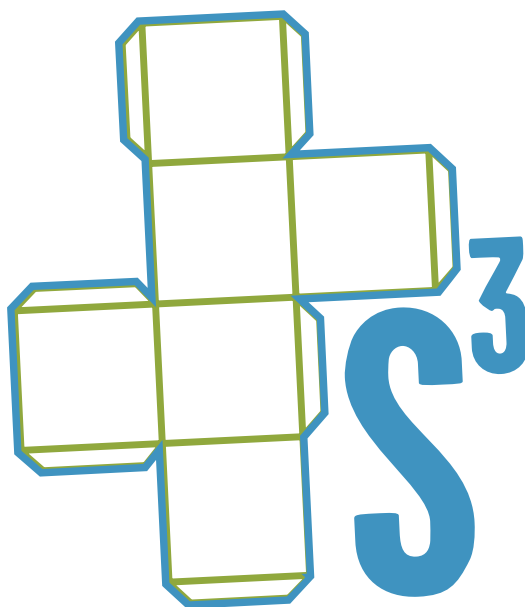


Student Summer Scholars Showcase

August 3, 2006 / 5:00 to 7:00 p.m. / Henry Hall Atrium



Poster Presentations

Henry Hall Atrium

5:00 p.m. to 6:00 p.m.

Kevin Betts

Attributions About Ostracism During the Completion of a Cognitive Task

Faculty Mentor: Christine M. Smith

Megan Cookingham

Evaluating Tagging Methods and Movement Patterns of Round Gobies

Faculty Mentor: Carl Ruetz

Benjamin Eovaldi

Title?

Faculty Mentor: Francis Sylvester

Rachel Hamilton

An Investigation of the Elements Required for a Successful Cervical Cancer Awareness

Campaign Designed to Meet the Needs of Women in Rural Nicaragua

Faculty Mentor: Julia Mason

Amanda Massau

Golf Course Management & Amphibians: Impacts of wetland habitat management on the occurrence of green and leopard frog populations

Faculty Mentor: Stephen Burton

Dustin Mier

Investigation of Ailanthus altissima Extracts on Microbial Species

Faculty Mentor: Roderick Morgan

Jesse Ondersma

Progress Towards the Synthesis of Apomorphine

Faculty Mentor: Matthew E. Hart

Jonathan Rawson

Probing important protein interactions in the mammalian diaphanous-related formins:

How single amino acid residue can affect the entire skeletal network of the cell

Faculty Mentor: Brad Wallar

Brian Smith

Generation of Mutant Class D Lactamases Conferring Resistance to Third-Generation Cephalosporins

Abstract Not Submitted

Faculty Mentor: Dave Leonard

Poster Presentations

Henry Hall Atrium

5:00 p.m. to 6:00 p.m.

Sara Smolinski

Determination of Hdc Transcription Initiation in the Drosophila Genome Using 5'-RACE.

Faculty Mentor: Martin Burg

Matthew Stamps

Circle Packings

Faculty Mentor: David Austin

Tina Struyk

The Impact of English as a Second Language and Bilingual Education on Spanish Language Proficiency of Elementary Students

Faculty Mentor: Zulema Moret

Jesse Veenstra

Identification of development-specific mRNA splice variants from the *rosA* gene of *Drosophila melanogaster*

Faculty Mentor: Martin Burg

Jamie Wasilchenko

The Divine Mother, Community Outreach, and Interfaith in West Michigan

Faculty Mentor: Russell Rhoads

Andrew Wilson

Access to Prenatal Care in Kent County: Understanding the Issues that influence Provider Participation in the Medicaid Program

Faculty Mentor: Stephen Borders

Patrick Womble

Urbanization induced changes to a ravine system and evaluation of land use and infrastructure sustainability at Grand Valley State University, Allendale, Michigan.

Faculty Mentor: Peter Wampler

Oral Presentations

Loutit Lecture Hall 101

6:00 p.m. to 7:00 p.m.

Lauren Bader

Protection of Adult Pig Retinal Ganglion Cells from Glutamate-Induced Excitotoxicity
Faculty Mentor: David Linn

Brad Fowler

Title?
Faculty Mentor: ?

