment, and if a park of this size is needed, from a natural resource management perspective. Previous land use, aerial photos, field data, and the following GIS layers will be used: land use/land cover, topography, transportation, hydrology, and others. GIS features will be intersected, overlaid, and buffers will be created to determine if the land is suitable for park use. Results will be based on: human accessibility, environmental sensitivity of the land, surrounding urban conditions, and possible effects on the landscape. Expected results are that this park will be a success, due to the high population growth in the area, and the amount of land set aside for park use. It will be useful to see if building such a large and expensive park is likely to increase the quality of life of those who reside near it.

Sponsor: Shaily Menon

Padnos 261

The Effect of RGD Peptide on Somatic Embryogenesis in Daucus Carota**Sarah Taylor**

In plants, it is possible to de-differentiate somatic differentiated cells to an undifferentiated, embryonic state. These totipotent cells can be induced to undergo embryogenesis (redifferentiation) when cultured in embryogenesis-inducing media, a process called somatic embryogenesis. This artificial embryogenesis can be likened to the natural process in developing seeds and seedlings, rendering somatic embryogenesis an extremely useful tool for studying the factors controlling early development in plants. We have observed that the Arginine- Glycine-Aspartic Acid (RGD) peptide inhibits somatic embryogenesis in *Daucus carota*, most likely via blockage of integral membrane proteins in the cell membranes, structures that have not yet been concretely characterized in plants. Through various methods, including cell culture treatments, thin-layer chromatography, and peptide probing, we have characterized the probable mode of action of the RGD in its inhibition of early somatic embryogenesis.

Sponsor: Sheila Blackman

Padnos 262

The Negative Space of Raymond Carver**Jeremy Stephenson**

The short stories of Raymond Carver can be enigmatic and frustrating for many readers. His extremely elliptical style leaves readers feeling as though they've missed large and significant portions of the story. By focusing on the short story "Viewfinder," one of his most elliptical, I will introduce concepts that may be helpful in understanding much of Carver's work. Furthermore, I believe that attendees of my presentation will leave feeling an effervescence not felt by many since the auburn days, immemorial, of their lost youth.

Sponsor: David Ihrman

Beginning at 5:20

Padnos 207

Analysis of Unionid Mussels from an Archaeological Context Found Along the Grand River in Ottawa County**Nick VandenBroek**

The purpose of this paper is to examine a series of small shell middens found near Crockery Creek, a tributary of the Grand River. Dating from the Late Woodland period ca. 1000-1400 A.D., this site provides an example of a temporary shell processing camp. Clusters of various species of Unionids were located in dark, burnt soil patches during archaeological excavations by GVSU in 2000. Analysis of the mussel shells provides information on molluscan population dynamics, river turbidity, flow, and sediment context. Furthermore, analysis of shells and associated artifacts suggest dietary and habitat preferences of Late Woodland people who exploited this specific resource.

Sponsor: Janet Brashler

Padnos 209

Cavitation Caused by Ultrasound**Kenneth Bader**

Therapeutic ultrasound is used increasingly as a source of deep heat in injured muscle tissue in order to reduce recuperation time. The two main effects of therapeutic ultrasound are thermal (desired) and non-thermal (undesired). It is the aim of this project to investigate acoustic cavitation, the major non-thermal consequence. Cavitation can take two forms: inertial and non-inertial. Inertial bubbles collapse violently, which can cause pitting of nearby material. Non-inertial bubbles can cause high-pressure fields if trapped against a rigid surface. Select consequences of inertial and non-inertial cavitation will be investigated. In order to extrapolate the results to the case of therapeutic ultrasound, samples will be subjected to ultrasonic signals which are comparable to therapeutic frequencies and intensities. These results will then be extrapolated to real-life situations.

Sponsor: Karen Gipson

Padnos 210

A Statistical Consulting Experience: Analysis of Dolomite layers**Sara Tansey**

Dr. Patricia Videtich from the Geology department has been studying the different layers of dolomite in gypsum mines. She desired to know the difference in the elements as the layers change. As a statistical consultant, my role was to interpret the elements throughout the layers of gypsum. I helped analyze the data to see if there is a relationship between dolomite and the amounts of particular elements.

Sponsors: Patricia Videtich, Neal Rogness

Padnos 211

Effects of Habitat Alteration on Karner Blue Butterfly Populations**Carly Kelly**

Carly Kelly The Karner Blue Butterfly (KBB) *Lycaeides melissa samuelis* Nabokov (Lepidoptera: Lycaenidae) is a federally endangered species, which occurs in U.S. states bordering the Great Lakes. Oceana County has some of the largest KBB populations over its range. By comparing KBB population numbers coinciding with habitat type, I hope to detect patterns between the habitat and population. The objective of this study is to use GIS to make predictions about KBB presence or absence within these locations in the county. KBB population will be compared to the following data layers: isolation of paths, lupine cover, nectar plant cover, and crown cover. By comparing these layers I expect to identify alterations in KBB habitat and also the effect of habitat alteration on KBB populations. The significance of this study is to find a relationship between KBB population and habitat and assess strategies for future conservation.

Sponsor: Shaily Menon

Padnos 261

The Social Construction of Space at a West Michigan Farmers Market**Elizabeth Baber**

This paper investigates the social construction of space as it relates to socializing and the various participants at a West Michigan farmers market. Several recent studies explore alternative food systems, and more specifically, farmers markets. Many examine farmers markets on a broad level, focusing on the market structure, the vendors and the participants, without focusing on the social construction of space at the market or the role that socializing plays in consumers' reasons for participating in the farmers market. From data collected during the 2003 farmers market season it is apparent that the market is a socially constructed space within which economic and subsistence-related functions are manifest, but where socializing appears to be an equally significant reason for participation.

Sponsor: Kimmarré Murphy

Padnos 262

The Language of Rape in Greco-Roman Myth and Literature**Kristen Heise**

How do you say 'rape' in ancient Greek? You don't. Neither Greek nor Latin contained any one word that simply meant 'rape.' This is quite an oddity for these languages considering that their literatures, mythology and art are chocked-full of rape stories. Through an examination of Greco-Roman mythology, we find that ancient authors get around this 'language deficiency' by creating a language specific to rape, which I call the 'rape sequence.' This is a series of five events: lure, resistance, vulnerability, penetration, and metamorphosis, whose purpose is to alert the audience that a rape is taking place. However, the rape sequence is not only used in rape stories proper. Authors also use the sequence metaphorically. Epic poets like Homer and Virgil, for example, use the rape sequence to describe episodes of trickery (like the Trojan Horse), thus likening the 'trickster' to a rapist and the one 'tricked' to a rape victim.

Sponsor: Diane Rayor

Beginning at 5:40

Padnos 207

A Petrographic Analysis of Clay Samples and Woodland Period Pottery from Two Archaeological Sites in the Grand River Valley**Rachel VanderHart**

This study attempts to identify and explain ceramic technological change between the Middle (200 B.C. - A.D. 400) and Late Woodland (A.D. 400 - A.D. 1650) periods in the Grand River Valley of southwest Michigan. Previous research (Chivis 2003; Brashler 1991) suggests that technological differences exist in Middle Woodland and Late Woodland ceramics. In particular, the percentage of quartz and the size of temper inclusions are believed to vary in ceramics made during these time periods. Examining clay samples from two archaeological sites as well as two off-site samples collected near Prison Farm tests this hypothesis. Using petrographic analysis, raw clays from these locales are compared to pottery vessel sherds excavated from the Middle Woodland site of Prison Farm and the Late Woodland site of Zemaitis.

Sponsor: Janet Brashler

Padnos 261

Disrupting the Dichotomy: The Presentation of Woman in Silence**Amanda Mitchell**

Debates have raged on the issue of whether *Silence*, a medieval text, is in fact a misogynistic tale, or one rife with feminist ideals. There can almost be no wider a spectrum in any debate than in this, for scholars are not battling over a minute point that may or may not have a real bearing on the reading of the text, but are battling tooth and nail in order to determine the very fundamental premise of this work of literature. By concentrating on the contrast of the main character, *Silence*, to the two other prominent women in the text, Eufemie and Eufeme, I will show how the latter two women are set up as a dichotomous pair who represent the stereotypes of what a woman is only to show a third option through *Silence*, serving to break the dichotomous stereotypes of the good girl and the bad girl.

Sponsor: Kathleen Blumreich

Beginning at 6:00

Padnos 261

Are We Teaching our Kids to Be "Big Pigs Too"? A Study of Linguistic Prejudice in Children's Animated Film

Alicia Gomori, Heath Thomson

This study investigates how animated children's films reinforce social stereotypes. Specifically, our research relies on critical discourse analysis to examine how the top five grossing children's animated films of 2003 in the US use language to reinforce stereotypes related to ethnicity, culture, and region. Another aspect of our study concentrates on what kinds of stereotypes these representations reproduce. In our analysis we consider representations of regional dialects, accents, and mainstream U.S. English. We also take into account context and its relationship to language use. Our aim is to explore what attitudes, values, and beliefs these stereotypes promote. It is important to understand what popular children's films portray about dialects, ethnicities, and cultures because of their potential in shaping, as well as reinforcing, linguistic and social prejudices in children.

Sponsor: Kathryn Remlinger

Abstracts for the Oral Presentations on the Pew Campus

Beginning at 4:00

DEV 117E

Financial Planning for a Golf Professional

Steve Bussis

No abstract provided.

Sponsor: Rita Grant

DEV 119E

Evidence of Real-Estate Market Bubble

Justin Karl

No abstract provided.

Sponsor: John Nader

DEV 136E

Strategic Intent of Meijer

Kristy Olson, Matt Palmer, Leigha Smith, Cassie Tinsely, Robert Westdrop

Recent events surrounding the global business community in the last three years have caused major upheavals in the way businesses are run. The trickle down effect from the reversal of the 1990's good fortune, as seen in the West Michigan area, has been substantial. Our focus concerning these issues will be on the food retailing industry, specifically Meijer. The questions to be addressed and answered through an in depth interview with a Meijer Departmental Director will center around the future strategic position of Meijer in an uncertain future.

Sponsor: Vipin Gupta

DEV 138E

Fore Golfers: Providing Marketing Research for Denali, A Local Golf Wholesaler

Shannon Briggs, Ken DeBoer, Stacy Dow, Fay Dubord, Anthony Rollins, Sarah Van Elderen

Denali Products, Inc. manufactures quality and affordable golf products, and would like to expand their customer base. Our goal was to determine how current customers perceive Denali, to identify the geo-demographic characteristics of customers, and to explore the effects of price on buying behavior. Through implementing a descriptive research design we have provided Denali with quality research information which will enable them to execute educated business decisions. This information will also assist Denali in expanding their customer base, to satisfy current and future customers, and to expand their product offerings.

Sponsor: Nancy Levenburg

Beginning at 4:20

DEV 117E

Operation of an Independent Insurance Agency -- A Case Study

Megan Greenwood

The purpose of this study is to describe the insurance industry through the viewpoint of an independent agent. The appointment process is examined, which includes why an agency limits the number of companies to represent and how the decision is made to represent a particular company. A discussion is also included on the types of insurance to offer and how an agent evaluates where to place a potential client based on niches or disadvantages a company may have.

Sponsor: Gregg Dimkoff

DEV 119E

Food Processing Companies: Spartan Foods**Jason Decker, Rebecca Denman, Daryn Kuipers, Lindsay Miracle, Austin Prater**

We will be doing an indepth interview with a local food processing company in the greater Grand Rapids area. The interview will take place with a member of the top management team. We will be applying concepts such as strategic intent analysis, general environmental analysis, industry analysis, competitor analysis, entrepreneurshship and innovation analysis, and corporate analysis.

Sponsor: Vipin Gupta

DEV 136E

Unstitching the Embroidery Market! Research Designed to Discover How Everlasting Embroidery Can Meet the Logo Wear Needs of Area Schools**Mark Dewys, Sara Mellema, John Parshall, Alan Smith, Lindsey VanKeuren**

Everlasting Embroidery is in the business of providing its customers with solutions to their printed and embroidered apparel needs. Our objective was to determine: how school organizations meet their embroidered and screen printed apparel needs, the role advertising plays in meeting these needs, who to contact within school organizations, and how to compete with small local shops. Data was collected during the 2004 winter semester through the use of surveys. The resulting data was analyzed using SPSS® statistical analysis software. Results will aid Everlasting Embroidery in tailoring their service to the needs of area schools.

Sponsor: Nancy Levenburg

Beginning at 4:40

DEV 117E

Pixar Animation Studios: The Disney Alliance**Shrikkanth Parthasarathy**

In June 2003, Pixar Animation Studio's Chief Executive Officer, Steve Jobs, was faced with a major decision. His company's strategic alliance with Disney was due to end in 2005, but Pixar was allowed to begin negotiations with other companies after the May 2003 release of *Finding Nemo*. In the current alliance, Pixar and Disney co-financed the production costs of films. Pixar was responsible for the products and Disney for the marketing. After a distribution fee to Disney was deducted from the film's proceeds, the two partners share profits equally. While this arrangement suited Pixar as a start-up, Jobs and the senior management felt that the alliance contract favored Disney. The decision focus of the case deals with the choices faced by Pixar: continue the alliance with Disney, seek other alliance partners with more favorable terms, or vertically integrate into film distribution.

Sponsor: Ram Subramanian

DEV 119E

An Exploration of Market Interest in Digital Communication Security**Kelly Allen, Jill Barrs, Rory Byrne, Lesley Hooker, Christopher LaBelle, Allen Lenartz**

In this joint qualitative and quantitative study, market segments were analyzed and surveyed to determine interest for a new product in the field of digital communication security. IPMailSec, a new distributor of the digital security system S-Wire, had the potential to capture a large part of the digital security market nationwide. The market was segmented into General Business, Individual, and Government sectors. Questions posed in telephone survey format included users' interest and knowledge of S-Wire, impact of competitors' strengths and weaknesses on the market, and reasons for individual segment use.

Sponsor: Nancy Levenburg

DEV 136E

Study of Attorneys' Perceptions of the MI-SBTDC**Jason Chesla, Jeff Denes, Jeff Drew, Anthony Stepter, Dan VanVoorst**

The Michigan Small Business and Technology Development Center (MI-SBTDC) is a statewide network of twelve regional offices providing services for small business that are emerging and growing throughout the state. The students conducted a survey to explore attorneys' perceptions of the MI-SBTDC in West Michigan. The research will be used to help the MI-SBTDC understand why they have been receiving fewer referrals from the attorneys.

Sponsor: Nancy Levenburg

Beginning at 5:00

DEV 117E

A Detailed Look at Current Retirement Plans Offered to Non-Profit Employees**Jennifer Anderson, Eric Gervais, Angela Knapp, Mark Peterson, Tiffany Sutton**

Market Research of Local Non-Profit Retirement Plans Westphal Financial is a locally owned company that provides many different options of retirement plans for local non-profit organizations. Our objective was to determine what the local non-profits such as schools, hospitals and other organizations were looking to get included in their current retirement plans and how the process of entering in a new retirement plan works. We designed a questionnaire that was used during the telemarketing process and as we went directly to some of the different non-profit organizations. SPSS software was used to analyze the data. The final results of our research helped our client in identifying his target market and his target market's individual needs.

Sponsor: Nancy Levenburg

DEV 119E

Spray Foam, It's For You**Liz Bielik, Rebecca Brander, Marie Cameron, Trevor Kelly**

A Marketing Research Study to Determine the Opportunity to Distribute Spray Foam Insulation. Randex Inc. is a small business in Grand Rapids that is looking for the possible opportunity to distribute spray foam insulation to builders. During the last three months we had to determine that market, find what it would take for builders to start using this method of insulation, and determine their past perceptions of spray foam. Through this research we were able to find out if it was reasonable for Randex Inc. to pursue the opportunity to distribute spray foam and be successful. Data collected was analyzed using SPSS analysis.

Sponsor: Nancy Levenburg

Beginning at 5:20

DEV 117E

A Descriptive Study of Nursing Home Equipment**Jordan Broker, Ryan Dosenberry, Adam Kammeraad, Brendan Kelly, Mike Porter**

The purpose of this study is to provide our client with the information needed concerning nursing home medical equipment uses. Our group plans on contacting nursing homes throughout Michigan and finding out what they like and don't like about their present equipment, which includes lifts, baths, slings, and injury prevention solutions. We will be contacting these nursing homes by means of telephone. This project will involve typical descriptive research that consists of questions that deal with who, what, why, how, where, etc. Our results will give the client a better understanding of what equipment nursing homes are using and why they are being used.

Sponsor: Nancy Levenburg

DEV 119E

Light Corp**Paul DeBoer, Trevor Pawl, Darcy Porter, Shaun Shira, James Streit**

Light Corporation, located in Grand Haven, Michigan, designs and manufactures lighting for the office furniture industry. Our group has been selected to conduct market research on the level of demand for high bay industrial lighting within Light Corporation's current customer base. This project will consist of deciphering what criteria potential buyers use when purchasing industrial lighting fixtures. Research objectives will include determining what customer perception of this product is, and obtaining a detailed range of prices, installation costs, financing options, and acceptable payback times that future buyers will expect. With this information, Light Corporation will be more equipped to make a prudent decision regarding the launch of this product.

Sponsor: Nancy Levenburg

DEV 138E

Research Solutions for Wyoming Town Center Business Coalition**Jared Hoving, Jennifer Jones, Timothy McIntosh, Mathew Norton, Laura Schmelzer**

We teamed up with the Wyoming Town Center Business Coalition to aid them in their marketing research challenges. Through a cross-sectional study utilizing person - administered surveys of businesses along 28th street between Wilson and Division avenues, we discovered results we are about to share with you. Topics of findings: Contact person of each business & preferred methods of communication, levels of awareness and interest in WTCBC, and topics/activities of interest to pull in prospects. Data was analyzed using SPSS data software which lead to the findings in this presentation.

Sponsor: Nancy Levenburg

Beginning at 5:40

DEV 117E

A Descriptive Research on Visual Communications**Elizabeth Caliendo, Tracy King, Whitney Post, Brian Small, Gabrielle Steele**

Furniture Etcetera is a modern furniture retailer located in Grand Rapids. Our objective was to assist the owner, Phyllis Vos, in finding ways to brand her store for a new target market. Exploring alternatives of store identity, distinguishing criteria used when purchasing furniture, and understanding attitudes of customers in regard to color addition and new layout within Furniture Etcetera were the main issues surrounding the research. A telephone questionnaire was developed and administered in winter 2004 by the members of our research team. The questions were directed toward previous customers of Furniture Etcetera whose names were provided by Phyllis Vos. SPSS software was used to gather and analyze the collected data.

Sponsor: Nancy Levenburg

DEV 119E

A Descriptive Research Study on Visual Communication for Process, LLC**Chris Burdick, Christin Glueck, Chris Harris, Justin Hood, Chris Kenny**

Brett VanTil is the owner of Process, LLC which is located in downtown Grand Rapids, Michigan. Process provides visual communications and multimedia for small and large businesses across the Midwest. Brett came to the SBTDC in hopes of solving his marketing challenges. We hope to ensure a promising future for Process, LLC with the marketing research that has been conducted.

Sponsor: Nancy Levenburg

DEV 138E

Automatic Springs Products Corporation: International Expansion Evaluation**Sara Manderscheid, Melisa Massaway, Hannah Morrison, Joshua Munn, James Voice**

A descriptive research project was commissioned by Automatic Springs Products Corporation to explore the viability of expanding overseas, assess the extent of involvement required from customers of ASPC, and investigate the level of customer satisfaction with ASPC. Email questionnaires and telephone surveys were used to obtain relevant data to form conclusions. All data was tabulated and analyzed using SPSS® statistical analysis software.

Sponsor: Nancy Levenburg

Beginning at 6:00

DEV 205E

The Future of Electronic Commerce**Gurminder (Timmy) Khatra**

In today's highly competitive business environment, e-commerce has been an important factor in the growth of a business. This paper discusses the past, present and future of electronic commerce transactions and related issues.

Sponsor: Simha Magal

Beginning at 6:20

DEV 205E

EVA: A More Precise Measurement**Lindsay Janka**

The more precise measure of the profitability of firms that is becoming increasingly popular is Economic Value Added (EVA). EVA is a better measure of a firm's true profitability, because it uniquely makes the cost of capital explicit. COMPUSTAT has been made available by Standard and Poor's Inc. It is a versatile source of data that provides students and researchers with the ability to compute EVA with simply a click of the mouse. The Seidman School of Business subscribes to COMPUSTAT which allows students of finance and accounting to easily compute EVA and use it in cross-sectional and time series analysis.

Sponsor: Yatin Bhagwat

Abstracts for the Poster Presentations

Beginning at 9:00

***Salmonella* [1]**

Michelle Figueroa, Rachel Golin, Joshua Stickney

We present a review of primary literature concerning *Salmonella* bacteria, the secreted proteins responsible for its pathogenicity, the mechanism by which these proteins are secreted, and the manifesting clinical symptoms of infection. *Salmonella* is a bacterium normally found in the intestinal flora of birds, cattle, and reptiles that can cause disease in humans. Such diseases include typhoid fever, enteritis, and enteric fever. Transmission is by ingestion of improperly prepared meat, eggs, poultry, and dairy products. The pathogenicity is due to various proteins that are secreted via the type III secretion system.

Sponsor: Mary Karpen

***From Cow to Cannibal* [3]**

Amanda Davis, Shannon Edwards, Erin Harris, Jessica Key

Spongiform Encephalopathies, including the diseases Bovine Spongiform Encephalopathy (Mad Cow Disease), Creutzfeldt-Jakob and scrapie, have been linked to the conversion of the normal prion protein, PrP^c, to the transmissible, disease-causing form of the protein, PrP^{Sc}. Here, we examine research that details differences between PrP^c and PrP^{Sc}, regarding ligand and metal binding, pH effects, conformational/structural differences and how these cause disease. Current research is in the process of developing novel methods of early detection for the presence of PrP^{Sc} in animals.

Sponsor: Mary Karpen

***Cosmetic Toxins* [5]**

Eric Krupa, Patti Norby, Lauren Sanford, Sarah Vasquez

Botulinum neurotoxin A is a toxin found in the bacteria *Clostridium botulinum*. Despite its relationship to the deadly disease botulism, this neurotoxin is used in the cosmetic drug Botox. Recently, the FDA issued warnings to the manufacturer of Botox concerning its use as a cosmetic. Wrinkles are prevented by obstructing brain signals to the muscle, preventing muscle contractions. Botulinum A is believed to be zinc-dependent, and cleaves the synaptic protein SNAP-25. This project describes the origin of botox and its mechanism of action in the body as well as possible side effects that may result from its use.

Sponsor: Mary Karpen

***Variations of Polyimide Precursor and the Resultant Microsphere Diameter* [7]**

Jennifer Nyland

Through a partnership with Unitika Ltd., NASA's Langley Research Center has synthesized a foam based on high temperature resistant polyimide chemistry. Licensed to Sordal Inc., the low density foam, called SOLREX®, utilizes a salt-like monomeric solution used to yield a homogeneous polyimide precursor solid residuum. This unique polyimide foam offers superior insulation and support qualities, with heat, flame, acoustic, and dielectric resistance capabilities. This presentation will focus on a comparative analysis of the properties of the polyimide using different monomers. Alternative polyimide precursors will provide variation in lattice structure which will affect microsphere diameter and alter the density of SOLREX®. The relationship between variations in the synthesis of the polyimide precursor solid residuum and microsphere diameter will be analyzed.

Sponsor: Robert Smart

Dying Well: The Role of Spirituality in End-of-Life Care Giving [10]**Afton Austin**

The concerns of terminally ill patients include not only meeting physical needs, but also meeting the cognitive, social, emotional, and spiritual needs of the individual. The tendency in care giving is to emphasize medical treatment to meet a dying patients needs. This study proposes to examine what is being done in the care of dying patients to determine and meet their spiritual needs. The spiritual needs will be determined by gathering empirical data from various case studies of terminally ill patients. The theories of Herbert Maslow (Hierarchy of needs), and Peter Berger (Existentialism) will also be incorporated into the study to further suggest the necessity of the incorporation of spirituality into end-of-life care.

Sponsor: Don Williams

Groins and Beach Erosion [13]**Chad Meyer**

Concerns with coastlines, the increase in erosion and water levels around the world are affecting sediment deposition. The problem affects the beaches for tourism and recreation around the world. Possible answers to this problem are groins. Groins are a traditional method of coastal engineering. The groins are shore normal structures which are used as a defense against shoreline erosion and deposition that in recent years has become almost obsolete. They are mildly high maintenance due to cost, repairs, materials and deterioration over time. Plus, groins impede the beach front views that tourism thrives upon in today's society.

Sponsor: Figen Mekik

Bikini Atoll [16]**Ryan McCarthy**

Bikini Atoll is the site of the world's first nuclear accident and largest nuclear weapon testing. The atoll may be isolated in the middle of the Pacific Ocean but the events that took place there from 1946 to 1958 have changed the course of history. The inhabitants of Bikini Atoll were removed from their homeland in 1946 and still have not been able to return. The United States, with massive amounts of nuclear testing, has devastated Bikini Atoll and the lives, culture and traditions of the native Bikinians. Over the course of 12 years 62 nuclear bombs were tested on the atoll and covered the area with nuclear fallout. The world's largest nuclear bomb ever to be tested named Bravo was over 1,000 times more powerful than the one used in Hiroshima. It spread nuclear debris throughout Bikini Atoll. It covered with nuclear radiation, unsafe and unable to support human life.

Sponsor: Figen Mekik

The World's Largest LIP: The Ontong Java Plateau [19]**Julie Groenleer**

With a surface area of 1.5 to 1.9×10^6 km² and a crustal volume of 4 to 5×10^7 km³, the Ontong Java Plateau is the largest of Earth's Large Igneous Provinces (LIPs). Situated in the Southwestern Pacific, this massive oceanic plateau is currently being obducted onto the Solomon Islands after stopping subduction by clogging the Solomon trench. Erupting underwater in a relatively short period of geologic time (~ 122 Ma to ~ 90 Ma); the Ontong Java Plateau may have impacted ocean life causing anoxic conditions and mass extinctions. Research on oceanic plateaus is relatively new and by studying today's LIPs geologists can discover the roll they have played in Earth's history.

Sponsor: Figen Mekik

Effectiveness of 2 specific lacrosse shots [22]**Jordan Moon**

The purpose of this study is to compare the accuracy and speed of the lacrosse overhand shot versus the lacrosse underhand shot. The independent variable is the type of shot and the dependent variable is the speed and accuracy of the shot. The goal of this study is to determine what shot in lacrosse generates greater speed and accuracy from a specific distance from the net. The reasoning for why one shot is more effective than the other will be determined by a video analysis of both shots and the specific brake down of each motor movement.

Sponsor: James Scott

What Makes Me Happy? A Third Grader's Perception on Happiness [24]**Allison Laackman**

The notion of happiness seems easy to define for most people, but happiness can be a very complex emotion. Happiness is a short-term sensation that works sporadically throughout time. Depending upon social environments, happiness may differ from person to person, social class to social class or from child to child. Is happiness a universal emotion? If you were asked to draw what makes you happy, what would you draw? This is how I intend to gather my research information. I plan to conduct an experiment with third graders of lower and upper socioeconomic status in school and ask, "What makes them happy?"

Sponsor: Don Williams

Waves: Beautiful and Wonderful [28]**Richard Barnes**

Waves that form in water are orbital waves containing both transverse and longitudinal waves. Waves transfer energy from the wind to the water. The energy contained within a wave can have destructive forces on coastal features. These forces are only hazardous to humans when humans put themselves in harm's way. Most attempts to resist the persistent erosional forces of waves by humans are unsuccessful, as time and energy are always on the side of the wave. It may be possible to harness the energy within waves for use in power generation.

Sponsor: Figen Mekik

Why is the Ocean Salty? [29]**Gilde Dana**

When we combine the effects of the hydrologic cycle and oceanic processes we can see why salt is concentrated in the oceans along with why the oceans salinity is relatively constant. Weathering and erosion of rocks on land and oceanic processes such as hydrothermal vents and volcanoes add salt to the ocean. The salinity of global ocean water is kept uniform by the deposition of salts like calcite and halite on the ocean floor.

Sponsor: Figen Mekik

Effect of Curl Speed on Bicep Muscle Recruitment [31]**Esiquiel Cardenas, Ryan Vanportfliet**

The purpose of this study was to examine the muscle recruitment patterns of the bicep muscle using correct versus incorrect lifting form. Ten subjects were familiarized with two lifting styles. Style 1 utilized an incorrect form (body movement to enhance inertia, rapid lifting speed). Style 2 required subjects to perform bicep curls at a standardized speed (20 lifts per minute) using a metronome. Subjects completed 5 submaximal lifts to avoid fatigue. Bipolar EMG electrodes were placed over the belly of the dominant bicep, and subjects completed barbell curls. Data were filtered and integrated. The density of the EMG signal was greater for the correct form compared to the incorrect form. This indicates that the muscle was contracting throughout the range of motion when using correct form. Incorrect form, utilizing inertia, does not allow the muscle to be overloaded as much. Thus muscle overload is most ideal when the lift is performed in a slow, controlled manner.

Sponsor: Steve Glass

Effectiveness of Rehabilitation in Restoring Muscle Balance in ACL-Deficient Knees [32]**Kenny Cott, Ketti Martwick, Brian Perry**

The goal of rehabilitation is to restore the knee to its pre-injury status and prevent re-injury. The study will test non-injured knees to determine muscle strength ratio between quadriceps and hamstrings. The study will then test ACL-deficient limbs in the same subjects to compare muscular balance between injured and non-injured limbs. Each subject's rehabilitation and activity history will be recorded to determine the effectiveness of rehabilitation for an ACL deficiency.

Sponsor: James Scott

Variations in Body Weight and Body Composition in High School Wrestlers [38]**Matt Arnold, Brooklyn Netherton**

The health of high school athletes has always been a concern especially when it comes to the weight loss practices of high school wrestlers. Health factors, including body weight and body fat have a direct impact on an athletes performance. It is important for high school wrestlers to maintain a healthy body composition in order to maximize performance and reduce the likelihood of injury. Using measurements of body weight (kg) and body fat percent using the fat caliper and bioelectrical impedance, we should be able to determine whether or not there is a correlation between each variable along with the level of fitness/health of each wrestler. From here, inferences can be made about each wrestler's performance.

Sponsor: James Scott

Sampling mtDNA from the Hair of White-Footed Mice [41]**Akosua Walters**

We are in the process of developing a non- invasive genetic sampling technique using hair from white-footed mice obtained in the field by Dr Joe Jacquot. Our method is based on genetic sampling techniques developed in human forensics. By expanding the field of non-invasive genetic sampling, researchers are given the option to avoid the use of the predominant means of acquiring DNA, most of which are currently invasive to the subject. Obtaining DNA using non- invasive genetic sampling allows minimal tissue contact between researcher and subject as well as maintenance of subject safety. Using our technique, the subject will suffer zero trauma after DNA is acquired.

Sponsor: Steven Hecht

Bingham Canyon Mine [44]**Rachael Czechowskyj, Caleb O'Boyle**

Bingham canyon mine is the granddaddy of all copper mines. It is not only the largest of all copper mines in the world, but it has also produces more copper than any other mine in history. It has produced approximately fourteen and a half million tons in over 90 years. Bingham Canyon is approximately two and a half miles across and over a half mile down and is so large it is one of the few man made objects noticeable from space. During the Cambrian age igneous intrusions with ore-related monzonite helped to form this copper deposit. The main source of copper comes from the mineral chalcopyrite. This mine also produces gold, silver, lead, molybdenum, platinum and palladium. Bingham Canyon is nestled in the Oquirrh Mountains and is approximately twenty miles southwest of Salt Lake City and sits on top of what may be the greatest single metal deposit ever discovered.

Sponsor: Ginny Peterson

The Parotid Gland: Controversy of its Surgical Anatomy [46]**Kate Jones**

The parotid gland is the major salivary gland in humans and is located in front of the ear on the side of the face. Two differing theories have been postulated regarding its general structure which could lead to different approaches in surgery. One theory describes the parotid as a superficial lobe and a deep lobe sandwiching the branches of the facial nerve. The second theory depicts the facial nerve as tunneling through a single mass of parotid tissue. Understanding this gland's anatomical makeup and that of its neighboring structures is essential to its possible removal. This project has been designed to investigate the nature of the parotid gland through dissection of a human cadaver.

Sponsor: William Merbs

Understanding Prehistoric Ceramic Technology from the Grand River Valley [48]**Jeff Chivis**

This research focuses on understanding the technological choices of potters during the Woodland Period in western Michigan. This ultimately provided information regarding choices not only pertaining to style but also to material choices, and firing strategies of early societies. The research involved the replication of pottery sherds, which were then compared to a sample of Early Woodland, Middle Woodland, and Late Woodland sherds from sites in the Grand River valley by using petrographic analysis. These sherds were extracted from the Prison Farm (20IA58), Norton Mounds (20KT1), Spoonville (20OT1), and the Converse Mounds sites (20KT2). Technological changes were recorded and analyzed for a small sample of Woodland sherds from these sites that dated between 800 B.C. and A.D. 1650.

Sponsor: Janet Brashler

What Causes Tides? [52]**Samantha Hawkins**

Tides are caused by displacements of the particles in a celestial body [like water on Earth] by the gravitational attraction of a neighboring celestial body, like the sun and moon. Terrestrial tides are known to be related to the phases of the moon and to the seasons. It is actually the gravitational attraction of the sun and moon that causes waters of the ocean to swell and recede at different parts of the earth. The moon, however has a much stronger impact on our tides than the sun due to its proximity to Earth.

Sponsor: Figen Mekik

Tsunami vs. the World [54]**David Hendrix**

Throughout time, large ocean waves have ripped apart coastal communities around the world. Known as a tsunamis, these seismic, impact, and volcanic eruption generated waves cause millions of dollars of damage as well as take lives, deposit debris, and change coast lines. Most tsunamis occur in the Pacific Ocean where tectonics is very active.

Sponsor: Figen Mekik

The Bushveld Complex of South Africa [56]**Lisa Raterink, Sarah Szurley**

One of the largest igneous mineral complexes in the world, the Bushveld Complex of the South African savanna houses rich ore deposits of platinum, chromium, copper, gold, and nickel. The layered mafic intrusion was injected into the surrounding craton with cyclic layering of chromite and plagioclase-rich layers. The two billion-year- old intrusion's potential was first realized in the early 1920s with the discovery of platinum in the eastern Bushveld. Mining is specifically focused on PGMs (platinum group metals: palladium, ruthenium, rhodium, iridium, and osmium), of which South Africa is the world's leading producer. Due to the spectacular wealth and variety of the deposit, the complex will continue to be a dominant force in the world market.

Sponsor: Ginny Peterson

Yoga: Preceptions and benefits [60]**Lindsey Mackey**

Current medical philosophy strongly supports the separation of the mind and body. However, new evidence is providing scientists with information that the mind and body are interconnected with one another. With a little light shed upon the mystery of yoga, one may question, what are the health benefits to yoga? Through comparing surveys between yoga and non-yoga classes, I will be able to illustrate the benefits of yoga with the responses. Informaion will also be collected on emotional and physical status of the participant to further the evidence suggesting that yoga has positive benefits to the human body and mind.

Sponsor: Don Williams

Prevention of a Fatter Future for Today's Kids [64]**Lisa Schneider**

Obesity has increased dramatically in the past several years. Higher yet is adolescent obesity, doubling the number of overweight children from two decades ago. This nationally rising phenomenon is surprisingly underdiagnosed and undertreated and brings not only severe physical health problems but many emotional and social problems as well. Because obese children have a significantly higher risk of being obese adults, these physical and emotional problems carry on throughtout their entire lives. This study examines the causes, treatments, and prevention of child obesity. It further examines school lunch programs to see if they are offering children a well-balanced meal. These issues must be addressed to control what is now called the most dramatic increase of obesity in history.

Sponsor: Don Williams

Relationship Between Physical Activity Levels in High School and College [71]**Lindsey Frawley, Hoang Nguyen**

During high school, physical exercise adherence is motivated by external factors, such as required physical education classes and close parental supervision. Once a student transitions to college, motivation becomes more internalized. The purpose of our study is to discover if there is a link between physical activity level in high school and physical activity level in college. The research will be carried out through a survey: participants will be asked to fill out a survey on their levels of physical activity in high school, as well as currently in high school.

Sponsor: Brad Ambrose

Aqueous-Phase Heterogeneous Hydrogenolysis of 1,3-cyclohexanediols [74]**Grant Bailey, Ajdin Kavara**

The chemical behavior of cis- and trans-1,3- cyclohexanediols under aqueous heterogeneous catalytic conditions is under investigation with the intent to contribute to the detailed understanding of complex polyhydroxilic structures, under similar conditions. Known homogeneous catalytic systems and microbiological pathways are currently used mainly for producing hexitols from biomass-derived sugars. Surprisingly, few detailed descriptions of sugar pathways under heterogeneous conditions, especially using water as the solvent of choice, may be found. We focus on the role of the relative position of two hydroxyl groups, cis or trans, and their alternate positioning on the cyclohexane ring, 1 and 3, in the interaction with the catalyst surface and, ultimately, in the C-C cleavage. The aim of our work is to determine the conditions that favor cis-trans isomerization as well as the possible products of C-O and C-C cleavage of 1,3-cyclohexanediols under the heterogeneous aqueous conditions.

Sponsor: Dalila Kovacs

Stress in the Workplace [77]**Bonnie Wiekierak**

No abstract provided.

Sponsor: John Hodge

Dolphin Communication and Disturbances that Affect Them [80]**Brian Shelson**

Dolphins are mammals that live in the oceans with other cetaceans. Cetaceans rely heavily on their ability to communicate underwater by means of echolocation. Echolocation is the ability to send out noises (clicks) into the water and have them bounce back as echoes, to give these animals a sight with the use of sound. They use this echolocation for everyday tasks like navigation, finding prey for food, and communication. Without echolocation these animals would not be able to survive. We are greatly causing this echolocation communication to diminish by the use of maritime activities, channel dredging, offshore gas and oil exploitation, military activities, and other noise pollutions. These activities inhibit dolphin communication and may even cause dolphins to die. We need to find a way that we as humans can regulate our activities and try to help these animals, and allow them to live their lives properly.