Karen Grant

Creativity Testing: Alive and Well in the 21st Century?
Faculty Mentor: Susan Odgers

Nicole Henrikson

Using Imitative Play and Free Play to Facilitate the Development of Social and Play Skills in Young Children with Autism
Faculty Mentor: Amy Matthews

Loretta Lanning

Beethoven's Continental Folksong Settings: Research and Musical Preparation
Faculty Mentor: Lisa Feurzeig

Kait LaPorte

Preparing a Performing Version of L'Amor Marinaro, an Opera by Joseph Weigl
Faculty Mentor: Lisa Feurzeig

Kimberly Marshick

Processing Information from Narrative and Expository Text
Faculty Mentor: Michael Wolf

Adam Miller

Designing Engineering Analysis Software
Faculty Mentor: John Oliva

Rachel Salata

Public Discourse in a Democracy
Faculty Mentor: Judy Whipps

Susan Soli

Walking the Ravines: An Educational Journey through Writing and Photography
Faculty Mentor: Stan Krohmer

Oral Presentations

Loutit Lecture Hall 101

6:00 p.m. to 7:00 p.m.

Ilea Swinehart

Identification of a Gene Involved in Hormone-Induced Moss Development

Faculty Mentor: ?

Anita Van Til

Willard Wichers and Dutch Immigration Under the Refugee Relief Act

Faculty Mentor: David Snyder

Crystal VanOss-Daining

Woman and the Reformation: A Comparative Study of Marriage Laws and the Gender Roles in Catholic and Protestant Europe

Faculty Mentor: Grace Coolidge

Poster Presentations

Kevin Betts

Attributions About Ostracism During the Completion of a Cognitive Task

Previous research examining the effects of ostracism shows that several fundamental human needs are negatively affected. Among others, the sense of belonging, control, self-esteem, and meaningful existence are swayed most easily. In a cognitive analogue to previous studies, subjects were asked to work in groups of three (two confederates and one real subject) on two crossword puzzles. Depending upon the condition, confederates actively ostracized the real subject in either both trials, only the first trial, or neither trial. This design allowed us to investigate several previously unanswered questions experimentally, including 1) are these effects manipulated by the length of time ostracized, and following from this, 2) is it possible to undo the effects of ostracism? Our results, obtained via standard survey and video analysis procedures, show that subjects ostracized only during the first trial were as negatively affected as those ostracized throughout both trials. This suggests that in the short-term, it is not possible to undo the deleterious effects of ostracism.

Faculty Mentor: Christine M. Smith

Megan Cookingham

Evaluating Tagging Methods and Movement Patterns of Round Gobies

The round goby (*Neogobius melanostomus*) is an invasive fish species introduced in the St. Clair River in 1990 and is now found throughout the Great Lakes basin. Information on round goby movement and behavior is needed to understand their potential impact on the Great Lakes. Research on potential tagging methods and movement of round gobies is scant. We explored the use of marking round gobies with passive integrated transponder (PIT) tags in order to determine the effects of tagging on growth and mortality. In general, we found that the presence of a tag in the fish had no strong effect on growth or mortality. We also conducted a study on the movement patterns of round gobies in Muskegon Lake. Using PIT tagged fish we followed 48 round gobies enclosed in a 20x20-m block net for 22 days. Our goal was to determine the movement patterns of the gobies within the block net and examine the effects of various factors on these patterns. However, during the course the study, we found that the equipment used was not optimal for use with round gobies. Due to a high escape rate and low detection rate of fish, no conclusions could be surmised on round goby movement. Overall, we determined that although PIT tags do not strongly affect the growth or mortality of round gobies, the equipment available currently seems to be inadequate for tracking round gobies in shallow-water, lake habitats.

Faculty Mentor: Carl Ruetz

Benjamin Eovaldi

The purpose of this investigation was to determine if prolonged incubation of pulmonary and coronary arteries with 0.1 micromolar dihydrotestosterone (DHT) affects the vascular response of the arteries to challenges with known constrictors and dilators, i.e. potassium chloride (KCl) and the nitric oxide donor NOC - 9. Porcine pulmonary and coronary arterial segments were obtained from DeVries Meats, Inc. and, then surgically dissected, mounted in isolated tissue baths, and incubated for two hours in DHT. The effect of the prolonged incubation was tested by measuring the change in arterial force when the vessels were constricted with KCl and relaxed with NOC - 9. The experimental group was compared with control arteries, which were not incubated with DHT. Preliminary results do not show consistent differences in the arterial responses, regardless of DHT incubation. The coronary arteries are more reactive than the pulmonary arteries to KCl and NOC-9. Further investigation of the vascular effects of prolonged arterial incubation with DHT will be required to come to a definitive conclusion regarding its effect on vascular function. It is hypothesized that guanosine 3', 5'-cyclic monophosphate (cGMP) is the second messenger responsible for acute, androgen-induced relaxations. To determine the concentration of cGMP in

pulmonary and coronary arteries upon treatment with natural steroids, e.g. testosterone, DHT, androstenedione, and dehydroepiandrosterone, arterial segments were isolated and equilibrated in physiological salt solution for 30 minutes and then treated with the aforementioned steroids at varying concentrations. Following steroid treatment, samples were frozen in N2 (l) and ground to powder to be analyzed with a cGMP assay from Assay Designs, Inc. These studies are ongoing. This study was supported by a Student Summer Scholars grant at Grand Valley State University.

Faculty Mentor: Francis Sylvester

Rachel Hamilton

An Investigation of the Elements Required for a Successful Cervical Cancer Awareness Campaign Designed to Meet the Needs of Women in Rural Nicaragua

Cervical cancer is a devastating disease, but with the right resources it is both treatable and preventable. In communities with low socioeconomic status and limited resources, cervical cancer awareness and treatment often falls as a lower priority to other health care needs, and in some places is virtually nonexistent. Every day, 600 women die from cervical cancer (PAHO, 2005). This is a particular crisis within Latin America where access to screening and treatment are often severely limited, and due to social contexts such as machismo, women often hold little power to negotiate the use of condoms or advocate for themselves in the health arena.

In May 2005 the UCA (Union of Agribusiness Cooperatives) Miraflor expressed a need to address the problem of cervical cancer within their community. UCA Miraflor has a population of 4,105, and is located in the northeast portion of the municipality of Estelí within the mountains of Northern Nicaragua (UCA Miraflor, 2005). As a population greatly affected by poverty, health care resources are scant and cervical cancer prevention and treatment is practically non-existent.

This study evaluated programs that increase cervical cancer awareness and promote treatment, particularly among rural Spanish speaking populations. A questionnaire was designed and pilot tested with the community leaders of UCA Miraflor. Over 60 health professionals working within Nicaragua were contacted with a request to participate in this survey. To date, four of these health professionals have responded with interest and have moved onto the next phase of the study. This research is ongoing and is a part of a continuing effort to build such programs in Miraflor.

This research has identified several key factors in implementing a successful cervical cancer awareness and treatment program in Miraflor. The education of both men and women regarding cervical cancer and screening practices is a primary dynamic in achieving this goal. Collaboration between healthcare providers, community leaders, and stakeholders is key in harnessing all resources necessary to implement a comprehensive cervical cancer program. Due to the socioeconomic status of the community, it is necessary to have the programs at very low to no cost for the women and their families. A major challenge will be finding the funding to make all of this a reality.

Faculty Mentor: Julia Mason

Amanda Massau

For many years amphibian populations have been declining and much of this is the result of human destruction of the natural habitat of amphibians. To help stem the loss of amphibians we must look for alternative ways to provide habitat, and one way may be the wetlands on golf courses. We conducted surveys of 16 golf courses within the Grand Rapids watershed to determine what kind of habitat features they provided and what species were already present, focusing on leopard (Rana pipiens) and Green frogs (Rana clamitans). We used both night time calling surveys and daytime surveys to identify species present and measure many habitat features including grass height, water quality, depth, North shore characteristics and others. A preliminary review of the results suggests vegetation height surrounding the ponds does not seem to be significant factor. However other features,

like North shore shallows and emergent vegetation may be linked to leopard frog presence. In this poster, we will present our results for both leopard and green frogs. With the information determined in this study, golf courses may be able to better design and manage their wetlands to encourage leopard and green frog populations.