Sponsor: Figen Mekik

Amazing Discoveries in the Deep Sea: Hydrothermal Vents and Tube Worms [83]**Christopher Tort**

Eight years after Neil Armstrong set foot on the moon our focus of exploration returned home to Earth in a rare, unexpected discovery in the deep oceans. To find never before seen creatures living in the harsh, fragile deep ocean in pitch black darkness, surviving, without any means of sunlight to make food is amazing. Tube worms are sessile creatures living near hydrothermal vents and can grow 8 feet tall. The tube worm's body is a white tube made out of chitin, with a red plume on top containing blood rich in hemoglobin. A tube worm contains neither eyes, nor mouth, nor do they digest food. A chemosynthesis relationship exists between bacteria and tube worms to help produce food, and reproduction occurs by the release of sperm and eggs into the cold ocean water.

Sponsor: Figen Mekik

Dynamics of Charged Pendulum [86]**Amer Hodzic**

Lagrangian mechanics helps us formulate equations of motion when the Newtonian method is difficult eg. for the system of n particles with constraints. Equations of motion are written starting from Lagrangian function $L(q,v,t)$. The Hamiltonian $H(q,p,t)$ (the energy of the system), is obtained from $L(q,v,t)$ via Legendre transformation. Dynamics of charged pendulum can be best described by using the above formulations. This type of pendulum is realized as an electric dipole in a uniform electric field or an electric bipole in a uniform magnetic field. The pendulum can also be placed in earth's vicinity in a uniform gravitational and magnetic field. Solving Lagrangian and Hamiltonian equations of motion of such systems is an important step in understanding the power of modern mechanics.

Sponsor: Milun Rakovic

Animals of the Deep Sea [94]**Richard Ruel**

The deep sea makes up the largest ecosystem on the planet. It covers 60% of the Earth's solid surface. The animals that occupy the deeps are some of the most interesting creatures known to man because they live in an environment impossible to reach by humans. The degree of risk that is present to even study this ecosystem is extreme. By taking statistics from catch per unit effort (cpue) we are able to see the amount of fish present at certain depths and in certain areas of the ocean ranging from orange roughy to the viper fish (*Chauliodus sloani*) as well as the vent crabs (*Bythograea thermhydrion*). The lifestyles of these organisms are important examples of adaptation to special environments.

Sponsor: Figen Mekik

Seamounts: Indicators of Geologic Processes, Past and Present [100]**Vanderlaan Troy**

Seamounts and volcanic island chains hold evidence of past geologic and tectonic processes. Seamounts and seamount chains are formed by hot spot volcanism, which occurs when tectonic plates move over a stationary area of magma upwelling. Geologists and oceanographers conduct research on the characteristics of seamounts to reveal data on multiple geologic and tectonic processes that have occurred throughout time. Deep sea drilling, basalt dating and correlation, sediment analysis and correlation, and seismic wave reflection times are methods that were used in gathering data on the seamounts portrayal of geological activity. The culmination of the data retrieved by the research is used to deduce geologic and tectonic processes that have occurred in the past as well as in the present.

Sponsor: Figen Mekik

Patterns of Copulation Behavior in North American Songbirds [102]**Ben Cutler, Kendra Grove, Emily Hohmann, Stephanie Januchowski, Danielle Jarois, Holly Nowak, Janice O'Neill, Joan Smith, Evan Wilson**

The patterns of copulation behavior of North American songbirds vary widely. For example, some species copulate frequently and in highly visible locations e.g., Tree Swallows) while others apparently copulate infrequently because their copulations are infrequently observed (e.g., bluebirds). We collected data on the ecological correlates of copulation behavior found in published accounts of the life histories of all of the songbirds that breed in North America. The data were analyzed to detect patterns in copulation behavior related to nesting habitat, mating system, and patterns of parental care.

Sponsor: Michael Lombardo

History of Sonar [105]**Richard Beaudin**

Sonar was first developed at the beginning of the 20th century. SONAR, or Sound Navigation and Ranging, uses transmitted sound waves to find the distance between objects. Initially it was used as a military tool to find submarines. Later scientists and researchers began using it to explore the ocean. Scientists began by using fathometers to measure depth. Later more sophisticated sonars were designed, including sidescan sonars and multibeam echosounders providing more accurate data. The increasing sophistication of sonars have allowed greater understanding of the world's oceans.

Sponsor: Figen Mekik

Candida Albicans Mbp1 Gene [109]**Jennifer Snide**

Candida albicans is the most common fungal pathogen of humans. Our laboratory focuses on isolating and characterizing genes involved in morphogenesis in *C. albicans*. Morphogenesis is the ability of the organism to switch its growth from the yeast phase to the hyphal phase. Using PCR, we have cloned the MBP1 gene of *C. albicans*, which may be regulated by a signaltransduction pathway involved in morphogenesis. A 3,125 bp fragment was amplified, which contained the entire 2,559 open reading frame. A BLAST analysis revealed that the Mbp1 protein of *C. albicans* is 28% identical and 48% similar to the Mbp1 protein of the yeast *Saccharomyces cerevisiae*. The homologous protein in *S. cerevisiae* functions as a transcription factor involved in cell cycle regulation and oxidative stress response. We intend to create a homozygous null mutant, possibly by using the "ura-blaster" technique, in order to characterize the function of the Mbp1 protein in *C. albicans*.

Sponsor: Daniel Herman

Beginning at 10:00***Motion Analysis of the Softball Swing [4]*****Rachel Blain, Megan Sawyer**

The purpose of this study was to evaluate the correctness of form of a softball batter's swing in order to improve performance. We did this by using motion analysis software on video that we shot of the batters during practice. The software used was Dartfish Trainer, a new multifunctional video tool in the movement science department. All of the batters belong to the GVSU women's softball team. Their swings were critiqued by using selected verbal cues on setup, swing, and follow through. These cues were gathered from various sources such as coaching videos, journal articles, and the GVSU softball coaching staff.

Sponsor: James Scott

Building Along the Coast: A Gamble with Nature [11]**Jason Culbert**

Hard stabilization, such as seawalls, is placed to protect coastal property, buildings, and homes from erosion and other natural processes. But in reality, hard stabilization often contributes to problems by causing erosion of sand in one place and extensive deposition of sand in other places. Also, there is evidence that hard stabilization may fail and can amplify the dangerous effects of waves. Society often believes it can control the powerful forces of nature by establishing hard stabilization. By doing so they think it is safe to build along coastal lands, but eventually the dangers are discovered as they scramble to save their homes from falling off a cliff or bluff or being washed away.

Sponsor: Figen Mekik

Physician Assistant Studies Program Survey Analysis: A Statistical Consulting Experience [15]**Nicole Augustine**

Grand Valley's Physician Assistant Studies (PAS) staff continues to strive for excellence throughout all aspects of the program. A survey is administered multiple times over each person's curriculum to provide feedback on the program improvement, staff methods, resources and location changes. The survey is a good resource for anonymous feedback on new professors. My job as a statistical consultant was to compare key questions between semesters and also across different graduating year groups.

Sponsors: Mike Taylor, Neal Rogness

Distributed Data Mining of Large Biological Databases [17]**Holli Popour**

This project is an interdisciplinary effort on the part of computer science and biology students to create a more effective way to navigate and analyze large biological databases. By using Grid computing to access biological databases, a process called data mining, we will perform analyses to determine the network characteristics of various biological systems. Our goals are to achieve faster information processing and to discover relationships between components of these systems, possibly leading to a new understanding of how they function.

Sponsor: Greg Wolffe

Upper Body and Lower Body Fatigue Characteristics [18]**Michael Gurtowsky, Diana Martin**

Muscle fatigue is an important parameter when assessing human performance. Fatigue in one muscle may not relate to fatigue characteristics in another. The purpose of this study was to compare the muscle fatigue characteristics of upper and lower body exercise. Ten subjects performed maximal, isometric contractions using a hand grip dynamometer and leg extension using a cybex dynamometer. Different grip lengths and leg extension angles were assessed. Subjects held the maximal contraction for 30s. Results showed a poor relationship between fatigue characteristics in the forearm flexors compared to leg extensors. Differences may be due to fiber type characteristics of the muscles in question.

Sponsor: Steve Glass

Geology of the Stillwater Complex [20]**Neil Schafer, Nick Spicer, Jon Vos**

The Stillwater Complex is found in the Beartooth Mountains along the Stillwater River in south central Montana. Intrusions of mafic magma give evidence that the complex formed about 2.7 billion years ago. The belt of these mafic intrusions extends about 45 km long by 6 km wide; a large area considering the exposed part of the complex is roughly 180 square km. The complex has experienced deformation, uplift and erosion to give its present day exposure. The most abundant minerals that have been mined from the Stillwater Complex, specifically from the 600 meter deep Stillwater Mine, include: olivine, orthopyroxene, clinopyroxene, pigeonite, plagioclase, and chrome spinel. However the most useful minerals that are mined are platinum and palladium ores. It is the highest graded platinum ore body in the world.

Sponsor: Ginny Peterson

Highly-Sensitive Inexpensive Isotope Ratio Determination using Wavelength Modulation and Cavity Ringdown Spectroscopy [21]**Tonya Leeuw**

This project investigated a compact, inexpensive way to determine carbon isotope ratios in carbon dioxide using infrared diode laser spectroscopy. Both wavelength modulation and cavity ringdown spectroscopy were investigated. Using wavelength modulation, the best result obtained so far for the $^{13}\text{C}/^{12}\text{C}$ ratio in a standard gas sample was 1.3%, as compared to the accepted value of 1.119%. Efforts to improve the data acquisition and analysis are underway. The cavity ringdown spectrometer is still being developed.

Sponsor: George McBane

Reefs of Michigan [23]**Paul Schmude**

Corals are living animals which create an environment rich with life and grow in warm tropical waters. Over 400 million years ago coral reefs thrived in Michigan. There are several types of coral reefs, and they all host a complex assemblage of life. Michigan has two distinct types of reefs, barrier and pinnacle reefs. Pinnacle reefs can grow to be over 700 feet tall and over 500 acres in size. They are of significant interest because through their fossilization, they have become excellent traps for oil and gas accumulation, and oil companies come from all over the country to find them.

Sponsor: Figen Mekik

The Hawaiian Hot Spot: Is It on the Move? [26]**Michael Shelton**

Previous theories of the active Hawaiian hotspot were based on the theory that the hotspot was fixed at roughly 11° N latitude. This implies that the hotspot would not move due to gravitational inequalities or properties we are still unaware of but will only be detected by a change in direction of movement of the overlying Pacific Plate. With the apparent change in direction from the Emperor Seamount to the Hawaiian Chain, this observation would be acceptable. Recently, however, the O.D.P. (Oceanic Drilling Project) was able to take core drillings from numerous seamounts and establish their paleolatitude by analyzing the paleomagnetic and radiometric age data from samples collected. These samples provide an age- progressive paleolatitude history. With these findings, it indicates that the Emperor Seamount was formed by the progressively rapid movement south of the Hawaiian Hotspot.

Sponsor: Figen Mekik

Coccolithophores [30]**Diana Kulczynski**

Coccolithophores are unicellular golden brown algae that differ from other types of phytoplankton in that they are surrounded by coccolith plates. These plates help with gathering light and with movement in the water to obtain nutrients. Coccolithophores play an important role in the environment by helping control the greenhouse effect with their production of coccoliths. Coccolithophores help keep the climate cool by enhancing cloud formation. When they die from their production of dimethyl sulphoniopropionate, this chemical breaks down to form dimethyl sulphide and is released to the atmosphere where it forms sulfate aerosols which, in turn, is a source for cloud condensation in the atmosphere. In large quantities coccolithophores shed their coccolith plates forming a bloom. These blooms are easily seen from space because the water turns a turquoise blue. Once these coccolith plates sink to the ocean floor they contribute to the calcareous ooze of deep sea sediments.

Sponsor: Figen Mekik

Exploring the Technological Caregiving Experience [35]**Sarah Boomstra**

More than one quarter of the adult population provide care for a terminally ill or aged family member each year. It is evident that these family caregivers are under tremendous pressure, attending to the needs of the patient, often at the expense of their own needs and health. As the suffering and needs of the patient increase, so does the physical, emotional, and financial burden of the caregiver. The purpose of this research study is to explore the technological caregiving experience of family members caring for an individual with advanced heart failure at home.

Sponsor: Linda Scott

The Petrogenesis of the Homestake Mine, South Dakota [37]**Brian Beach, Ryan Sleeper**

No abstract provided.

Sponsor: Ginny Peterson

Keweenaw Copper Country, Like No Place Else On Earth [40]**Richard Beaudin, Jennifer DeLoge**

The Keweenaw Copper Deposit located in the Upper Peninsula of Michigan is the largest of its kind on earth. The deposit formed as a result of rifting and volcanism in the Precambrian era 2.5- 0.57 billion years ago. Its petrologic makeup includes basaltic lavas, breccias, volcanic tuffs, siltstones, sandstones and conglomerates. Though it was first reported to the Michigan legislature in 1841 the natives of the area had been mining the veins for some time. The copper veins became exposed as a result of channels created by glaciations which cut through the metamorphic rock binding the veins. As a result the deposit became a major source of the world's copper for many years. Although many of the mines are currently closed, the Keweenaw Copper Country remains one of the most unique mineral deposits on earth.

Sponsor: Ginny Peterson

The Efficacy of a Training Program on Increasing Sport Specific and Non Specific Skills in Collegiate Rowers [43]**Esiquiel Cardenas, Richard Schneider**

If you ask any coach, or athlete in the sport of rowing what one of the most important elements to their performance is, they will answer their training program. The present study was to evaluate whether or not sport specific or non sport specific skills had the highest improvement, and which group had the highest average of increases in these skills. The Grand Valley Rowing Team (N= 31) participated as test subjects. The test subjects underwent a number of physical tests that ranged from highly sport specific, to highly non-sport specific, thus establishing baseline measurements. They then engaged in a semester long training program, and had the same values tested again. Since changes would be a consequence of the training program we can conclude that the training program either increased or decreased sport specific and non-specific skills among various groups.

Sponsor: James Scott

Tsunami [45]**Caleb O'Boyle**

Imagine a wave of monstrous proportions, large enough to swallow most harbors with little warning of its approach. This is a tsunami. The harbor is often drained of its water directly before a large swell of water approaches. A tsunami is almost impossible to notice until it reaches shallow water. Tsunami waves can reach a possible height of 50 to 100 ft and travel at speeds up to 450 miles per hour. They are caused by earth quakes, meteors, rock slides, and other seismic activity.

Sponsor: Figen Mekik

Predictors of Relationship Satisfaction: What's Perfection Got to Do With It? [51]**Brandy Fedewa**

First, we clarified a difference between positive and negative perfectionism using measures of self-efficacy, argumentativeness, self-righteousness, approval motivation, social fear, and liking people. Then we studied the relationships between positive and negative perfectionism, dependency, self-monitoring, and self-silencing behaviors and the effects upon relationship satisfaction. Results indicated that positive perfectionists tend to believe in their ability to successfully perform a behavior, enjoy the intellectual challenge arguing, and in females report being flexible about their behaviors and beliefs, show less emotional reliance, and are more confident. While negative perfectionists blatantly showed significant increases in avoidance, need for approval, self-silencing behaviors and self-monitoring. Negative perfectionism, the self-silencing construct, and self-monitoring proved to be predictors of decreased relationship satisfaction.

Sponsor: Lawrence Burns

Dolphin Intelligence [53]**Jennifer Mackson**

Intelligence is one of the most difficult things to measure especially when dealing with animals. Dolphins are considered to be smart based on their creative playfulness and ability to maintain companionship, but exactly how smart is not yet known. Researchers have different methods for evaluating their intelligence, but these are different from methods used on humans. Measurements of dolphin intelligence includes teaching them new tricks and testing how well they perform these tricks, how long it takes them to learn the tricks and how long they will remember them. Thus, scientists have shown that dolphins, indeed intelligent in some ways, but we have yet to learn much more about this intelligence.

Sponsor: Figen Mekik

Lacrosse Training Program [58]**Jordan Moon, Steve Zurek**

The purpose of this presentation is to develop the ideal training program for collegiate men's lacrosse players. It is necessary for all athletes to be in top physical shape to perform at the highest level without injury. The most productive way to acquire top physical performance for a specific sport is to focus on the specific tasks that are performed on the field. This Presentation will base all training on direct motor transfer of specific lacrosse skills to developed greater performance throughout all lacrosse skills and will be developing a periodized strength and conditioning program. The Goal of this Presentation is to break down skills and positions and develop a complete year round training program that will focus directly on specific positions and skills, thus increasing the teams overall performance.

Sponsor: Shari Bartz

The Effects of Repetition Speeds on Muscle Improvement [62]**David Calkins, Justin Fuchs, Matthew Zalewski**

No abstract.

Sponsor: James Scott

Echolocation [68]**Lynette Wilson**

Echolocation is a way of communication for some animals. It is similar to SONAR. Dolphins use clicks that pass through the water and reflect off an object. The brain then interprets the echo made by the object so the dolphins can know what the object is. Echolocation does not work for fishing nets. It is unknown if dolphins sense them or not, but many die from entanglement. Dolphins also use echolocation to detect fish for dinner, predators that will cause danger, their surroundings so they don't get lost, and for communicating with other dolphins. Each dolphin has his or her own special clicks and whistles that tell each one apart. Only bats and a few other cave dwelling birds are able to use echolocation to their advantage. They use it to look in the dark for food, predators, and their surroundings.

Sponsor: Figen Mekik

A Sensory Journey in Poetry [70]**Megan Smith**

This exhibition of my poetry will attempt to showcase the use of the senses in poetic form. I have found that focusing in on the senses rather than the overall purpose of the poem brings the poetical line to life. I will utilize sight, taste, smell, touch, sound, and motion in an attempt to create realistic yet magical scenes. It's extraordinary the life that your senses can bring to a poem.

Sponsor: Ron Dwelle

Incidence of Mosquitoes Carrying the West Nile Virus in West Michigan [73]**Jack DeGroot**

With the West Nile Virus (WNV) considered to be an emerging infectious disease and the state of Michigan reporting the second highest number of positive cases in 2002; it was appropriate to conduct research this past summer in an attempt to understand the details of the virus and the arthropods that transmit it. Based on monitoring efforts for the past two summers, we expected to identify and isolate WNV from local mosquito and bird populations. Approximately 150 mosquitoes and 20 birds from Kent County were tested for the presence of WNV. RNA was extracted from the samples and RT-PCR performed. The isolated DNA was then run through gel electrophoresis to test for the presence of sequences specific to WNV genetic material. Unfortunately, none of the samples that were tested produced any positive DNA. These results, although surprising due to the trends of previous years, are consistent with the results of similar research efforts that were conducted in the area.

Sponsor: Roderick Morgan

Affectation: 'Masculinity' in Mass Culture [76]**JP Baertson**

In response to the claim that there has been insufficient substantial critique of the archaic and ambiguous perceptions of 'masculinity', this project aims at establishing awareness of society's processes and mechanisms, allowing for dissection of the attributes, understandings, and implications of the universal and particular denotations and the prescriptive descriptions of 'masculinity' by mass culture. By contrasting while combining various theories and identifications of 'masculinity' through the film *Fight Club*, this examination outlines the various crossroads negotiated in cultural ambivalence, where innate and essential parameters are inappropriate. Elimination of 'the natural' in non-identity is a potential catalyst for revolutionizing the epistemological and ontological structures of the human person.