Faculty Mentor: Stephen Burton

Dustin Mier

Investigation of *Ailanthus altissima* Extracts on Microbial Species

Increasing resistance to antimicrobial drugs by infectious organisms has created a growing need for the discovery of possible sources of new antimicrobial agents. *Ailanthus altissima*, commonly known as the Tree of Heaven (ToH,) is an invasive species native to Eastern Asia. Previous studies have shown that ToH root extract stimulates growth of *Azotobacter vinelandii*, a common soil bacterium. The study also indicated that a ToH leaf extract produced an antibacterial effect on *Azotobacter vinelandii*. To further study the production of antimicrobial compounds by ToH, we investigated the effect of ToH root and leaf extracts on *Azotobacter vinelandii*, as well as ten bacteria and four fungi of clinical importance. Both water and ethanol extracts were prepared by cutting the corresponding part of the tree and placing root/leaf pieces in the proper solvent. The extracts prepared did not appear to have an inhibitory effect on any of the bacteria or fungi tested. Stimulatory effects of the extracts are currently being investigated on all of these organisms as well as organisms isolated from soil.

Faculty Mentor: Roderick Morgan

Jesse Ondersma

Progress Towards the Synthesis of Apomorphine

Recently a thyroid hormone metabolite, T1AM, was found which activates a rat trace amine-associated receptor (rTAAR1) and induced rapid physiological responses in mice, such as: reduced cardiac output, reduced metabolism, and hypothermia. R() apomorphine has been shown to elicit the same rapid activation of rTAAR1. S(+) apomorphine, however, shows very little if any activation of rTAAR1. Our objective is to develop an enantioselective synthesis of apomorphine which can be modified to synthesize analogs to explore the molecular basis of apomorphine induced rTAAR1 activation. To this end, we have been synthesizing the two key fragments in a novel synthetic route to apomorphine. For the synthesis of the first fragment we have explored the protection and iodination of a catechol. For the synthesis of the second fragment we have explored the formation of a lactam by a series of reactions. Upon completion of our synthetic apomorphine it will be compared with the commercially available product. Both enantiomers will be measured for rTAAR1 activation to determine the EC₅₀ of each and to determine if the (S) enantiomer is an antagonist of rTAAR1.

Faculty Mentor: Matthew E. Hart

Jonathan Rawson

The cytoskeleton plays a crucial role in the maintenance of cell shape, cell movement, and cellular division. Our laboratory focuses on a conserved family of proteins, the Diaphanous-related formins (Drfs), that act as "molecular switches" in signaling to the cytoskeleton. Because Drfs are crucial to many cellular processes, it is vital that these proteins are tightly regulated. Normally, Drfs exist in an inactive "closed" state maintained by an intramolecular inhibitory interaction between the Diaphanous-inhibitory domain (DID) and the Diaphanous-autoregulatory domain (DAD). In response to external stimuli, Drfs are activated by Rho GTPases, which bind to the GTPase Binding Domain (GBD) and "open" the protein. However, recent research suggests that an additional activating signal is necessary. Phosphorylation, a common cellular signaling mechanism in many organisms, may very well be this additional signal. While phosphorylation could help facilitate the activation of Drf proteins, it may also serve to

the way we communicate and maintain relationships with our family and friends. Many third generation Latin Americans struggle to communicate with their grandparents and parents. There are many language programs with different instructional approaches such as English as a Second Language (ESL) and Bilingual education. It is important to access the goals of these language programs and their possible implications on the Latino community. It is my belief that if Spanish speaking elementary students experience instructional approaches with little or no Spanish language input then they will perform poorer on Spanish language activities than students who experienced instructional approaches that include first language usage. Throughout the summer and fall of 2006 Spanish speaking students and their teachers will be surveyed in local elementary schools. Both students and teachers will fill out a questionnaire. Students will also complete a writing activity designed to determine fluency. The purpose of this project is to address the effects such programs have on the Spanish language and any possible consequences this might have on individuals, families, and communities. I would also like to suggest some possible solutions that would allow for a healthier diverse nation.

Faculty Mentor: Zulema Moret

Jesse Veenstra

Identification of development-specific mRNA splice variants from the *rosA* gene of *Drosophila melanogaster*

The *rosA* (receptor oscillation A) gene has been shown to encode a membrane protein that serves various physiological functions in the fruit fly *Drosophila melanogaster*. While *rosA* has been shown to be expressed in many different types of cells in adults and in various developmental stages, it is not known whether the same protein product functions in all cells through the lifespan of the fly. Earlier work has suggested that this gene generates multiple mRNAs that differ in size, some of which are at different developmental stages. Therefore, it is important to determine whether the different mRNAs generated by *rosA* encodes the same or different functioning proteins. To identify the different mRNA products generated at each lifestage, RT-PCR was performed using *rosA*-specific primers to synthesize cDNA. mRNA was isolated from specific developmental stages of *Drosophila*. Initially, mRNA from adult heads was analyzed. DNA primers were designed to detect specific mRNA species as well as unknown mRNA types transcribed from the *rosA* gene using a single-step RT-PCR technique. Thus far, several different pairs of primers have produced a single RT-PCR product, while other primer combinations appear to produce a wider range of RT-PCR generated products, suggesting that there may be additional mRNA types identified in these experiments. These RT-PCR products are being subcloned and analyzed using restriction enzyme digestion as well as DNA sequencing to allow identification of the product's predicted protein sequence. Once completed, it is expected that new and novel forms of the *rosA* protein will be identified in various developmental stages.

Faculty Mentor: Martin Burg

Jamie Wasilchenko

The Divine Mother, Community Outreach, and Interfaith in West Michigan

The divine mother is an integral part of faith systems in India, often manifested in goddess forms. In popular practices, the goddesses are believed to use their primal power to nurture, protect, and exercise justice and retribution against evil and dehumanizing forces. These mother-focused aspects have sometimes been transplanted and adapted to a new social context in the U.S. The interfaith movement can be seen as one avenue for reaching non-Indian communities and providing a dynamic vehicle for mother-oriented spirituality and outreach. Mother's Trust/Mother's Place in Ganges, Michigan, attributes the divine mother as one inspiration for its interfaith program, the Lakeshore Interfaith Institute, as well as for its outreach programs dedicated to helping families in crisis and health care communities. By interviewing those most closely involved in MT/MP services and facilitating discussions between those who attend courses at the LII, our research will address which aspects of the divine mother orientation provide the impetus for outreach activities. It will also examine what interfaith is, what it means to those involved at MT/MP/LII, and how it is applied in a day-to-day setting.

Faculty Mentor: Russell Rhoads

Andrew Wilson

Access to Prenatal Care in Kent County: Understanding the Issues that influence Provider Participation in the Medicaid Program

An analysis of the Kessner Index, a measurement of the adequacy of prenatal care, reveals a large disparity between Medicaid enrollees and those with private health insurance in Kent County. Between 1998 and 2003, 55% of Medicaid funded births in Kent County received adequate care, compared with 70% of privately insured births. A contributing factor to this occurrence is a limited physician capacity willing to provide care. Because the choice of accepting Medicaid as a form of payment is left largely at the physician's discretion, access to prenatal care for those enrolled in Medicaid can be greatly impeded. This study surveyed OB/GYNs in Kent County asking them about issues that have a potential impact on their decision to accept Medicaid patients. The results indicate common frustrations in dealing with the Medicaid program overall, as well as important differences across age and gender. These findings provide potential avenues for policy change that will address the existing disparity. Faculty Mentor: Stephen Borders

Patrick Womble

Urbanization induced changes to a ravine system and evaluation of land use and infrastructure sustainability at Grand Valley State University, Allendale, Michigan.

Land use practices at Grand Valley State University have dramatically altered runoff, erosion, and slope stability in the ravine system adjacent to campus. Urbanization from campus facilities has resulted in more than 68 hectares of impermeable concrete, asphalt, and buildings. Impermeable acreage, primarily in the form of new parking lots and buildings, increased more than 141% between 1973 and 1998 and 20% between 1998 and 2004. The increase of impermeable surface area has resulted in decreased lag time, concentrated runoff, incision, and accelerated erosion.