Sponsor: John Drabinski

Surtsey: A Volcano Born from the Sea [79]**Alissa Carlton**

Surtsey is a volcanic island which rose above the sea in late 1963. It is located to the south of Iceland above the Mid-Atlantic Ridge. The eruptions of Surtsey lasted three and a half years and caught the attention of people from all over the world. Phreatic explosions characterized the early eruptive stages. Later, Surtsey was dominated by lava flows that added new land and helped fight the power of wave erosion, which will one day overpower the island. Surtsey is believed to be extinct having had its last eruption in 1967. Today, the island of Surtsey serves as a nature reserve where visitors from the outside world are rare.

Sponsor: Figen Mekik

The Big Lake They Call Gitche Gumee [82]**Kevin Weiss**

Although Lake Superior is often called the great inland sea the differences in the frequency of the waves on the surface of the lake are the demise of many seagoing vessels caught on the Big Lake during the severe storms late in the shipping season. The frequency of the waves is different on the Great Lakes than in the oceans causing a different design in ship construction. Lake Superior, the largest lake of the great lakes system, has all the power of the Oceans but with a different frequency in the waves that has been explored in great depth. Through the exploration of these frequency differentiations the shipping and commerce can safely take place throughout the shipping season through the rethinking of the ship design for the Great Lakes system happily merging engineering and oceanography.

Sponsor: Figen Mekik

Using Foram Shell Weight Loss as a Proxy for Carbonate Dissolution [84]**Gary Van Ravenswaay**

By plotting weight loss of whole shells and shell fragments from various planktonic foraminifera (forams) against parameters such as delta calcite, and percent calcite dissolved at various depths in ocean water core samples, we hope to find a relationship that would allow chemical oceanographers to predict carbonate ion concentrations $[CO_3^{2-}]$ as a function of carbonate dissolution. If such a correlation is found to exist, it will be linked, through a series of additional steps, to $[CO_3^{2-}]$ of ancient seafloor sediments and then correlated to atmospheric CO_2 levels of paleoclimates.

Sponsor: Figen Mekik

Perceptions of Minorities Criminal Involvement in Grand Rapids: community and Media dialogue [87]**Rafael Castanon**

This research examines the perception of over- representation of racial/ethnic minorities in violent crimes in Grand Rapids, Michigan. The data is gathered from news articles in the Grand Rapids Press and arrest reports from the Grand Rapids Police Department and measures disparity in the number of times minorities are mentioned in violent crime articles versus the actual number of arrests for 2001. To measure public perception, questionnaires were administered to a variety of individuals in Grand Rapids. This study provides a better understanding of root causes of minority disparity within the Criminal Justice System.

Sponsor: Dennis Malaret

The Summer in a Forensics Crime Lab [88]**Stephanie Karczynski**

I spent the 2003 summer in an internship with the Michigan State Police Crimelab in the DNA/Biology Unit. I will describe how the DNA unit operates and what a typical day is in that area. I will describe how rape kits were handled, how evidence is received and different articles of evidence must be dealt with, what is looked for, and if blood, semen, etc. are present what is the next step taken. I will discuss how the DNA is extracted, going over each step in detail including reagents used and their purposes. Finally, actual DNA profiles will be used to show final results, how they are interpreted, and how one can compare a known sample of DNA to that of one from evidence in order to catch a criminal. Actual cases will be used that we had to deal with and I will describe some of the hardest aspects of the job, what the enjoyable aspects were, what other departments are within the crime lab, and what requirements one needs to become a part of the forensic unit.

Sponsor: Roderick Morgan

FAK Tyrosine Kinase Substrate Determination [90]**Lauren Sanford**

FAK is a protein tyrosine kinase that is associated with regulating cell growth and migration. By phosphorylating its substrates, FAK acts as a chemical switch, sending signals from the cytoplasm to the nucleus. Abnormal FAK activity has been associated with certain types of cancer. The direct protein substrates of FAK have not been fully characterized. Here, a combinatorial peptide library was generated to determine the preferred peptide substrates of FAK, and thus what proteins are involved in the FAK signaling pathway. This may provide insight into the protein substrate(s) of FAK in vivo. A peptide library of over 1 million unique sequences was synthesized attached to a solid support of resin beads such that each bead contained one unique amino acid sequence. This "one-bead, one-peptide" library was reacted with FAK kinase and ATP. Any peptide beads phosphorylated by FAK are detected using a colorimetric antibody tagging system and their amino acid sequence determined.

Sponsor: Laurie Witucki

Leodia Sexiesperforata, the Life and Legend [92]**Jennifer DeLoge**

The *Leodia sexiesperforata*, better known as the Keyhole Sand Dollar, is a member of the Echinoderm Phylum. Their class, Echinoidea, is perhaps best known for the beautiful pentameral symmetry. The role this sandy, shallow water loving mollusk plays in the ocean is a niche this species has been striving for since they evolved in the early Tertiary. Its biology is perfectly suited for its environment. Specimens of the Keyhole Sand Dollar are readily collected along beaches and are found burrowed deeper than 2 cm.

Sponsor: Figen Mekik

The Influences of Physical Activity on Academic Performance [96]**Jeremy Fisher, Ryan Whitsitt**

The main focus of our project is to determine if physical activity has a positive affect on academic performance. We will focus strictly on junior and senior level students at Grand Valley State University for our subjects. Three specific groups will be targeted throughout our research: athletes, non-athletes who are physically active, and non-athletes who are not physically active. Previous research supports the hypothesis that physically active students perform better academically than those who are not physically active.

Sponsors: Brad Ambrose, Francis Burns, James Scott

A Qualitative Analysis of the Meaning of Education in Students Lives [97]**Michelle Smith**

Using a qualitative approach, we analyzed interview data from undergraduate students concerning the meaning of education in their lives. During an extended interview regarding their educational background and experience, we asked them several questions about their definition of an educated person, their feelings about general education requirements, their ideal educational experience, and their overall image of education. We explored the consistencies and disconnects that characterize students' reports of their educational experiences. Findings suggest that students may have difficulty connecting personal experiences of education to their ideas of what an educated person should aspire to be.

Sponsor: Donna Henderson-King

Human Impacts on the World's Coral Reefs [103]**Alex Koning**

For years humans have been destroying the most fragile and diverse system on our planet, the coral reef. As human society advances and grows the reefs become more and more threatened by pollution, sewage, industrial waste and global warming. If this trend continues it is estimated we will lose 50% of our coral reefs in the next 50-70 years.

Sponsor: Figen Mekik

Vascular Anomaly [104]**Nick Sheridan, Ryan Smith, Nicole Zyla**

The superior mesenteric artery is used by surgeons as an important landmark for various procedures. A vascular anomaly has been discovered in one of the bodies in the dissection lab involving the celiac trunk and the superior mesenteric artery. The purpose of this project is to further explore this anomaly by speculating on the origin of its development and explain the consequences of its presence both surgical and otherwise.

Sponsors: William Merbs, Tim Strickler

Religion and Rape in Abusive Relationships [106]**Amy Clough**

Relatively little is known about the impact of religion on women who experience sexual assault in the context of a violent relationship. Some studies show that religion may reduce sexual assault while other authors suggest it increases sexual violence. This project contributes to this research by examining whether religious and non-religious women experience sexual assault by intimates differently either in number of occurrences or type of assault. Data was collected by the author from archived client files at a metropolitan domestic violence shelter. Complete results will be presented during Scholarship Day. This type of information is important because of the known benefits of social support for assisting victims of crime; by better understanding the role that religion plays in the adaptation or coping response to marital rape, victim advocates and shelters can provide more targeted interventions to assist the survivors of these assaults.

Sponsor: Anton Tolman

Kimberly Mine (South Africa) [108]**Ryan Mengel, Brian Shelson**

The Kimberly Mine is a giant diamond deposit located in South Africa. It is known today by geologists as The Big Hole because of the huge hole that is left from the open pit mining that initiated in the late 1800s. Today the 215m deep hole is filled with 40m of water leaving 175m visible. The big hole was mined until 1914 with a total of 2,722kg of diamonds removed. The diamonds were formed by volcanic activity that occurred ten million years ago, 60 miles below the earth's surface in the mantle. Concentrations of carbon were put under immense heat and pressure and crystallized into the hard, clear stones we call diamonds. The diamonds were brought to the surface in a relatively rapidly moving intrusion called a kimberlite pipe. The Kimberly mine is home to the world's largest uncut diamond called the 616 named because of its weight being 616 carats!

Sponsor: Ginny Peterson

Social Norms and Bone Health Promoting Behavior in Adolescents: Analysis of Data from The Healthy Bones Norm Questionnaire [110]**Julie Woodbury**

Previous studies have established that peak bone mass is determined early in life. Thus, prevention of osteoporosis by maximizing the amount of bone mineral deposited in late childhood, adolescence, and early adulthood is the preferred strategy for preventing osteoporosis. Adolescents act more independently in choosing diet and activity level. The purpose of this presentation is to present data from a new instrument, The Healthy Bones Norm Questionnaire, that assesses perception of social norms for bone health promoting behaviors (nutrition and exercise) for the adolescents. This research is based on Pender's health promotion model which proposes that social norms are important in performing health promoting behaviors.

Sponsor: Jean Martin

Beginning at 2:00***Nursing Care of a Complex Client [13]*****Roberta Jordan**

The purpose of this poster presentation is to present selected aspects of nursing care provided for a client with complex care considerations. Highlighted nursing interventions will be based on the patient's history and current conditions, identification of complex problems which may include co-morbidity, chronic conditions, enduring vulnerabilities, psychotic conditions, persistent difficulties with social relationships, and de-establishing social environments. The focus of the poster will demonstrate critical thinking concepts, nursing outcomes, nursing interventions, and may include nutrition, pharmacology, and transition to home/facility issues. The poster is also a venue to discuss nursing challenges, use the North American Nursing Diagnosis Association language and verbally communicate the role of the nurse to both the lay public, peers, and faculty.

Sponsor: Grace Hoyer

Mapping GVSU Allendale Campus Using GPS / GIS Technology [15]**Pete Crawford, John Dillay, Jon Vos**

This study aims to illustrate how to employ GPS and GIS to map and analyze current features, sidewalks, roads, entrances/exits of buildings on campus, and to calculate shortest routes among designated points. Using a GPS unit to gather field data ensures accurate results allowing later computations of the fastest routes with desktop GIS software (ArcView GIS). By incorporating GIS, and photogrammetric techniques, GVSU Public Safety will be able to meet on-campus accessibility needs of all students, staff, and visitors including handicapped individuals. Benefits of this study will also direct ambulances, fire trucks, and other vehicles into selected areas as well as illustrate areas of concern for future planning.

Sponsor: Edwin Joseph

Keratinase Producing Microorganisms [16]**Rebecca Creswick, Michael Hrabonz, Justin Sterett, Thea Walsh**

The Goal of our project is to isolate an organism that produces the exo-enzyme keratinase. This enzyme will break down human hair which will enable the organism to survive off of the carbon and nitrogen within the keratin. After the organism has been isolated we then want to isolate the keratinase enzyme that it produces. Upon isolation and identification of keratinase we will be able to compare and contrast our keratinase with the protease K used by forensic science to break down hair. Currently we are still in the preliminary stages of finding an organism that produces the enzyme. To accomplish this we are developing a plate that will contain only keratin as the carbon and nitrogen source. This plate will also allow us to see zones of inhibition from the exo-enzyme. The steps that follow this will involve identifying keratinase activity by a reliable bio assay and PCR identification.

Sponsor: Steven Hecht

Silicon Nanoparticles in Carbonaceous Chondrite Meteorites [18]**Abram Bos**

A powder X-ray diffraction pattern and a visible luminescence spectrum were recorded for a sample of the Murchison meteorite. The purpose was to determine if silicon nanoparticles are present in the Murchison meteorite. Silicon nanoparticles have a distinct powder X-ray diffraction pattern and exhibit a visible luminescence in the red portion of the spectrum. The Murchison is a member of the carbonaceous chondrite class of meteorites, a class of meteorites believed to bring to earth primordial unprocessed interstellar medium. Silicon nanoparticles existing in the Murchison meteorite would support the hypothesis, based on observational data, that silicon nanoparticles exist in interstellar medium.

Sponsor: Doug Furton

Potemkin Village [20]**Lauren Pike**

No abstract provided.

Sponsor: Patricia Clark

Nursing Care of a Complex Client [23]**Rachel Vanderkolk**

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Sponsor: Mary Kay Van Driel

Nursing Care of a Complex Client [25]**Kimberly De LaCruz**

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Sponsor: Mary Kay Van Driel

Nursing Care of a Complex Client [30]**Stacy Anderson**

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Sponsor: Susan Groesser

Nursing Care of a Complex Client [33]**Kristi Stewart**

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Sponsor: Grace Hoyer

Nursing Care of a Complex Client [34]**Bridget Whelan**

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Sponsor: Grace Hoyer

Nursing Care of a Complex Client [37]**Mary Rozneck**

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Sponsor: Mary Kay Van Driel

Nursing Care of a Complex Client [39]**Rebecca Stevens**

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Sponsor: Mary Kay Van Driel

Keweenaw Copper Country, a Hydrothermal Deposit [42]**Richard Beaudin**

The Keweenaw Copper Deposit located in the Upper Peninsula of Michigan is the most important of its kind on earth. The deposit is part of a 100 mile belt, thought to be created due to rifting of a triple junction with its center where the Michigan Basin is now. The volcanically active region experienced Mafic lavas beginning in the Precambrian. The basaltic flows have produced amygdaloid tops in the Keweenaw Peninsula. Hydrothermal processes are responsible for these cavity filling deposits with a sub class of vesicular filling. This suggests a reducing environment which allowed the copper to precipitate from solution. The copper became exposed as a result of channels created by glaciations which cut through the metamorphosed rock binding the veins. The Keweenaw deposit was first reported to the Michigan legislature in 1841 and mining began shortly thereafter.

Sponsor: Ginny Peterson

Nursing Care of a Complex Patient [46]**Tina Marie Padron**

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Sponsor: Grace Hoyer

Nursing Care of a Complex Client [49]**Lin Miu-Linda Ng**

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Sponsor: Grace Hoyer

Nursing Care of a Complex Client [52]**Terre Buck**

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Sponsor: Grace Hoyer

Nursing Care of a Complex Client [55]**Erin Macklin**

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Sponsor: Grace Hoyer

Nursing Care of a Complex Client [58]**Jessica Tkach**

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Sponsor: Grace Hoyer

Nursing Care of a Complex Client [61]**Megan Highhouse**

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Sponsor: Grace Hoyer

Using GPS Technology to Identify Erosion Prone Areas in the Grand Valley Ravine System Adjacent to the Arboretum, and Measure the Characteristics of Surrounding Features with GIS [63]**Donna McMullen, Mark Saylor, Sunalath Siakhasone, Becky Touchett**

Erosion has a major impact on natural features in a landscape. It also affects the life span of manmade structures such as buildings, bridges, etc. Grand Valley's arboretum is located in close proximity to a part of the ravine system and effective preservation of the arboretum is dependent on sustainable management practices within it and adjacent to it. Investigating erosion in the ravine will help identify characteristics of features that are sensitive to erosion. This project investigates relationships between erosion and the physical characteristics such as slope, man-made structures, soil type and pH, vegetation and stream flow (turbidity and flow rate). GPS was instrumental for identifying land features under investigation and GIS was used to analyze relationships. The data will help guide future land use practices since Facilities Planning will be better able to implement specific erosion preventative management schemes.

Sponsor: Edwin Joseph

Nursing Care of a Complex Client [64]**Cecy Bailey**

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Sponsor: Grace Hoyer

The Role of the Virtual Classroom in Physics [67]**Scott B. DeVries**

The Internet has been fundamental in changing the way that people communicate information, in particular in the education profession. The physics education community has been one of the last academic professions to adopt the technological opportunities offered by the Internet. What are the positive and negative consequences of using Internet technologies to teach introductory-level physics concepts? Are virtual classrooms suitable for teaching physics? This project analyzes the conceptual understanding of students in traditional classrooms, with that of students in a virtual classroom to determine the strengths and weaknesses of virtual course content delivery.

Sponsor: Doug Furton

GIS Inventory: Management of Grand Valley State University's Arboretum [68]**Rebecca Attila-Fried, Bret Groendyke, Jason Skantze**

An arboretum is designed to appeal to our senses (aroma, color, etc.) for peace and relaxation. Knowing where to place features for maximum impact is important for long-term sustainability. The ideal concept of arboretum management helps correlate present layout, use, and cataloging techniques through monitoring soil composition, erosion control and tree characteristics. The utilization of GIS and GPS technology demonstrates major advantages over conventional methods of arboretum management. While GIS is complex, it simplifies routines and enables efficient data collection, which allows real-time analysis. The project demonstrates how to archive, map, catalog, manage, and monitor information within the arboretum.

Sponsor: Edwin Joseph

Nursing Care of a Complex Client [70]**Carrie Germain**

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Sponsor: Mary Kay Van Driel

The Phenotypic Characterization of a Candida albicans YPD1 Null Mutant [72]**Diana Brown**

The human pathogen *Candida albicans* is commonly found on mucosal surfaces as a commensal organism. This organism can cause a spectrum of diseases from superficial mucosal infections to lethal systemic infections in susceptible individuals. What makes this organism able to spread systemically is its ability to undergo morphogenesis, meaning switching from yeast to filamentous growth. Morphogenesis occurs in response to a variety of environmental signals. The YPD1 gene product is thought to be one of a number of proteins that have been identified in the transduction of environmental signals leading to morphogenesis. To assess the role of the YPD1 gene product in morphogenesis, phenotypic characterization of several null mutants was performed. When compared to the wild type strain, it was observed that the null mutants exhibited reduced hyphal growth under conditions conducive to morphogenesis.

Sponsor: Daniel Herman

Characterization of a Kanamycin Resistance Gene Identified in Sinorhizodium Fredii [74]**Erik Howell**

Our research concerns the characterization of a kanamycin resistance gene that has been identified in the bacterium *Sinorhizobium fredii*. So far we have characterized the degree of resistance of the cloned gene in *Pseudomonas putida*. We are currently purifying the cloned DNA to transfer into additional host bacteria (*Escherichia coli* and other Rhizobia strains). Based on the DNA sequence of this region, we have compared it to known Kanamycin resistance genes from other bacteria. Even among other Rhizobia bacteria, this gene is significantly different. Additional work will be necessary to identify essential regions of this gene.

Sponsor: Anthony Nieuwkoop

Urban Poetry-A Collection of Poetry Influenced by the Sights, Sounds and Citizens of the City [76]**Lauren Pontious**

My poetry usually has a political and feminist twist to it, and attempts inspire thought and insight.

Sponsor: Patricia Clark

Arthrometric Assessment of Glenohumeral Laxity in Healthy Females Using the KT-1000 Instrumented Arthrometer [80]**Aimee Leestma**

The purpose of this study was to establish reliability and identify characteristics of glenohumeral (GH) laxity in females using the KT- 1000 knee ligament arthrometer (MEDMetric Corporation, San Diego, CA). Subjects reported to the Human Performance Laboratory on two separate occasions, at least 24 hours apart for measurement of GH translation. Eighteen subjects (18 female, age = 20.72 ± 1.53 yr., ht. = 165.81 ± 6.27 cm, mass = 63.93 ± 12.37 kg) who had no previous history of shoulder pathology participated. Participants were instructed to relax while an anteriorly directed pulling force of increasing magnitude was applied to the GH joint using the arthrometer. Three trials at each load level were collected during the two sessions. This method of measuring GH laxity in the female dominant shoulder has proven to be reliable. In addition, significant differences between dominant and non-dominant shoulders were identified in the female shoulder.