Comparison of 2005 LIDAR topographic data with topographic mapping created in 1963, prior to the construction of the university, reveal consistent degradation in the heads and upper portions of some ravines of as much as 4 meters; and aggradation in the lower parts of the ravines of as much as 2 meters. Degradation has created undercut slopes and slope instability, while aggradation has reduced channel slopes and buried riparian vegetation.

Four continuous-recording stream gages, installed in the ravines, provide hydrograph data for the summer of 2006. Runoff data, combined with continuous precipitation data, provide lag time estimates for storm runoff. Recent erosion and overbank flooding was observed and documented after a storm event July 11th.

Early attempts to control erosion, through the installation of engineered erosion control structures, have been largely unsuccessful and in some cases have contributed to more lateral erosion and slope instability. Check dams intended to reduce erosion have transferred the erosion to the valley walls resulting in increased slope instability in some areas. Dispersal, rather than concentration, of runoff is likely to provide the best long term solution. Faculty Mentor: Peter Wampler

Oral Presentations

Lauren Bader

Protection of Adult Pig Retinal Ganglion Cells from Glutamate-Induced Excitotoxicity

Glaucoma is a neurodegenerative disease characterized by the death of optic nerve fibers and consequent blindness (Glaucoma Research Foundation, 2005). One theory suggests that increased intraocular pressure evokes the release of excess glutamate. The overabundance of this excitatory neurotransmitter causes an excitotoxic effect, which kills the retinal ganglion cells (RGCs). Data indicates that acetylcholine (ACh) released from amacrine cells in the retina can prevent excitotoxicity by acting as an agonist for nicotinic ACh receptors (nAChRs) on RGCs (Wehrwein et al, 2004). PNU 282987 is a synthetic drug that is a nicotinic agonist selective for the $\alpha 7$ nAChR (Tocris, 2006). To determine if PNU has neuroprotective effects against glutamate-induced excitotoxicity, RGCs were isolated from adult porcine eyes using a two-step panning technique, which utilized an antibody selective for RGCs. The isolated cells were plated on culture dishes at consistent densities. Some dishes received no treatment (control), other dishes received glutamate (excitotoxicity), and the remaining dishes received glutamate and agonist (PNU or nicotine) at various concentrations (neuroprotection). Cell survival was assayed after constant exposure to treatment for three days. Live cells were labeled with a fluorescent dye and microscopic images were captured and analyzed. Results showed that PNU displayed significant neuroprotective effects at concentrations of 10nM and 100nM. Similar results were obtained with nicotine, with maximal effects seen at 500nM. When α -bungarotoxin, a nicotinic antagonist specific for $\alpha 7$ nAChRs, was pre-applied with PNU, the efficacy of PNU was reduced supporting the concept that the neuroprotective effect of PNU is mediated through $\alpha 7$ nAChRs.

Faculty Mentor: David Linn

Brad Fowler

My research is an analysis of the theories of Richard Florida and how they have influenced urban policy making in recent years. Florida's basic thesis is that physical capital is now less valuable than human capital-- creativity and knowledge-- and that this has led to the rise to prominence of a class who possesses this, the "creative class". Florida contends that the creative class prefers diverse and tolerant inner city environments with active arts and amenities industries. Because the creative class is highly mobile a competition has arisen between cities in an attempt to attract them to tap into their creative capital for economic gains, reversing the suburban trend of the last half century. Optimistic policy makers have jumped on Florida's bandwagon, including Gov. Jennifer Granholm who has implemented the Michigan "Cool Cities Initiative" in response to Florida's ideas. This optimism may be unfounded, as many critiques have arisen in urban sociology and other fields. Critiques include Florida's shaky scholarship, problems in the conception of this "class", ignorance of other historical trends which have led to the current shape of cities, issues in trying to artificially trying to replicate the success of ideal creative centers, and the ills of justification. In the end, for all the optimism, Florida's ideas prove to be at the very least over stated.