Sponsor: Brian Hatzel

Nursing Care of a Complex Client [84]**Jennifer Alavarez**

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Sponsor: Susan Groesser

Nursing Care of a Complex Client [87]**Marcy Stonex**

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Sponsor: Susan Groesser

Nursing Care of a Complex Client [90]**Kristy Wheeler**

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Sponsor: Grace Hoyer

Nursing Care of a Complex Client [93]**Kontarrow Bryant**

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Sponsor: Grace Hoyer

Patient Satisfaction in Primary Care Centers [94]**Jamie Tamim, R.N.**

This study is a continuation of previous research that identified patient satisfaction outcomes in nurse-managed primary care centers, including the Herkimer Family Health Center and the Campus Health Center, funded by the Michigan Academic Consortium. The data for this study were obtained from the Ferguson Family Health Center, currently managed by the KSON, and the Campus Student Health Center managed by student services. Three satisfaction components emerged when factor analysis was performed: clinic care, phone contact, and return/recommendation that are consistent with the original research.

Bivariate analysis was performed to determine if there were significant differences between the Ferguson Health Center and the Campus Student Health Center in these three areas of satisfaction. There were significant differences in two of the three satisfaction components: phone contact and return/recommendation.

Sponsor: Andrea Bostrom

Nursing Care of a Complex Client [96]**Christian Kessler**

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Sponsor: Grace Hoyer

Nursing Care of a Complex Client [102]**Kelli Leask**

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Sponsor: Susan Groesser

Degree of Tolerance for Sexual Orientation as a Function of the Level of Intrinsic Religiosity [106]**Andrea Deming, Sara Ruess**

A sample of 100 GVSU students rated their agreement to self-report items tapping into intrinsic religiosity. They were then given a scenario about two college freshman who are roommates. However, the scenario also implied that one of the roommates is either heterosexual or homosexual. Participants then responded to a set of self-report items measuring their tolerance of the roommate whose sexual orientation was manipulated. The key finding was a significant interaction between the participants' level of intrinsic religiosity and the roommate's sexual orientation. As intrinsic religiosity increased the level of tolerance for the homosexual roommate decreased, but for the heterosexual roommate the level of tolerance remained relatively equal. We believe these results occurred because people who are high on intrinsic religiosity tend to hold religion as the most significant element of their worldview and likewise follow what the Bible says, which implies that homosexuality is a sin.

Sponsor: Luke Galen

Nursing Care of a Complex Client [108]**Jackie Lefere**

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Sponsor: Susan Groesser

Contrast Therapy: Does it really work? [110]**Darcy Lown**

Contrast therapy is a common modality utilized in the Athletic Training setting. Unfortunately, most of the belief behind this modality is anecdotal. The purpose of this review was to identify the physiological advantages of utilizing contrast therapy to treat soft tissue injury. Contrast therapy involves the use of both cryotherapy and thermotherapy techniques. Patients commonly immerse limbs in cold water for a given amount of time then switch to warm water. The theory behind contrast therapy is that it is used to decrease swelling by producing a vasodilatation/vasoconstriction pump. Cryotherapy and thermotherapy have been proven effective as independent modalities. However, the combination of the two (contrast therapy), has not. Despite common theories of practice, contrast therapy does not create a tissue temperature change significant enough to result in vasodilatation and vasoconstriction of the venous and arteriole walls.

Sponsor: Brian Hatzel

Beginning at 3:00***Motion Analysis of Pole-Vaulting [10]*****Mike Kinney, Tom Koziol, Chris Michael**

Pole-vaulting is a highly complex athletic activity. Success in pole-vaulting depends upon developed motor ability and learned technique. For the project video was shot of members of Grand Valley's pole-vaulting team in order to analyze their technique. Motion analysis computer software was used to determine foot placement, body angles, and placement of the pole at the point of take-off. Each pole-vaulter has his or her unique target for all of the measures taken, and using this software, proximity to these targets can be judged. The purpose of the project was to discover what relationship, if any, exists between these factors and the success of the jumps attempted. In doing this, it is hoped that improvement in their technique can be achieved.

Sponsor: James Scott

Effects of Caffeine on Submaximal Exercise and Muscular Strength Tasks [12]**Meagan DeHaan, Sara Lewis**

The purpose of this project is to determine how caffeine affects the body's performance on submaximal exercise tasks and muscular strength exercises. Previous research suggests that caffeine improves performance in endurance tasks and but its effects on muscular strength are mixed. After caffeine or placebo ingestion, two assessments will be administered. Strength will be tested using a hand grip dynamometer and submaximal exercise endurance will be tested using a bicycle ergometer.

Sponsors: Brad Ambrose, Francis Burns, James Scott

Nursing Care of a Complex Client [17]**Carrie Gillette**

The purpose of this poster presentation is to present selected aspects of nursing care provided for a client with complex care considerations. Highlighted nursing interventions will be based on the patient's history and current conditions, identification of complex problems which may include co-morbidity, chronic conditions, enduring vulnerabilities, psychotic conditions, persistent difficulties with social relationships, and de-establishing social environments. The focus of the poster will demonstrate critical thinking concepts, nursing outcomes, nursing interventions, and may include nutrition, pharmacology, and transition to home/facility issues. The poster is also a venue to discuss nursing challenges, use the North American Nursing Diagnosis Association language and verbally communicate the role of the nurse to both the lay public, peers, and faculty.

Sponsor: Mary Kay Van Driel

Nursing Care of a Complex Client [19]**Kristin Burgess**

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Sponsor: Susan Groesser

Nursing Care of a Complex Client [21]**McKensay Hourtienne**

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Sponsor: Grace Hoyer

Using GIS to Monitor and Evaluate Soil pH in GVSU Arboretum [22]**Erika Curtiss, Laura Hite, Rachel VanderHart, Matt VanPortfliet**

Using GIS to monitor and evaluate soil pH in GVSU Arboretum Erika, Laura, Matt, Rachel The purpose of this research is to establish how salt applications for snow removal affect the pH of the GVSU arboretum, and also how it changes naturally. The pH level is important because it determines the availability of nutrients in the soil for plants to utilize. In order to keep the arboretum aesthetically pleasing it is necessary to monitor the soil quality and how it affects the vegetation. Using a pH tester and GPS unit to systematically sample the soil we were able to ascertain how the pH varied with the proximity to different variables. Through the use of GIS and ArcView, data was collected and analyzed to provide essential information on how the pH changes across the arboretum. We expected to find that salt would cause the pH along the walkways to be lower. The collected data was used to display the distribution of pH throughout the arboretum.

Sponsor: Edwin Joseph

Nursing Care of a Complex Client [24]**Amy McCalla**

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Sponsor: Mary Kay Van Driel

Nursing Care of a Complex Client [28]**Nicole DeYoung**

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Sponsor: Susan Groesser

Nursing Care of a Complex Client [29]**Katie Pemberton**

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Sponsor: Mary Kay Van Driel

Nursing Care of a Complex Client [32]**Anna Przekadzinska**

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Sponsor: Susan Groesser

An Analysis of Mold Spores in the GVSU Dissection Laboratory [35]**Katherine Handley**

In the summer of 2003 mold growth was detected on the cadavers in Grand Valley's dissection lab. An investigation was initiated to determine if the ventilation system in the dissection lab was the source of the contaminating mold spores. To test this hypothesis, a total of 96 agar plates (48 test, 48 control) were distributed in the lab and the Biomedical/Health science office over a time period of approximately two weeks. The exposure time for each control and test plates was approximately 24 hours. After incubation of the plates, it was noted that 13 of 18 (72%) test plates from the office locations were positive for mold growth, while 13 out of 30 (43%) test plates from the dissection lab were positive. Furthermore, none of the positive plates from the dissection lab were located directly beneath vents bringing air into the laboratory. Therefore, the data suggests that the contamination of the cadavers is not likely a result of mold spores originating from the ventilation system.

Sponsor: Daniel Herman

Nursing Care of a Complex Client [36]**Laura Bloomfield**

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Sponsor: Grace Hoyer

Twice as Nice: Producing Conducting Polymers by Solving the Problem of Double Nitrogen Substitution on Metal Olefin Complexes [38]**Ryan Hoekstra**

The goal of this project is to create a copolymer of ethylene and phenylene diamine, which could act as a molecular wire. The synthesis of this molecular wire would be based on the ability to di-substitute a metal complexed olefin with nitrogen nucleophiles. Nucleophilic substitution on the olefin is facilitated by means of complexation to Fp^+ ($CpFe(CO)_2^+$) which draws electron density off the olefin π -cloud. It has been proposed that the ability to do nucleophilic substitution, either single or double substitution, is a function of the position of the Fp^+ along the olefin face. Previous work in our labs has demonstrated that the position of the Fp^+ can be carefully controlled by the electronic properties of groups present on the olefin. I am attempting to prove that di-nitrogen substitution is possible by synthesizing a variety of single substituted derivatives (containing para substituted anilines), which are being tested for Fp^+ position and susceptibility to a second substitution.

Sponsor: Stephen Matchett

Nursing Care of a Complex Client [41]**Jill Chamberland**

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Sponsor: Grace Hoyer

Nursing Care of a Complex Client [44]**Patricia Sprick**

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Sponsor: Susan Groesser

Analysis of the Genetic Structure of Brown Trout (Salmo Trutta) in the Muskegon River [47]**Kevin Devormer, Todd Tiano, Catherine Willis**

Michigan DNR stocks inland waters of West Michigan with three strains of brown trout, among which are the Wild Rose and the Gilchrist Creek strains. Until 2001 the Muskegon River had been stocked predominantly with Wild Rose and some Gilchrist; the Gilchrist stocking was since discontinued. We sampled fish from several access points on the Muskegon and did genetic analysis of their mitochondrial DNA. Surprisingly, we found a significant number of the fish to be of the Gilchrist genetic type. The data suggests there is either a selection advantage that favors Gilchrist in the Muskegon River, or that the hatchery broodstock of Wild Rose may also carry Gilchrist.

Sponsors: Mark Luttenton, Alexey Nikitin

Nursing Care of a Complex Client [48]**Molly McGee**

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Sponsor: Susan Groesser

Nursing Care of a Complex Client [51]**Becky Roobol**

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Sponsor: Susan Groesser

Mapping Grand Valley State University's Nature Trails with GIS [53]**J.R. Lotto, Michael Shelton, Kristian Williams**

Grand Valley's extensive trail system is not only under utilized, but there is a lack of current information about trail features. Existing physical fitness areas, trails, and structures are deteriorating because of the lack of maintenance. Using GPS data, digital photography and a Geographical Information System, we obtained data to remap and reevaluate current trail conditions. We also discovered new trails and classified varying difficulty levels so the trail system can be enjoyed by all. This research project identifies the areas in dire need of attention and proposes a methodology for the upkeep of the trail system. Also, the up-to-date mapping will allow individuals of varying health status to selectively use the trail system to their full advantage. This will allow students and the community to become associated with nature and realize the importance of a healthy trail system.

Sponsor: Edwin Joseph

Nursing Care of a Complex Client [54]**Kathryn Ballantine**

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Sponsor: Mary Kay Van Driel

Nursing Care of a Complex Client [56]**Wendy Goodfellow**

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Sponsor: Susan Groesser

Diversity Management Relative to Manufacturing Environments [57]**Shelley Deemter**

America was founded when people from all different countries gathered together and formed a diverse population. Diversity management was addressed a great deal during the twentieth century. But now, the topic of diversity has evolved far beyond the ranks of affirmative action and quotas. Diversity now encompasses training, awareness and understanding. These principles are necessary to cultivate successful business and personal transactions. This research focuses on industries with a manufacturing component since it is so vital to our local economy.

Sponsor: Jaideep Motwani

Nursing Care of a Complex Client [59]**Rebecca Wiltjer**

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Sponsor: Susan Groesser

Individual Differences in Processing Speed, Working Memory, and Reasoning Abilities [62]**Stephanie Hitsman**

Some researchers have emphasized the distinction between the verbal and visuospatial domains in describing the structure of individual differences in cognitive abilities. In contrast, other researchers have highlighted the role of working memory in reasoning regardless of domain. They have emphasized the distinction between simple and complex memory span tasks. In the current study, we compared these two approaches to predicting individual differences in reasoning abilities by administering participants a large battery of speeded tasks, simple and complex working memory tasks, and reasoning tests drawn from the verbal and visuospatial domains. Results from the present study extended previous research and demonstrated the importance of distinguishing both between the verbal and visuospatial domains and between simple and complex span measures of working memory.

Sponsor: Jing Chen

Nursing Care of a Complex Client [65]**Dawn Johnson**

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Sponsor: Grace Hoyer

Nursing Care of a Complex Client [66]**Theland Washington**

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Sponsor: Mary Kay Van Driel

Nursing Care of a Complex Client [69]**Meranda Lamoreaux**

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Sponsor: Mary Kay Van Driel

Nursing Care of a Complex Client [71]**Stacy Becker**

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Sponsor: Grace Hoyer

Nursing Care of a Complex Client [73]**Heather Parmelee**

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Sponsor: Susan Groesser

Nursing Care of a Complex Client [75]**Lindsey Reck**

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Sponsor: Mary Kay Van Driel

Nursing Care of a Complex Client [77]**Tammi Donker**

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Sponsor: Mary Kay Van Driel

Nursing Care of a Complex Client [79]**Jennica VanHouten**

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Sponsor: Susan Groesser

A Health and Wellness Statistical Consulting Experience [81]**Crystal Dymock**

Dr. Brenda Reeves of the Wellness Center conducted a survey to verify the usage rates based on gender and ethnicity. She wanted to determine if the Recreation and Wellness Centers meets student and faculty needs. As a statistical consultant, I needed to assess the survey data, to frequently meet with Dr. Reeves to find out exactly what results were needed for the project, and to determine the appropriate analysis to be performed. Assessing students' satisfaction of the Wellness Center based on variables such as gender and ethnicity will help to determine future changes in the Wellness and Recreation Center. The project results were found by using data gathering techniques I learned from my experience in statistical consulting.

Sponsors: Brenda Reeves, Neal Rogness

Nursing Care of a Complex Client [82]**Kristi Irelan**

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Sponsor: Mary Kay Van Driel

Genetic Differences Between Strains of Brown Trout (*Salmo Trutta*) at the Oden State Fish Hatchery (Michigan) [83]**Kevin Devormer, Todd Tiano, Catherine Willis**

The Oden State Fish Hatchery maintains broodstocks for the Gilchrist and Wild Rose strains of brown trout used to stock inland waters in West Michigan. We analyzed the genetic differences in the ND-1 region of the mitochondrial DNA from one-year-old fish of each of these two trout strains. We found each strain having a distinct mitochondrial restriction fragment length polymorphism (RFLP) pattern in the ND-1 region. We also found that some of the perceived Wild Rose fish had a Gilchrist mtDNA RFLP, which suggests either a sample contamination or the presence of Gilchrist fish in the Wild Rose broodstock.

Sponsors: Mark Luttenton, Alexey Nikitin

Nursing Care of a Complex Client [85]**Beth Welliver**

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Sponsor: Mary Kay Van Driel

Nursing Care of a Complex Client [88]**Wioletta Brechting**

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Sponsor: Mary Kay Van Driel

Nursing Care of a Complex Client [92]**Kurt Phillips**

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Sponsor: Susan Groesser

Authentic Enough: Poems by Amber Eby [98]**Amber Eby, Chris Shearer**

Visual art often inspires poetry and likewise poetry can inspire visual art. As an art major and a writing major, we would like to bring these types of art together and present the same subjects through different mediums. By doing so, we hope to engage audiences of all kinds--from the art world, the literary world, and beyond--in our work.

Sponsor: Patricia Clark

Nursing Care of a Complex Client [100]**Andrea Hoffman**

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Sponsor: Mary Kay Van Driel

Nursing Care of a Complex Client [103]**Michelle Riemersma**

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Sponsor: Mary Kay Van Driel

Peliminary Findings of Grandmothers Raising Grandchildren: Stressors, Social Support and Health Outcomes [104]**Kevin Senko**

No abstract provided.

Sponsors: Sharon Leder, Linda Nicholson Grinstead

Nursing Care of a Complex Client [105]**Susan VanderZouwen**

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Sponsor: Susan Groesser

Poems by Cindy Penman [107]**Cindy Penman**

My work as a poet has led me to a great interest in word play and the lyrical tones of language. As a college writer, I enjoy experimenting with different sounds of words. In my poetry, I use everyday situations as my topics and bend them at different angles to show how unique the norm can be. In my poster presentation, I plan to use these techniques and display my work.

Sponsor: Patricia Clark

Nursing Care of a Complex Client [109]**April Vaughan**

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Sponsor: Mary Kay Van Driel

Beginning at 4:00

Patterns and Functions in String Art [1]**Kyle Meyers**

String art is a popular and interesting form of art that has many mathematical applications. The presentation reviews a guided discovery activity where students explore many rich patterns in string art that lead to the study of linear and quadratic functions. Students will investigate the curve formed by the boundary of the lines leading to an investigation of function families.

Sponsor: Charlene Beckmann

Bungee Jumping and Exercise: The Study of Stretching [2]**Rachel Lewis**

We're 130 feet up and we've got 45 yards of bungee cord, that's uh& 90 feet. Allow for 30 feet of stretching, that gives us a total of & 120 feet. Perfect! So says the bungee jumping operator in the cartoon. Is the stretch of a bungee cord additive as the operator suggests or is the stretch proportional? Middle grades students will investigate the stretch of bungee cords, springs, and exercise bands to investigate the operator's theory. The experiments tie together mathematics, physics, and movement science.

Sponsor: Charlene Beckmann

The Functions of Quilts [4]**Tiffany Stob**

What one thing keeps you warm, decorates your bed, and reminds you of your grandmother while at the same time providing a colorful piece of artwork, a peek into your culture, a lesson in history, and a challenging mathematics problem? The answer: a quilt! Quilting in the classroom lends itself to exploring many mathematics concepts. This presentation shares an activity in which students compare linear and quadratic functions and exponential growth-all based on quilts!

Sponsor: Charlene Beckmann

A Heuristic Algorithm, Simulating Light Propagation in Orthogonal Polygons [5]**Omar Hwail**

The purpose of this study is to determine the area of light emitted by a source in an orthogonal polygon on a two-dimensional lattice that utilizes the cellular automata construction method. By applying this method, an efficient algorithm was tested and developed to determine the area of light propagated. The algorithm, although not optimal, gives a close approximation of the number of cells on the lattice that are to be illuminated. Furthermore the algorithm acknowledged in this research is sufficient to work with any orthogonal polygon. This research is based on a classical computational geometry problem-the art gallery problem. It is hoped that the results of this research can contribute to finding more efficient solutions to the problem as well as other computational geometry problems.

Sponsor: Christian Trefftz

Not Just a Bedtime Story: Exploring Inverse Functions Through Children's Literature [6]**Joshua Brandsen**

Students often confuse inverse with exponential functions. Children's books provide an engaging context from which to study mathematics. Eye charts and rows and piles of coins, both introduced through children's literature, are used to motivate the study of inverse functions and to assist students in distinguishing them from exponential functions.