Faculty Mentor:

Karen Grant

Creativity Testing: Alive and Well in the 21st Century?

Abstract: In the 1960s, tests of creativity were promoted as an alternative or supplement to standardized intelligence tests in American school systems, embracing new research on divergent thinking skills, as well as assessing novel, original thinking and the capacity to find unusual or unexpected solutions to problems. This research on the evolution of creativity testing looks at a sample of some of the current, most popular measures used to evaluate creative potentialities, the philosophies of the original creators of the creativity tests, and the context in which these measures are administered today. A critical analysis of the Torrance Tests of Creative Thinking, the Creativity Assessment Packet and the Creative Behavior Inventory is presented. Further, the paper explores the relevance of

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using such tests in today's educational climate and what the implications may be for the future of creativity testing.

Faculty Mentor: Susan Odgers

Nicole Henriksen

Using Imitative Play and Free Play to Facilitate the Development of Social and Play Skills in Young Children with Autism

Autism is a neurodevelopmental disability characterized by impairments in socialization and communication and repetitive, stereotyped behaviors (American Psychiatric Association, 2000). For young children with autism, it is important to target deficits in play and imitation skills. An approach involving adult imitation of the child's play has been shown to increase positive social and play behaviors of young children with autism (Dawson & Adams, 1984; Dawson & Galpert, 1990). However, no studies have compared the effects of adult versus peer play partners. This study had two major purposes: 1) to explore which play partner, adult or peer, would promote the most gains in social and play behaviors and 2) to evaluate the effects of imitative play and free play. The participants were eight preschool children with autism, two typically developing peer play partners, and three adult play partners. Each child with autism completed two five-minute baseline sessions and six nine-minute play sessions. All sessions were videotaped and involved either an adult or peer play partner with an alternating design of one of two sequences: 1) free play - imitative play - free play or 2) imitative play - free play - imitative play. Coding and data analysis are in progress. Preliminary review indicates that the children with autism varied widely in their responses. Generally, imitative play was better for facilitating social engagement, while free play was more effective at improving play skills. This study expands on previous research and demonstrates the usefulness of imitative play and free play as interventions for young children with autism.

Faculty Mentor: Amy Matthews

Loretta Lanning

Beethoven's Continental folksong settings were written in 1816. They were called "continental" because they are a collection of songs from the European mainland, rather than from the British Isles. Although this is not the only collection of settings that Beethoven arranged, these particular settings are different from all the other collections of Beethoven's arrangements in their authenticity, their origins, and the extent to which they reflect to present-day listeners and scholars the cultural stereotypes of the time. Personally chosen by Beethoven, as opposed to the others which were chosen by his editor, these songs and their melodies not only provide a glimpse into Beethoven's wide-ranging personal cultural experience, they also are a catalogue of what types of folk-music were in the public's ear at the time, as these settings include the original texts with the melodies, unlike other collections in circulation. In addition, these folksongs provoke and provide deeper insight into the true origins and nature of what is commonly considered to be folksong, when considering the broad range of origins and styles that are all included in one collection.

Faculty Mentor: Lisa Feurzeig

Kait LaPorte

The purpose of this project is to create a performing version of the little known opera, "L'Amor Marinaro" composed in 1797 by Joseph Weigl. Popular in its time and for some decades thereafter, the opera inspired many influential and popular composers. There is a trio in the opera that was the theme of a clarinet trio by Beethoven as well as a violin piece by Paganini. The newly created version will differ from the original. Songs that are not important to the plot will be cut and the text will be translated into English. The reason for the translation is that

the audience will be mostly English-speaking people. Being a comic opera, it is important that all the jokes be understood.

The sources used were a piano/vocal score from the music library of the University of Michigan and a libretto from the University of California at Berkeley. While both sources were useful, the piano/vocal score did cause some difficulties. When comparing the libretto and score, we noticed that there were many differences. The finales to acts I and II were missing from the score and there were also some differences in the texts. To remedy this, we have ordered a full orchestral score on microfilm from the music collection of the Austrian National Library in Vienna. Because the scores are old, they are difficult to read. Part of creating the performing version was to transcribe the score into notation software called Finale, providing a neat new score for the performers. Rehearsals will start at the beginning of the school year and culminate in a performance in March 2007.