Sponsor: Charlene Beckmann

Evolution, Understanding and Acceptance : A Student Statistical Consulting Experience [7]**Stephen Nelson**

Dr. Stephen Burton of the biology department conducted a questionnaire to ascertain GVSU entry-level biology students' understanding of the natural science process, the process of evolution and their acceptance of evolution. As evolution often conjures up many controversial debates, it is important to give students a fair opportunity to study evolution, as with all disciplines, before they make judgments. My role as a statistical consultant was to analyze the data and ascertain the relationship between students' knowledge of evolution and the natural science process and their acceptance of evolution. Further, I was to analyze the relationships between the scores of biology majors and non-biology majors as well as GVSU students and students from other states.

Sponsors: Stephen Burton, Neal Rogness

Batty Functions [8]**Jessica Roy**

Linear and quadratic functions arise naturally from a variety of children's books. Two of these, "Bats on Parade" (1999) and "Bat Jamboree" (1996), by Kathy Appelt, will be used to engage students in an investigation of the relationships between linear and quadratic functions (as a bonus they can also investigate a cubic function). Students will use physical materials, tables, graphs, and symbols to discover relationships and become familiar with these function families.

Sponsor: Charlene Beckmann

Immunocytochemical Identification of Histaminergic Cells in the Central Nervous System of Drosophila Melanogaster [9]**Tom Tomasiak**

Histamine immunocytochemistry was performed on intact central nervous systems (CNS) dissected from various developmental stages of the fruitfly, *D. melanogaster*. Changes in the localization and projection pattern of histamine-staining cells in the CNS were observed to occur between the larval and pupal developmental stages, most notably 10 hours after pupation. These results lay the foundation for work requiring histamine localization, such as the analysis of previously constructed mutants that contain deletions in the regulatory region of the histidine decarboxylase gene (*hdc*), which encodes the enzyme that synthesizes histamine. This approach may identify developmental and tissue-specific elements in the *hdc* gene that regulate its' expression. Initial evidence shows that a normal *hdc* transgene, used earlier to rescue the *hdc* mutant lacking histamine in adults, restores histamine in central neurons identified in several developmental stages.

Sponsor: Martin Burg

Comparison of Digit Ratio in Male and Female House Sparrows [11]**Barbara Brown**

Comparison of digit ratio in male and female House Sparrows. Barbara Brown Differences between the sexes can help reveal the effects of natural and sexual selection. Humans exhibit sexual dimorphism in digit ratio: the fourth digit is longer, on average, in males and the ratio between the lengths of the second digit and fourth digit (2D:4D) is, on average, smaller in males. This sexual dimorphism is influenced by prenatal exposure to testosterone. Thus, 2D:4D is an easily accessible indicator of prenatal exposure to testosterone and should be found in all terrestrial vertebrates due to digit formation being controlled by the same genes. I measured digit ratio in male and female House Sparrows. There was no difference between males and females in 2D:4D ratio. This suggests that the effects of prenatal exposure of testosterone on digit formation may be different in birds than in mammals.

Sponsors: Michael Lombardo, Patrick Thorpe

The Burqa Solution [26]**Carrie Fletcher**

The Burqa Solution is a two-part exploration of street harassment. First, a thorough study of: what it is, the psychological and physical scars it inflicts, as well as the notion of a burqa being the "solution" to the problem. This component is summed up with possible solutions, the most important being education. It seems as though the majority of street harassment comes from those who are ignorant to the consequential burn that it leaves on the victim's psychological skin. Hence, my attempt to educate whomever may be seduced by the second element of The Burqa Solution; a life size sculpture depicting the psychological trauma one endures when faced with street harassment. The figures transcend all age, race and class. The first figure cowers; overcome by street harassment. The second figure prevails with a burqa as a shield, as many young Muslim women have begun to do again. Ironically, this, is what makes them feel empowered and safe.

Sponsor: Julia Mason

Tyrosine Kinase Substrate Synthesis and Analysis [27]**Doug Feenstra**

Tyrosine kinases are enzymes found in increased concentrations in many tumor cells. The goal of this research project is to synthesize two novel nine residue long peptides to be used as potential kinase substrates. These nonamers will then be utilized to quantify the extent of phosphorylation by a given tyrosine kinase. Phosphorylation will be quantified by submitting the peptides to two different bioassays. A fluorescence assay that monitors substrate phosphorylation will be compared to a similar radioactive assay on the same substrate.

Sponsor: Laurie Witucki

The Effect of Nitric Oxide Inhibitor L-name in Goldfish Telencephalon [31]**Terri Foster**

Research has shown that NO inhibitors block long term potentiation (LTP), an increase in neuronal synaptic communications and physiological correlate of learning and memory. In the current study, different doses of NO inhibitor L-name were injected into the goldfish telencephalon, an area of the brain responsible for memory and learning. The effects of this drug on learning and memory were monitored by measuring the avoidance learning behavior of the fish.

Sponsor: Xiaojuan Xu

The Influence of Health Status and Lifestyle Behaviors on Total Cholesterol Levels [40]**Brandon Comerford, Jessica Roop, Aaron Szura**

Health status and lifestyle behaviors have been shown to affect cholesterol. Some of the variables include gender, fitness, blood pressure, body fat, and caffeine and alcohol intake. **PURPOSE** To determine whether health status and lifestyle behaviors affect cholesterol levels. **METHODS** Subjects included 9 individuals, who completed a health history questionnaire and had the following variables measured: height, weight, resting heart rate, blood pressure, body fat, VO₂, and cholesterol levels. **RESULTS** There were positive correlations found between cholesterol and gender, fitness, blood pressure, body fat, and caffeine intake. A negative relationship was found between alcohol intake and cholesterol. **CONCLUSION** The relationships between health status and lifestyle and cholesterol were similar to those previously found in the literature. Due to a small sample size and the homogenous nature of the subject pool, significant correlations were not seen.

Sponsor: Dawn Coe

Yoga and Pilates as Physical Therapy Treatments [43]**Lisa Glenn**

The purpose of this presentation is to investigate the newest techniques being used today in the field of Physical Therapy. According to recent research, Physical Therapists are utilizing common exercise trends, similar to those seen in program such as Yoga and Pilates. These techniques are being used to rehabilitate patients with post- surgical deficiencies and to offset that need for surgery with pre-surgical patients. Yoga-based exercises have been employed with osteoporosis, chronic jaw tension and chronic post-stroke hemiparesis patients as well as a number of different clinical illnesses, including high blood pressure. Pilates-based exercises have been noted in rehabilitation from injury in dancers and athletes specifically. These exercise treatments have become more popular over the past few years and the focus of this study will be to determine its efficacy and potential value in the field of Physical Therapy.

Sponsor: Brian Kipp

Modeling and Bone Health Promoting Behaviors in Adolescents: Alanysis of Data from the Healthy Bones Modeling Questionnaire [45]**Rachel Decker**

Previous research has shown that bone mass is established by early adulthood. Therefore, osteoporosis prevention must begin with children. Adolescents, however, make many of their own choices regarding diet and exercise. The purpose of this presentation is to present data collected using a new instrument, the Healthy Bones Modeling Questionnaire. This instrument assesses the influence of role models on bone health promoting behaviors, such as diet and exercise, among adolescents. The theoretical framework for this study was Pender's Health Promotion Model. This model proposes that modeling is important in performing health-promoting behaviors.

Sponsor: Jean Martin

The Effect of Lrp5-deficiency on Mammary Hyperplasia in Mice Overexpressing Wnt-1 [50]**Nicole Evans**

Cancer is a genetic disease characterized by uncontrolled cell growth and division. It occurs through an accumulation of individual genetic changes, which give cells the ability to outgrow their neighbors. One mechanism by which cells gain the ability to grow uncontrollably is through the nearly constant activation of growth signaling pathways. The Wnt/-catenin signal transduction pathway is such a pathway, and is involved in cell growth and division. Wnt binds to specific receptors including LRP5 and LRP6 (low-density lipoprotein-related protein 5 and 6) and transmits a signal, which results the synthesis of new proteins involved in cell growth and division. Alterations in the Wnt/-catenin signaling pathway are present in more than half of breast cancers. We have found that Lrp5-deficiency inhibits mammary tumor formation in mice overexpressing Wnt-1. The purpose of this study was to examine if Lrp5-deficiency also inhibits hyperplasia, which normally precedes Wnt-1-induced tumors.

Sponsor: Nancy Shontz

Educating Residents of the City of Grand Rapids on the Impact of a 100-year Flood Event [60]**Andy Albrecht, Richard Barnes, Jason Culbert, Darrell Dakan, Pete Gerardini, Samantha Hawkins, Kenneth King, Ryan Mengel, Caleb O'Boyle, William Packard, Richard Ruel, Brian Shelson, Troy Vanderlaan**

The city of Grand Rapids is approaching the 100th anniversary of the largest historical flood in the history of the city, the flood of March 1904. The river flooded adjacent lands to an elevation of about 615 feet. At present, more than 10,000 families would be impacted by a flood of similar magnitude. In order to increase public awareness and preparedness we created the following educational materials: interpretive exercises using newspaper articles to identify problems caused by flooding; climate data to construct and interpret a flood-frequency curve and a hydrograph; maps to compare the size of the present city to the size of the city in 1904 (and possible consequences of these changes); a set of photographs to show the depth of the 100-year flood at numerous locations in the city; a set of photographs to compare the classic 1904 photos to the same locations today, and interpret topographic and historic maps to exam changes in land use. To better understand the impact of the flood we did the following: surveyed the stage of the flood at several locations in greater Grand Rapids, and surveyed the height of flood walls at various locations.

Sponsor: Steve Mattox

Abortion as Entrance into Womanhood [78]**Catherine Kidd, Ann Trombly**

Research presented will be based on abortion rates among female racial minorities of low socioeconomic status who reside in the United States. The question posed prior to the investigation is whether a girl fitting these characteristics makes the transformation from girl to woman upon completion of her first, of possibly many, abortions.

Sponsor: Brian Phillips

A Statistical Consulting Experience: Determining Relationships Between Questions in a Conceptual Chemistry Test [86]**Carl Griffith**

Dr. Ellen Yezierski, a chemistry faculty member, created a conceptual test dealing with the states of matter called ParNoMa, short for the PARTiculate Nature Of MATter. The test is designed to evaluate a student's understanding of the circumstances of the state change of matter. The question posed to me, as a statistical consultant, was, "What significant relationships exist between test questions?" Come find out more about my experience as a statistical consultant and what relationships exist between ParNoMa test questions.

Sponsors: Ellen Yezierski, Neal Rogness

Initiation into the World of Statistical Consulting: Analysis of Developmental Writing Classes [89]**Sandra Horn**

Statistical consulting is an occupation that students are usually introduced to in graduate programs, but I had the opportunity to serve as a statistical consultant for a faculty project this semester. Carol Kountz and Dawn Nagelkirk of the Writing Department gathered data for a study that examined academic success of students who completed the course WRT 098 prior to taking WRT 150. My role as the statistical consultant was to analyze the data and compare the academic success of students who completed WRT 098 before WRT 150 to the academic success of students who opted out of WRT 098.

Sponsors: Carol Kountz, Dawn Nagelkirk, Neal Rogness

Hand Dominance, Eye Dominance, and Anticipation Timing [91]**Alysa Samotis, Jaeden Wagner**

Through the use of an anticipation timer, the relationship between hand dominance, eye dominance and anticipation timing were tested. Subjects were tested using four different hand-eye combinations at various speeds.

Sponsors: Brad Ambrose, Francis Burns, James Scott

Social Support and Bone Health Promoting Behaviors in Adolescents: Analysis of Data from the Healthy Bones Social Support Questionnaire [95]**Robin Smith**

The prevention of osteoporosis begins in childhood and adolescence by the promotion of bone health. The purpose of this poster presentation is to present findings from the Healthy Bones Social Support Questionnaire on the social support young adolescents receive for bone health promoting behaviors, specifically nutrition and exercise. The theoretical framework for this study is Pender's Health Promotion Model which proposes that social support is important in performing health promoting behaviors.

Sponsor: Jean Martin

Synthesis of Chiral Silanes [97]**Shannon Edwards**

A simple synthesis for compounds that are chiral at the silicon atom is yet to be discovered. We developed a one-step synthesis that requires the presence of a chiral amine (our catalyst). The synthesis is much shorter than the widely known, yet difficult and tedious 10-step synthesis reported by L. H. Sommer. Optimization of the synthesis required reacting a dihydridesilane with an organolithium and was carried out in a series of experiments that included altering the temperature, percent catalyst and solvent to yield the highest production of one enantiomer (enantiomeric excess). The progress of each reaction was followed using GC and GC/MS analysis, while the purity of the final product was determined using NMR spectroscopy. The enantiomeric excess was determined using optical rotation measured by a polarimeter.

Sponsor: Randy Winchester

The Generalized Area Principle [101]**Kristina Lund**

Come discover how the volume of a special tetrahedron can be used to generalize the area principle to spherical and hyperbolic geometry. We use this tool to generalize certain cyclic product relations, such as Menelaus' and Ceva's theorem, to polygons in these geometries.

Sponsor: William Dickinson

Groupies and Singletons: Student Perspectives on Group and Individual Writing Tutorials [113]**Alicia Brazeau**

As a writing consultant, I have noticed the different ways in which students react to discussing and revising their writing in student groups versus working in individual sessions. My presentation will reflect the results of the study I am conducting, which aims to discover the patterns that exist in student preferences. The presentation will present my research on which aspects of their writing including content, focus, organization, and grammar students find most helpful to work on in consultant-led groups and on which aspects they more successfully work in individual meetings with the consultant. In order to gather this research I am conducting a survey in an Writing 150 course, asking students to indicate in which setting they most actively participate and receive constructive suggestion, and discuss the content, organizational, and grammatical levels of their writing. My presentation will also reflect my observation of four separate group sessions and lab classes.

Sponsor: Ellen Schendel

A Direct Test of the Sexually Transmitted Microbe Hypothesis of Avian Copulation in Tree Swallows (Tachycineta Bicolor) [114]**Jenny Brinks**

A direct test of the sexually transmitted microbe hypothesis of avian copulation in Tree Swallows (*Tachycineta bicolor*) Jenny Brinks We experimentally examined the sexually transmitted microbe (STM) hypothesis of avian copulation using female Tree Swallows. The STM hypothesis predicts that female birds may directly benefit from copulation if they receive a cloacal inoculation of beneficial STMs that can serve as therapy against present infection and/or vaccinate them from future encounters with pathogens. Females were captured during incubation days 7- 10, swabbed, and inoculated with *Yersinia* or *Lactobacilli*. Fourteen days later, they were recaptured and swabbed again. Counts of bacteria in treated individuals increased after inoculation. However, inoculation had no effect on mass change or reproductive performance. These results suggest that a key assumption of the STM hypothesis is correct.

Sponsors: Michael Lombardo, Patrick Thorpe

A Statistical Consulting Experience: Analysis of Biology prerequisites [115]**Craig Johnson**

Dr. Patricia Matthews wanted to determine the amount of knowledge students entering BIO 355 had retained from previous courses, including the prerequisite of BIO120/112. As professor Matthews's statistical consultant, I compared the answers given by students in a pre-test taken at the beginning of the semester with certain variables of interest. The goal was to raise awareness of content areas with which students struggle, so as to help ensure success in BIO 355.

Sponsors: Patricia Matthews, Neal Rogness

Hand Dominance and Bilateral Transfer [116]**Elizabeth Barko, Harvey Sanders**

We are investigating the possible association between hand dominance and bilateral transfer of motor ability. Bilateral transfer can be defined as the extent to which a non-dominant hand can perform a task that is usually performed by the dominant hand, or vice versa. By evaluating the motor performance of both right-handed and left-handed people in simple, everyday tasks, we aim to determine if that left-handed people will demonstrate better transfer ability because they conform to a right-handed dominant environment.

Sponsor: James Scott

Alphabetical List of Presenters

PAD refers to rooms in Padnos Hall (Allendale Campus); DEV refers to rooms in DeVos Center (Pew Campus). Location numbers with an 'A' or 'P' behind them refer to a poster location; the 'A' or 'P' indicates that the poster will be displayed during the AM or PM, respectively (see page 14 for a poster location map.)

Name	Time	Location
Accivatti, Cara	2:00 pm	PAD 207
Adame, Heather	10:00 am	PAD 209
Addington, Erica	4:00 pm	PAD 207
Alavarez, Jennifer	1:20 pm	PAD 168
Alavarez, Jennifer	2:00 pm	84 P
Albrecht, Andy	4:00 pm	60 P
Alger, Pennie	2:20 pm	PAD 207
Allen, Kelly	4:40 pm	DEV 119E
Anderson, Jennifer	5:00 pm	DEV 117E
Anderson, Stacy	10:20 am	PAD 262
Anderson, Stacy	2:00 pm	30 P
Arnold, Jill	11:00 am	PAD 207
Arnold, Matt	9:00 am	38 A
Attila-Fried, Rebecca	2:00 pm	68 P
Augustine, Nicole	10:00 am	15 A
Austin, Afton	9:00 am	10 A
Baber, Elizabeth	5:20 pm	PAD 261
Bader, Kenneth	5:20 pm	PAD 209
Baertson, JP	10:00 am	76 A
Bailey, Allison	10:20 am	PAD 207
Bailey, Cecy	9:20 am	PAD 262
Bailey, Cecy	2:00 pm	64 P
Bailey, Grant	9:00 am	74 A
Bakker, Mary	2:20 pm	PAD 209
Ballantine, Kathryn	10:00 am	PAD 262
Ballantine, Kathryn	3:00 pm	54 P
Banner, Katie	10:20 am	PAD 209
Barko, Elizabeth	4:00 pm	116 P
Barnes, Richard	9:00 am	28 A
Barnes, Richard	4:00 pm	60 P
Barnhard, Sarah	5:00 pm	PAD 209
Barrs, Jill	4:40 pm	DEV 119E
Bauer, Jennifer	9:20 am	PAD 211
Beach, Brian	9:20 am	PAD 210
Beach, Brian	10:00 am	37 A
Beaudin, Richard	9:00 am	105 A
Beaudin, Richard	10:00 am	40 A
Beaudin, Richard	2:00 pm	42 P
Beaudon, Ben	10:40 am	PAD 262
Becker, Stacy	10:00 am	PAD 262
Becker, Stacy	3:00 pm	71 P
Bell, Chasciti	4:40 pm	PAD 207
Beretta, Bennie	11:00 am	PAD 168
Bernardi, Kaleena	4:40 pm	PAD 261
Berry, Grant	2:00 pm	PAD 168
Besteman, Neil	8:00 am	PAD 211
Bidelman, Chance	9:20 am	PAD 168
Bidelman, Chance	11:00 am	PAD 210