Faculty Mentor: Lisa Feurzeig

Kimberly Marshick

This study aimed to identify the ways in which text genre affects information processing as well as how both of these factors together influence learning and memory. The subjects were 60 undergraduate students at Grand Valley State University who received course credit for participating. A knowledge assessment test was administered before and after the experiment in order to assess the level of learning achieved. The experiment also included an informational narrative text as well as an expository (textbook-like) text on the circulatory system. Both texts shared 10 identical target sentences. Subjects were recorded and instructed to read their assigned text out loud one sentence at a time and respond to each sentence with their own thoughts. These recordings were used to assess the type of processing subjects were using across the 10 identical sentences. It was found that the subjects' average learning was greater for the expository text. For the expository text, learning was positively correlated with paraphrasing and previous text elaborations. For the narrative text, elaborative comments and predictions were positively correlated with the post test scores. In addition, elaborative predictions were also positively correlated with learning. Any further conclusions are still pending.

Faculty Mentor: Michael Wolf

Adam Miller

Design of Engineering Analysis Software

As part of an introductory engineering class freshman students are required to design, build, and test a simple support bracket with the objective of optimizing strength to weight ratio. However, freshman students do not yet have the capability to predict the mechanical behavior of their designs. To prevent the students from taking a "guess and check" approach to the design process software was written that predicts the mechanical behavior of the part. A program was written in MATLAB, a common mathematical software, which uses Finite Element Analysis (FEA) to show the students areas of high stress in their designs. The program accepts an IGES file, a type of universal graphics file, that is generated using a Computer Aided Drafting (CAD) software. The software then automatically meshes the part using linear triangular elements and boundary conditions are applied. The program's output is a plot of Von Mises stress distribution as well as an animation of the deflection of the part as it is loaded. To verify the accuracy of the program several sample parts were designed, built, and tested. The location of the failure in each part was then compared to the plot of the stress distribution as predicted by the software. Each part failed in a manner that would be expected given the results of the software. In addition, the results of the software were compared against the results of a commercial FEA software package called ANSYS. Both sets of results were identical.

Faculty Mentor: John Oliva

fied the DNA using PCR and are currently focusing on changing the DNA into a form from which the sequence can be determined. Once the sequence is obtained we will try to determine what effect this gene has in the transition from filamentous growth to the leafy plant—the key event in moss development.

Faculty Mentor:

Anita Van Til

“Willard Wichers and Dutch Immigration Under the Refugee Relief Act”

Following the Second World War, the United States Congress enacted the Refugee Relief Act (1953-1956) in order to facilitate emigration out of countries that were devastated by the war. As one of these countries, the Netherlands benefited greatly from the Refugee Relief Act because of the law’s loosening of restrictions on immigration quotas. Under the Refugee Relief Act, voluntary organizations, usually faith-based, assisted immigrants from the Netherlands. As part of one of these voluntary organizations, the Netherlands Pioneer and Historical Society located in Holland, Michigan, became a clearinghouse for Dutch immigrants. As head of the Netherlands Pioneer and Historical Society, Willard Wichers oversaw the difficult task of finding sponsor groups and families for the thousands of Dutch immigrants who desired to come to the United States. My summer research focuses on Wichers involvement with other organizations involved in the immigrants’ cause, his personal involvement with the immigrants themselves, and his tireless promotion of Dutch immigration in the United States.

Faculty Mentor: David Snyder

Crystal VanOss-Daining

The goal of my research is to study the relation between women, marriage, and religion by comparing Protestant Germany and Catholic Spain during the Reformation and Counter Reformation. Both emphasized gender as it reformed marriage laws and the legal rights of women.

The Catholics and the Protestants had separate definitions of marriage, different marriage laws and customs, and often differing views and actions on women’s occupations within society. Yet when these two religious groups interacted with the common people, complexities resulted because the people decided which changes actually took place. Because of this, in some European communities in the Early Modern Period, the differences between these two Christian religions was actually much less defined than perceived in present-day history books.

Faculty Mentor: Grace Coolidge