Name	Time	Location
Bielik, Liz	5:00 pm	DEV 119E
Black, Casey	8:20 am	PAD 207
Blain, Rachel	10:00 am	4 A
Blancato, Angelo	8:40 am	PAD 262
Bloomfield, Laura	1:20 pm	PAD 168
Bloomfield, Laura	3:00 pm	36 P
Boller, Jennifer	10:00 am	PAD 211
Bondie, Deanna	11:00 am	PAD 207
Boomstra, Sarah	10:00 am	35 A
Bos, Abram	2:00 pm	18 P
Boughey, Shauna	9:00 am	PAD 209
Bourke, Josh	8:40 am	PAD 168
Brander, Rebecca	5:00 pm	DEV 119E
Brandsen, Joshua	4:00 pm	6 P
Brantley, Kathleen	9:00 am	PAD 209
Brazeau, Alicia	4:00 pm	113 P
Brechtling, Wioletta	9:20 am	PAD 262
Brechtling, Wioletta	3:00 pm	88 P
Briggs, Shannon	1:20 pm	PAD 207
Brinks, Jenny	4:00 pm	114 P
Brinks, Josh	1:40 pm	PAD 261
Brinks, Josh	3:00 pm	PAD 261
Brinks, Josh	3:20 pm	PAD 261
Britton, Brandi	3:40 pm	PAD 168
Broker, Jordan	5:20 pm	DEV 117E
Brown, Barbara	4:00 pm	11 P
Brown, Diana	2:00 pm	72 P
Bryant, Kontarrow	9:20 am	PAD 262
Bryant, Kontarrow	2:00 pm	93 P
Buck, Terre	9:40 am	PAD 262
Buck, Terre	2:00 pm	52 P
Burch, Christina	4:40 pm	PAD 262
Burdick, Chris	5:40 pm	DEV 119E
Burgess, Erin	10:00 am	PAD 207
Burgess, Kristin	9:20 am	PAD 262
Burgess, Kristin	3:00 pm	19 P
Bussis, Steve	4:00 pm	DEV 117E
Byrne, Rory	4:40 pm	DEV 119E
Caliendo, Elizabeth	5:40 pm	DEV 117E
Calkins, David	10:00 am	62 A
Calkins, Michael	1:40 pm	PAD 211
Cameron, Marie	5:00 pm	DEV 119E
Cardenas, Esiquiel	9:00 am	31 A
Cardenas, Esiquiel	10:00 am	43 A
Carlton, Alissa	9:00 am	PAD 168
Carlton, Alissa	10:00 am	79 A
Castanon, Rafael	10:00 am	87 A
Chamberland, Jill	1:20 pm	PAD 168

<u>Name</u>	<u>Time</u>	<u>Location</u>
Chamberland, Jill	3:00 pm	41 P
Chan, Brian	11:00 am	PAD 262
Channells, Adam	4:40 pm	PAD 210
Chesla, Jason	4:40 pm	DEV 136E
Chivis, Jeff	9:00 am	48 A, 49 A
Chycinski, Breanna	4:40 pm	PAD 262
Clauson, Johnny	10:40 am	PAD 262
Clough, Amy	10:00 am	106 A
Comerford, Brandon	4:00 pm	40 P
Cook, Courtney	10:40 am	PAD 209
Cook, Paul	10:20 am	PAD 168
Cooper, Jennie	2:20 pm	PAD 210
Copley, Melissa	1:20 pm	PAD 262
Cott, Kenny	9:00 am	32 A
Crawford, Pete	2:00 pm	15 P
Creswick, Rebecca	2:00 pm	16 P
Culbert, Jason	10:00 am	11 A
Culbert, Jason	4:00 pm	60 P
Curtis, Jaime	10:00 am	PAD 168
Curtiss, Erika	3:00 pm	22 P
Cutler, Ben	9:00 am	102 A
Cybulski, Carrie	9:20 am	PAD 209
Czechowskyj, Rachael	9:00 am	44 A
Czechowskyj, Rachael	10:20 am	PAD 210
Dakan, Darrell	4:00 pm	60 P
Dana, Gilde	9:00 am	29 A
Davis, Amanda	9:00 am	3 A
De LaCruz, Kimberly	1:20 pm	PAD 168
De LaCruz, Kimberly	2:00 pm	25 P
DeBoer, Ken	1:20 pm	PAD 207
DeBoer, Paul	5:20 pm	DEV 119E
Decker, April	8:40 am	PAD 168
Decker, Jason	4:20 pm	DEV 119E
Decker, Rachel	4:00 pm	45 P
Deemter, Shelley	3:00 pm	57 P
DeGroot, Jack	10:00 am	73 A
DeHaan, Meagan	3:00 pm	12 P
DeLoge, Jennifer	8:20 am	PAD 210
DeLoge, Jennifer	10:00 am	92 A
DeLoge, Jennifer	10:00 am	40 A
Deming, Andrea	2:00 pm	106 P
Denes, Jeff	4:40 pm	DEV 136E
Denman, Rebecca	4:20 pm	DEV 119E
Devormer, Kevin	3:00 pm	47 P
Devormer, Kevin	3:00 pm	83 P
DeVries, Scott B.	2:00 pm	67 P
DeWind, Justin	2:20 pm	PAD 262
DeWinter, Chris	11:00 am	PAD 262
Dewys, Mark	4:20 pm	DEV 136E
DeYoung, Nicole	10:20 am	PAD 262
DeYoung, Nicole	3:00 pm	28 P
Dillay, John	2:00 pm	15 P
Dixon, Stacy	3:20 pm	PAD 211
Donker, Tammi	10:20 am	PAD 262
Donker, Tammi	3:00 pm	77 P
Doren, Andrew	2:20 pm	PAD 207

<u>Name</u>	<u>Time</u>	<u>Location</u>
Dosenberry, Ryan	5:20 pm	DEV 117E
Dow, Stacy	1:20 pm	PAD 207
Drew, Jeff	4:40 pm	DEV 136E
Dubord, Fay	1:20 pm	PAD 207
Dundon, Matt	2:20 pm	PAD 168
Durante, Frank	1:40 pm	PAD 209
Dymock, Crystal	3:00 pm	81 P
Eby, Amber	3:00 pm	98 P
Edwards, Erika Denise	4:00 pm	PAD 211
Edwards, Shannon	9:00 am	3 A
Edwards, Shannon	4:00 pm	97 P
Esparza, Kristen	3:40 pm	PAD 207
Evans, Nicole	4:00 pm	50 P
Eversdyk, Rebecca	3:20 pm	PAD 168
Fairchild, Tara	11:00 am	PAD 262
Fedewa, Brandy	10:00 am	51 A
Feenstra, Doug	4:00 pm	27 P
Figuerola, Michelle	9:00 am	1 A
Fisher, Jeremy	10:00 am	96 A
Fisher, Joshua	4:20 pm	PAD 262
Fletcher, Carrie	4:00 pm	26 P
Foster, Terri	4:00 pm	31 P
Fox, Dylan	2:20 pm	PAD 210
Franz, Brad	8:20 am	PAD 207
Frawley, Lindsey	9:00 am	71 A
Fuchs, Justin	10:00 am	62 A
Fuentes, Angelica	4:20 pm	PAD 261
Fuller, Jeffrey	1:20 pm	PAD 209
Gaffney, Chris	4:20 pm	PAD 209
Garcia, Kim	4:00 pm	PAD 168
Geissler, Jeff	2:40 pm	PAD 168
Gerardini, Pete	4:00 pm	60 P
Germain, Carrie	10:00 am	PAD 262
Germain, Carrie	2:00 pm	70 P
Gerst, Katie	8:00 am	PAD 207
Gervais, Eric	5:00 pm	DEV 117E
Gibson, Marnika	5:00 pm	PAD 207
Gillette, Carrie	10:00 am	PAD 262
Gillette, Carrie	3:00 pm	17 P
Glenn, Lisa	4:00 pm	43 P
Glueck, Christin	5:40 pm	DEV 119E
Golin, Rachel	9:00 am	1 A
Gomori, Alicia	6:00 pm	PAD 261
Goodfellow, Wendy	10:00 am	PAD 262
Goodfellow, Wendy	3:00 pm	56 P
Gorski, Elizabeth	4:00 pm	PAD 207
Graham, Kathleen	2:00 pm	PAD 207
Gravatt, Chad	9:00 am	PAD 207
Gravelle, Stephanie	3:40 pm	PAD 207
Greenwood, Megan	4:20 pm	DEV 117E
Griffith, Carl	4:00 pm	86 P
Gripentrogg, Brian	5:00 pm	PAD 207
Grisby, Ebony	3:40 pm	PAD 168
Groendyke, Bret	2:00 pm	68 P
Groenleer, Julie	9:00 am	19 A
Grove, Kendra	9:00 am	102 A

<u>Name</u>	<u>Time</u>	<u>Location</u>
Gurtowsky, Michael	10:00 am	18 A
Haapala, Andrew	9:00 am	PAD 261
Halonon, Dana	8:40 am	PAD 168
Hammond, Shannon	8:40 am	PAD 209
Handley, Katherine	3:00 pm	35 P
Hardy, Justin	1:40 pm	PAD 207
Hargrove, Jacob	1:20 pm	PAD 211
Hargrove, Jacob	2:40 pm	PAD 261
Harris, Chris	5:40 pm	DEV 119E
Harris, Erin	9:00 am	3 A
Hartman, Lisa	10:40 am	PAD 207
Hawkins, Samantha	9:00 am	52 A
Hawkins, Samantha	4:00 pm	60 P
Heckel, Steve	3:20 pm	PAD 168
Heid, Kelly	2:00 pm	PAD 210
Heise, Kristen	5:20 pm	PAD 262
Heller, Ed	9:00 am	PAD 207
Hendrix, David	9:00 am	54 A
Herth, Molli	4:20 pm	PAD 207
Highhouse, Megan	9:20 am	PAD 262
Highhouse, Megan	2:00 pm	61 P
Hillila, Nathan	2:40 pm	PAD 209
Hintz, Wendy	10:20 am	PAD 207
Hite, Laura	3:00 pm	22 P
Hitsman, Stephanie	3:00 pm	62 P
Hodzic, Amer	9:00 am	86 A
Hoekstra, Ryan	3:00 pm	38 P
Hoff, Kelly	9:40 am	PAD 209
Hoffman, Andrea	10:00 am	PAD 262
Hoffman, Andrea	3:00 pm	100 P
Hohmann, Emily	9:00 am	102 A
Hollebeek, Kevin	8:40 am	PAD 211
Hollebeek, Kevin	2:00 pm	PAD 261
Hood, Justin	5:40 pm	DEV 119E
Hooker, Lesley	4:40 pm	DEV 119E
Hormann, Dustin	9:40 am	PAD 261
Hormann, Dustin	10:40 am	PAD 211
Horn, Sandra	4:00 pm	89 P
Hourtienne, McKensay	1:20 pm	PAD 168
Hourtienne, McKensay	3:00 pm	21 P
Hoving, Jared	5:20 pm	DEV 138E
Howell, Erik	2:00 pm	74 P
Hrabonz, Michael	2:00 pm	16 P
Hughes, Kenneth	9:00 am	PAD 211
Huhn, Mindy	10:00 am	PAD 207
Hunt, Aaron	4:20 pm	PAD 168
Hwail, Omar	4:00 pm	5 P
Irelan, Kristi	9:20 am	PAD 262
Irelan, Kristi	3:00 pm	82 P
Isely, Elaine Sterrett	2:00 pm	PAD 211
Ivantchenkova, Maria	1:40 pm	PAD 168
Jahr, Heather	11:00 am	PAD 211
Janka, Lindsay	6:20 pm	DEV 205E
Januchowski, Stephanie	9:00 am	102 A
Jarois, Danielle	9:00 am	102 A
Jarois, Danielle	4:00 pm	PAD 261

<u>Name</u>	<u>Time</u>	<u>Location</u>
Jewett, Crystal	1:40 pm	PAD 207
Johnson, Craig	4:00 pm	115 P
Johnson, Dawn	9:00 am	PAD 262
Johnson, Dawn	3:00 pm	65 P
Jones, Jennifer	5:20 pm	DEV 138E
Jones, Kate	9:00 am	46 A
Jordan, Roberta	9:00 am	PAD 262
Jordan, Roberta	2:00 pm	13 P
Kammeraad, Adam	5:20 pm	DEV 117E
Karczynski, Stephanie	10:00 am	88 A
Karel, Jason	8:00 am	PAD 207
Karl, Justin	4:00 pm	DEV 119E
Kaszyca, Jay	4:00 pm	PAD 168
Kavara, Ajdin	9:00 am	74 A
Kelly, Brendan	5:20 pm	DEV 117E
Kelly, Carly	5:20 pm	PAD 211
Kelly, Trevor	5:00 pm	DEV 119E
Kennedy, Tom	3:00 pm	PAD 210
Kenny, Chris	5:40 pm	DEV 119E
Kerkela, Kristy	3:40 pm	PAD 207
Kessler, Christian	10:20 am	PAD 262
Kessler, Christian	2:00 pm	96 P
Key, Jessica	9:00 am	3 A
Khatra, Gurminder	6:00 pm	DEV 205E
Kidd, Catherine	4:00 pm	78 P
King, Kenneth	4:00 pm	60 P
King, Tracy	5:40 pm	DEV 117E
Kinney, Mike	3:00 pm	10 P
Kipker, Josh	2:40 pm	PAD 207
Kipkosgeik, George	4:40 pm	PAD 207
Kirchner, Jessica	10:40 am	PAD 207
Knapp, Angela	5:00 pm	DEV 117E
Knoper, Korrie	2:00 pm	PAD 207
Kohlenberger, Michael	5:00 pm	PAD 210
Koning, Alex	10:00 am	103 A
Kowalski, David	8:20 am	PAD 211
Koziol, Tom	3:00 pm	10 P
Kreusel, Michelle	9:40 am	PAD 207
Kruer, Lauren	4:40 pm	PAD 207
Krupa, Eric	9:00 am	5 A
Kuipers, Daryn	4:20 pm	DEV 119E
Kulczynski, Diana	10:00 am	30 A
Kupkowski, Stephanie	8:40 am	PAD 209
Laackman, Allison	9:00 am	24 A
LaBelle, Christopher	4:40 pm	DEV 119E
Lamoreaux, Meranda	9:40 am	PAD 262
Lamoreaux, Meranda	3:00 pm	69 P
Lathers, Beth	2:00 pm	PAD 262
Latva, Cherie	11:00 am	PAD 262
Lawrence, Scott	2:40 pm	PAD 168
Leask, Kelli	9:40 am	PAD 262
Leask, Kelli	2:00 pm	102 P
Lee, Katherine	1:20 pm	PAD 262
Lee, Rachel	2:20 pm	PAD 207
Leestma, Aimee	2:00 pm	80 P
Leeuw, Tonya	10:00 am	21 A

<u>Name</u>	<u>Time</u>	<u>Location</u>
Lefere, Jackie	10:20 am	PAD 262
Lefere, Jackie	2:00 pm	108 P
Lehman, Shaun	9:00 am	PAD 168
Lenartz, Allen	4:40 pm	DEV 119E
Lesniak, Melissa	4:40 pm	PAD 262
Lewis, Geri	4:20 pm	PAD 207
Lewis, Rachel	4:00 pm	2 P
Lewis, Sara	3:00 pm	12 P
Lotto, J.R.	3:00 pm	53 P
Loubert, Robin	3:40 pm	PAD 168
Lowe, LeAnna	2:40 pm	PAD 262
Lowe, LeAnna	3:00 pm	PAD 262
Lown, Darcy	2:00 pm	110 P
Loyd, Josh	4:20 pm	PAD 211
Lund, Kristina	4:00 pm	101 P
Lyon, Trevor	11:00 am	PAD 209
Mackey, Lindsey	9:00 am	60 A
Macklin, Erin	9:40 am	PAD 262
Macklin, Erin	2:00 pm	55 P
Mackson, Jennifer	10:00 am	53 A
Make, Heather	4:40 pm	PAD 207
Mamuya, Fahmy	3:40 pm	PAD 210
Manderscheid, Sara	5:40 pm	DEV 138E
Martin, Diana	10:00 am	18 A
Martinez, Joe	1:40 pm	PAD 207
Martwick, Ketti	9:00 am	32 A
Massaway, Melisa	5:40 pm	DEV 138E
Mathew, Benjamin A.	9:40 am	PAD 211
Mays, Daniel	1:20 pm	PAD 261
McCalla, Amy	9:00 am	PAD 262
McCalla, Amy	3:00 pm	24 P
McCarthy, Ryan	9:00 am	16 A
McCarty, Ryan	3:40 pm	PAD 209
McCauley, Kathleen	10:20 am	PAD 207
McGee, Molly	1:20 pm	PAD 168
McGee, Molly	3:00 pm	48 P
McIntosh, Timothy	5:20 pm	DEV 138E
McMullen, Donna	2:00 pm	63 P
Mellema, Sara	4:20 pm	DEV 136E
Mengel, Ryan	10:00 am	108 A
Mengel, Ryan	4:00 pm	60 P
Meyer, Chad	9:00 am	13 A
Meyer, Jeremy	8:40 am	PAD 210
Meyers, Kyle	4:00 pm	1 P
Michael, Chris	3:00 pm	10 P
Michalski, Maureen	2:00 pm	PAD 209
Migazzi, Derek	9:00 am	PAD 207
Mihelich, Jill	4:40 pm	PAD 211
Miller, Nic	2:20 pm	PAD 210
Miracle, Lindsay	4:20 pm	DEV 119E
Mitchell, Amanda	5:40 pm	PAD 261
Mokienko, Christina	10:00 am	PAD 207
Monroe, Andrea	9:40 am	PAD 209
Moon, Jordan	9:00 am	22 A
Moon, Jordan	10:00 am	58 A
Moore, Andrew	5:00 pm	PAD 211

<u>Name</u>	<u>Time</u>	<u>Location</u>
Moore, Terri	8:40 am	PAD 209
Morrison, Hannah	5:40 pm	DEV 138E
Mrozinski, Angela	9:20 am	PAD 261
Mrozinski, Angela	10:20 am	PAD 211
Mukans, Vickie	8:00 am	PAD 261
Mund, Derrick	3:00 pm	PAD 211
Munn, Joshua	5:40 pm	DEV 138E
Nelson, Stephen	4:00 pm	7 P
Netherton, Brooklyn	9:00 am	38 A
Ng, Lin Miu-Linda	9:20 am	PAD 262
Ng, Lin Miu-Linda	2:00 pm	49 P
Nguyen, Hoang	9:00 am	71 A
Noelke, Angela	9:40 am	PAD 209
Norby, Patti	9:00 am	5 A
Norton, Mathew	5:20 pm	DEV 138E
Nowak, Holly	9:00 am	102 A
Nyland, Jennifer	9:00 am	7 A
O'Boyle, Caleb	9:00 am	44 A
O'Boyle, Caleb	10:00 am	45 A
O'Boyle, Caleb	4:00 pm	60 P
Ofield, Jay	8:40 am	PAD 168
Okuly, Jason	10:00 am	PAD 261
Okuly, Jason	2:40 pm	PAD 211
Olson, Kristy	4:00 pm	DEV 136E
Olson, Melinda	9:20 am	PAD 207
O'Neill, Janice	9:00 am	102 A
Otto, Jayson	4:40 pm	PAD 209
Packard, William	4:00 pm	60 P
Padron, Tina Marie	1:20 pm	PAD 168
Padron, Tina Marie	2:00 pm	46 P
Palmer, Matt	4:00 pm	DEV 136E
Parmelee, Heather	10:20 am	PAD 262
Parmelee, Heather	3:00 pm	73 P
Parniske, Mike	2:20 pm	PAD 168
Parshall, John	4:20 pm	DEV 136E
Parthasarathy, Shrikkanth	4:40 pm	DEV 117E
Pawl, Trevor	5:20 pm	DEV 119E
Pemberton, Katie	10:00 am	PAD 262
Pemberton, Katie	3:00 pm	29 P
Penman, Cindy	3:00 pm	107 P
Perosky, Anne	8:20 am	PAD 207
Perry, Brian	9:00 am	32 A
Peterson, Mark	5:00 pm	DEV 117E
Petrovic, Sanja	10:40 am	PAD 262
Pfister, Laurel	3:20 pm	PAD 211
Phenicie, Shannon	10:40 am	PAD 262
Phillips, Kurt	9:40 am	PAD 262
Phillips, Kurt	3:00 pm	92 P
Pierce, Jennifer	4:20 pm	PAD 168
Pike, Lauren	2:00 pm	20 P
Pontious, Lauren	2:00 pm	76 P
Popour, Holli	10:00 am	17 A
Porter, Darcy	5:20 pm	DEV 119E
Porter, Mike	5:20 pm	DEV 117E
Post, Whitney	5:40 pm	DEV 117E
Prater, Austin	4:20 pm	DEV 119E

<u>Name</u>	<u>Time</u>	<u>Location</u>
Prinja, Rohini	3:40 pm	PAD 262
Prusakiewicz, Mark	8:20 am	PAD 261
Przekadzinska, Anna	9:20 am	PAD 262
Przekadzinska, Anna	3:00 pm	32 P
Puite, Christy	3:20 pm	PAD 207
Pukey, Allison	5:00 pm	PAD 168
Putnam, Ryan	8:20 am	PAD 262
Rainer, Monica	4:20 pm	PAD 207
Raterink, Lisa	9:00 am	56 A
Raterink, Lisa	1:20 pm	PAD 210
Reck, Lindsey	10:20 am	PAD 262
Reck, Lindsey	3:00 pm	75 P
Rehfeld, Darren	2:20 pm	PAD 210
Reniski, Melissa	3:40 pm	PAD 261
Resovsky, Andrea	1:40 pm	PAD 207
Richards, Penny	8:00 am	PAD 209
Riemersma, Michelle	9:40 am	PAD 262
Riemersma, Michelle	3:00 pm	103 P
Riley, Kenny	10:00 am	PAD 209
Ritchie, Brent	9:20 am	PAD 168
Roback, Rachel	10:20 am	PAD 209
Rollins, Anthony	1:20 pm	PAD 207
Rondini, Nicole	8:40 am	PAD 207
Roobol, Becky	1:20 pm	PAD 168
Roobol, Becky	3:00 pm	51 P
Roop, Jessica	4:00 pm	40 P
Rosene, Katie	9:00 am	PAD 209
Ross, Jillian	8:20 am	PAD 207
Roth, Patrick	4:40 pm	PAD 168
Rowe, Josh	1:40 pm	PAD 262
Roy, Jessica	4:00 pm	8 P
Rozneck, Mary	9:20 am	PAD 262
Rozneck, Mary	2:00 pm	37 P
Ruel, Richard	9:00 am	94 A
Ruel, Richard	4:00 pm	60 P
Ruess, Sara	2:00 pm	106 P
Rumley, Wade	8:20 am	PAD 207
Rydecki, Aaron	11:00 am	PAD 261
Sadler, Crystal	8:00 am	PAD 207
Samotis, Alysa	4:00 pm	91 P
Samuels, Albert	2:20 pm	PAD 210
Sanders, Harvey	4:00 pm	116 P
Sanford, Lauren	9:00 am	5 A
Sanford, Lauren	10:00 am	90 A
Sawyer, Megan	10:00 am	4 A
Saylor, Mark	2:00 pm	63 P
Schafer, Neil	10:00 am	20 A
Schenk, Jennifer	2:40 pm	PAD 210
Schlichter, Amy	10:20 am	PAD 209
Schmelzer, Laura	5:20 pm	DEV 138E
Schmitt, Denise	8:00 am	PAD 209
Schmude, Paul	9:00 am	PAD 210
Schmude, Paul	10:00 am	23 A
Schneider, Lisa	9:00 am	64 A
Schneider, Richard	8:00 am	PAD 168
Schneider, Richard	10:00 am	43 A

<u>Name</u>	<u>Time</u>	<u>Location</u>
Schultz, Jon	11:00 am	PAD 262
Schwalm, Stacy	2:40 pm	PAD 168
Scott, Littisha	4:00 pm	PAD 209
Senko, Kevin	3:00 pm	104 P
Serna, Eric	8:20 am	PAD 168
Shamus, Stephanie	10:40 am	PAD 207
Sharland, Nick	8:00 am	PAD 207
Shearer, Chris	3:00 pm	98 P
Shelson, Brian	9:00 am	80 A
Shelson, Brian	10:00 am	108 A
Shelson, Brian	4:00 pm	60 P
Shelton, Michael	9:40 am	PAD 168
Shelton, Michael	10:00 am	26 A
Shelton, Michael	3:00 pm	53 P
Shepard, Lindsey	10:40 am	PAD 262
Sheriden, Nick	10:00 am	104 A
Shira, Shaun	5:20 pm	DEV 119E
Siakhasone, Sunalath	2:00 pm	63 P
Sievert, Mary	2:20 pm	PAD 211
Silcox, Jake	3:20 pm	PAD 211
Simmons, Lindsey	5:00 pm	PAD 207
Skantze, Jason	2:00 pm	68 P
Sleeper, Ryan	10:00 am	37 A
Sleeper, Ryan	1:40 pm	PAD 210
Small, Brian	5:40 pm	DEV 117E
Smith, Alan	4:20 pm	DEV 136E
Smith, Dara	10:40 am	PAD 209
Smith, Joan	9:00 am	102 A
Smith, Kati	3:20 pm	PAD 209
Smith, Leigha	4:00 pm	DEV 136E
Smith, Megan	10:00 am	70 A
Smith, Michelle	10:00 am	97 A
Smith, Michelle	4:20 pm	PAD 210
Smith, Robin	4:00 pm	95 P
Smith, Ryan	10:00 am	104 A
Smith, Tracy	2:40 pm	PAD 207
Snide, Jennifer	9:00 am	109 A
Sobanski, Jessica	4:20 pm	PAD 210
Spicer, Nick	9:40 am	PAD 210
Spicer, Nick	10:00 am	20 A
Sprick, Patricia	9:00 am	PAD 262
Sprick, Patricia	3:00 pm	44 P
Springberg, Tamara	4:20 pm	PAD 168
Stasio, Craig	4:20 pm	PAD 262
Steele, Gabrielle	5:40 pm	DEV 117E
Stein, Leslie	4:00 pm	PAD 207
Stephison, Jeremy	5:00 pm	PAD 262
Stepter, Anthony	4:40 pm	DEV 136E
Sterett, Justin	2:00 pm	16 P
Stevens, Rebecca	9:40 am	PAD 262
Stevens, Rebecca	2:00 pm	39 P
Stewart, Kristi	10:00 am	PAD 262
Stewart, Kristi	2:00 pm	33 P
Stickney, Joshua	9:00 am	1 A
Stob, Tiffany	4:00 pm	4 P
Stonex, Marcy	9:00 am	PAD 262

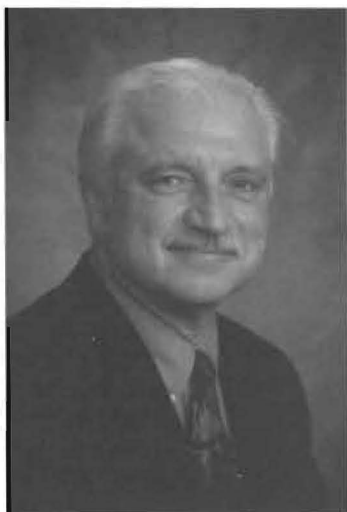
<u>Name</u>	<u>Time</u>	<u>Location</u>
Stonex, Marcy	2:00 pm	87 P
Streit, James	5:20 pm	DEV 119E
Sturgeon, Greg	3:40 pm	PAD 211
Sulek, Mary	8:00 am	PAD 262
Sutton, Tiffany	5:00 pm	DEV 117E
Szura, Aaron	4:00 pm	40 P
Szurley, Sarah	8:00 am	PAD 210
Szurley, Sarah	9:00 am	56 A
Tamim, R.N., Jamie	2:00 pm	94 P
Tansey, Sara	5:20 pm	PAD 210
Taylor, Brainne	10:00 am	PAD 209
Taylor, Sarah	4:40 pm	PAD 261
Taylor, Sarah	5:00 pm	PAD 261
Tetreau, Julie	11:00 am	PAD 207
Thomson, Heath	6:00 pm	PAD 261
Thornton, Tami	8:40 am	PAD 207
Tiano, Todd	3:00 pm	47 P
Tiano, Todd	3:00 pm	83 P
Tinsely, Cassie	4:00 pm	DEV 136E
Tkach, Jessica	9:40 am	PAD 262
Tkach, Jessica	2:00 pm	58 P
Tkach, Trisha	4:00 pm	PAD 262
Tomasiak, Tom	4:00 pm	9 P
Tort, Christopher	9:00 am	83 A
Touchett, Becky	2:00 pm	63 P
Travis, Amanda	2:00 pm	PAD 207
Trebesch, Kevin	4:00 pm	PAD 210
Trombly, Ann	4:00 pm	78 P
Troy, Vanderlaan	9:00 am	100 A
Tuls, Steve	8:40 am	PAD 168
Tuomi, Valerie	10:40 am	PAD 209
Van Elderen, Sarah	1:20 pm	PAD 207
Van Ravenswaay, Gary	10:00 am	84 A
Van Regenmorter, John	10:00 am	PAD 210
Van Tol, Melissa	3:20 pm	PAD 168
VandenBroek, Nick	5:20 pm	PAD 207
Vander Veen, Kurt	2:40 pm	PAD 168
Vander Woude, Emily	10:40 am	PAD 168
VanderHart, Rachel	3:00 pm	22 P
VanderHart, Rachel	5:40 pm	PAD 207
Vanderkolk, Rachel	9:00 am	PAD 262
Vanderkolk, Rachel	2:00 pm	23 P
Vanderlaan, Troy	4:00 pm	60 P
VanderStelt, Tara	3:20 pm	PAD 262
VanderZouwen, Susan	9:00 am	PAD 262
VanderZouwen, Susan	3:00 pm	105 P
VanDriel, Kelly	4:00 pm	PAD 262
VanHouten, Jennica	9:00 am	PAD 262
VanHouten, Jennica	3:00 pm	79 P
VanKeuren, Lindsey	4:20 pm	DEV 136E
VanPortfliet, Matt	3:00 pm	22 P
Vanportfliet, Ryan	9:00 am	31 A
VanVoorst, Dan	4:40 pm	DEV 136E
Vasquez, Sarah	9:00 am	5 A
Vaughan, April	1:20 pm	PAD 168

<u>Name</u>	<u>Time</u>	<u>Location</u>
Vaughan, April	3:00 pm	109 P
Veenstra, Kelly	3:20 pm	PAD 211
Voice, James	5:40 pm	DEV 138E
Vos, Jon	10:00 am	20 A
Vos, Jon	2:00 pm	15 P
Vosburg, Keri	2:20 pm	PAD 210
Vu, Han	3:00 pm	PAD 168
Wagner, Jaeden	4:00 pm	91 P
Walen, Joel	2:20 pm	PAD 261
Walker, Jay	3:20 pm	PAD 211
Walsh, Thea	2:00 pm	16 P
Walters, Akosua	9:00 am	41 A
Ward, Wayne	2:40 pm	PAD 207
Wartella, Kyle	5:00 pm	PAD 207
Washington, Theland	9:20 am	PAD 262
Washington, Theland	3:00 pm	66 P
Way, Beth	3:40 pm	PAD 168
Weiss, Kevin	10:00 am	82 A
Weiss, Matthew	9:40 am	PAD 168
Weiss, Matthew	10:40 am	PAD 210
Welliver, Beth	10:00 am	PAD 262
Welliver, Beth	3:00 pm	85 P
Wells, Jennifer	8:20 am	PAD 209
Werner, Christine	10:40 am	PAD 262
Westdrop, Robert	4:00 pm	DEV 136E
Whalen, Marsha	3:00 pm	PAD 207
Wheeler, Kristy	10:20 am	PAD 262
Wheeler, Kristy	2:00 pm	90 P
Whelan, Bridget	9:00 am	PAD 262
Whelan, Bridget	2:00 pm	34 P
White, Greg	10:20 am	PAD 261
Whitmore, Anna	10:40 am	PAD 261
Whitsitt, Ryan	10:00 am	96 A
Wieczorek, Julie	4:00 pm	PAD 168
Wiekierak, Bonnie	9:00 am	77 A
Wieten, Meghan	2:20 pm	PAD 207
Williams, Kim	9:20 am	PAD 209
Williams, Kristian	8:40 am	PAD 261
Williams, Kristian	3:00 pm	53 P
Willis, Catherine	3:00 pm	47 P
Willis, Catherine	3:00 pm	83 P
Wilson, Evan	9:00 am	102 A
Wilson, Kathleen	4:00 pm	PAD 207
Wilson, Lynette	10:00 am	68 A
Wiltjer, Rebecca	9:00 am	PAD 262
Wiltjer, Rebecca	3:00 pm	59 P
Wisniewski, Kelly	1:40 pm	PAD 207
Wohlert, Kelli	8:00 am	PAD 207
Wolf, Shane	3:20 pm	PAD 210
Woodbury, Julie	10:00 am	110 A
Yates, Katie	4:00 pm	PAD 262
Zagel, Kathryn	3:00 pm	PAD 168
Zalewski, Matthew	10:00 am	62 A
Zimmer, Megan	9:20 am	PAD 209
Zurek, Steve	10:00 am	58 A
Zyla, Nicole	10:00 am	104 A

KEYNOTE SPEAKER:

James Gentile

Keynote Address:
CARCINOGENS IN THE ENVIRONMENT:
SEPARATING FACT FROM FICTION



James Gentile is Dean for the Natural Sciences and Chair of the Biology Department at Hope College in Holland Michigan. His research focuses on the connection between inflammation and cancer. His bachelor's degree is from St. Mary's University in Minnesota and Ph.D. from Illinois State University and he spent two years in postdoctoral studies in the Department of Human Genetics at the Yale School of Medicine. Among his many awards he has received the Cancer Research Medallion from the National Cancer Institute of Japan, the Medallion of Scientific Achievement from Provincia Di Pisa, Italy, the Alexander Hollaender Research Excellence Award from the North American Environmental Mutagen Society and is a AAAS Fellow. He is a member of the State of Michigan Hazardous Waste Site Review Board and has served as a

member of the Science Advisory Board for the U.S. EPA as well as on advisory boards for the National Institute of Occupational Health Safety and the National Institute of Environmental Health Sciences. He has also served on the Committee on Undergraduate Science Education for the National Research Council (NRC) and is currently a member of the NRC Life Science Board, where he had a leadership role in the preparation of the recent publication *Biology 2010: Transforming Undergraduate Education for Future Research Biologists*. He is a past-President of the Environmental Mutagen Society and current President of the International Association of Environmental Mutagen Societies and is the past Editor-in-Chief for the international journal *Mutation Research*, having served in that position for over 12 years. Currently he is member of the Board of Governors for the National Conferences on Undergraduate Research, serves on the Executive Committee for Project Kaleidoscope and is on the Advisory Board for the State of Maine Biomedical Research Initiative. With Bill Wood from the University of Colorado he is the Co-Chairperson of the National Academies Summer Institutes for Education in Biology. He is a consultant to several private foundations and corporations and has been program director for over \$5 million in grants to support education and research at Hope College. He has had the opportunity to work with over 120 undergraduate students in collaborative research in his laboratory and has authored more than 100 research articles, book chapters, book reviews, and special reports in areas of scientific research and higher education.

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Xiaojuan Xu
Ellen Yeziarski
Yan Yu
Laurie Zawila

Abstracts for the Morning Oral Presentations

Beginning at 8:00

Padnos 168

Testing the Psychological Skills Hypothesis: The Effects of Mental Imagery on the Psychological States of Collegiate Rowers

Richard Schneider

There is considerable evidence that mental imagery (visualization, mental practice, etc.) is positively correlated with athletic performance. The Psychological Skills Hypothesis attempts to explain this relationship by stating that mental imagery impacts performance by enhancing general psychological skills (e.g., concentration, self-efficacy, and anxiety control). This study was conducted to determine the effects mental imagery has on athletes' self-reported anxiety, self-efficacy, and concentration levels. The Grand Valley State University rowing team (n=70) served as participants in the study. After collecting baseline anxiety, self-efficacy, and concentration data, the rowers underwent eight guided imagery sessions in which they visualized themselves successfully performing a rowing-related task. Baseline psychological skills were compared to those obtained after the intervention and prior to an actual performance of the rowing task.

Sponsor: Rick Albrecht

Padnos 207

In Search of Consumer Interest: How Important is the Label?

Katie Gerst, Jason Karel, Crystal Sadler, Nick Sharland, Kelli Wohler

The main goal for New Life Dairy, a new dairy business located in Lowell, was to investigate the consumers' perceptions of yogurt in the Grand Rapids area. We explored the buying behavior and consumption of consumers including purchase motivations, the importance of various factors such as price, label, brand, health benefits, frequency, and time of day eaten. The data calculated was tabulated and analyzed using SPSS software.

Sponsor: Nancy Levenburg

Padnos 209

An Anorexic Women's Perception of Her Relationship with Her Father and the Affect of that Perception on the Emotional Experience of her Select Occupations

Penny Richards, Denise Schmitt

Our research is aimed at exploring further the perceptions an anorexic women holds in regards to her father and how those perceptions affect her emotional experience during her select occupations. In the past, research has primarily focused on the women's relationship with her mother, neglecting the father. Therefore, we felt it important to explore the father-daughter relationship. Our research is a case study in design utilizing an interview format to obtain a detailed description of the father-daughter relationship in a female anorexic's family context. From our research we aim to provide further insight into other researchable areas concerning this topic and to possibly spark a development into alternative treatment options for other researchers.

Sponsors: Shari Bartz, Cynthia Grapczynski, Nancy Powell

Padnos 210

Shape, Size, Sorting, and Percentage of Quartz Grains in Dolomite in the Mississippian Michigan Formation, Western Michigan

Sarah Szurley

Through analyses of grain shape, size, and sorting a particular grain's history can be surmised. Quartz grains present in sandy dolomite in the Mississippian Michigan Formation in western Michigan provide a candidate for this type of grain analysis. With the use of a petrographic microscope, the general roundness, size, and sorting of quartz grains present in thin sections of the dolomite will be determined. With this data, inferring how far the grains traveled from their original source is possible. The percentage of quartz within each thin section will also be determined in order to establish the degree of input of terrestrial quartz into the probable shallow marine environment.

Sponsor: Patricia Videtich

Beginning at 6:00

Padnos 261

Are We Teaching our Kids to Be "Big Pigs Too"? A Study of Linguistic Prejudice in Children's Animated Film

Alicia Gomori, Heath Thomson

This study investigates how animated children's films reinforce social stereotypes. Specifically, our research relies on critical discourse analysis to examine how the top five grossing children's animated films of 2003 in the US use language to reinforce stereotypes related to ethnicity, culture, and region. Another aspect of our study concentrates on what kinds of stereotypes these representations reproduce. In our analysis we consider representations of regional dialects, accents, and mainstream U.S. English. We also take into account context and its relationship to language use. Our aim is to explore what attitudes, values, and beliefs these stereotypes promote. It is important to understand what popular children's films portray about dialects, ethnicities, and cultures because of their potential in shaping, as well as reinforcing, linguistic and social prejudices in children.

Sponsor: Kathryn Remlinger