Faculty Senate Committee on Research

Student Research Day

Dr. Thomas Horvath & Matt Altman, Silver Creek, Oneonta NY

April 27, 2005 2:30 PM—5:00 PM

Morris Conference Center

Sponsored by: *Alan B. Donovan,* President; *Paul J. Adamo,* Vice-President for College Advancement; *F. Daniel Larkin,* Provost; *Grants Development Office*

The Committee on Research
is proud to present

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April 27, 2005
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Funded by the investment income of the College at Oneonta's Unrestricted Endowment, made possible through charitable gifts and grants to the College at Oneonta Foundation.

Student Research Day is sponsored by Paul J. Adamo (V.P. for College Advancement), F. Daniel Larkin (Provost), and the Grants Development Office

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Program book designed by: Chris Burgher

State University of New York, College at Oneonta, Oneonta, New York

Program

2:30 Poster sessions (on exhibit throughout the afternoon)

3:00 Welcoming remarks:
Dr. F. Daniel Larkin, Provost, SUNY College at Oneonta;
Dr. Joseph Heissan (Class of 1963) Member of the Board of Directors, College at Oneonta Foundation
Dr. Achim Köddermann, Chair, Faculty Senate Committee on Research

3:15 *Motion Sickness Symptoms in the Optokinetic Drum (OKD) as a Function of Stripe Frequency.*
Student Researchers: Elizabeth Kiniorski, John Finley, Theresa Brancato, and Stacey Czmara
Faculty Advisors: Drs. Peter DiNardo and Lawrence Guzy

3:30 *The 3-D Karnaugh Map.*
Student Researcher: Michael J. Reale | Faculty Advisor: Mr. Dennis M. Higgins

3:45 *Video-Based Motion Analysis.*
Student Reseachers: Joel Peterson, Julie Arrighi, and Carolyn McCruden
Faculty Advisor: Dr. Paul French

4:00 Dr. Alan B. Donovan, President, SUNY College at Oneonta.
Dr. Michael Merilan, Dean of Sciences and Social Sciences, SUNY College at Oneonta

4:05 Guest Presentation: Dr. Robert Adams (Class of 1966), Clinical Director of Animal Resources and Associate Professor of Comparative Medicine, Johns Hopkins School of Medicine

4:30 *A Novel Third Isoform of Zebrafish Cytochrome Oxidase IV.*
Student Researcher: Brandon Smith | Faculty Advisor: Dr. Nancy Bachman

Student Research Day Presentations

Motion Sickness Symptoms in the Optokinetic Drum (OKD) as a Function of Stripe Frequency

Student Researchers: **Elizabeth Kiniorski**, **John Finley**, **Theresa Brancato**, and **Stacey Czmara**
Faculty Advisors: **Drs. Peter DiNardo** and **Lawrence Guzy**

Sopite syndrome is characterized by drowsiness and mood changes. It occurs in motion environments that are too weak to induce the classic motion sickness syndrome that includes gastric symptoms. We compared sopite symptoms in the OKD using stripes with different widths in order to vary the potency of the OKD procedure.

The 3-D Karnaugh Map

Student Researcher: **Michael J. Reale**
Faculty Advisor: **Mr. Dennis M. Higgins**

As a graphical aid in reducing Boolean canonical expressions, K-maps are very useful. However, a two-dimensional Karnaugh map can fit at most 4 variables. This project explores an implementation of a 3D Karnaugh map. Programmed entirely in JAVA, it utilizes an advanced GUI that allows the user to input binary information (either directly or by opening an appropriate file), to convert it to DNF (SOP) or CNF (POS), and to construct an appropriate 3D Karnaugh map for it. The implementation involved development of a simple 3D graphics engine that can display multi-colored "bricks" with some shading. These cubes represent the data values using color codes. We automatically reduce the map and display the reduction. Other GUI enhancements allow the user to select bricks, make bricks "disappear" and "reappear" (to facilitate selection of obscured bricks), and rotate the display, as well as toggle bricks "on" and "off" in modification mode. The user also has the option to manually reduce the K-map in reduction mode.

Video-Based Motion Analysis

Student Reseachers: **Joel Peterson** and **Julie Arrighi**
Faculty Advisor: **Dr. Paul French** and **Carolyn McCruden**

The research project we have been working on is Video Based Motion Analysis. For this project, we have examined some of the errors that come about when using digital video to analyze physical motion. Errors arise when using video analysis due to lens distortion, scaling, parallax, and discretization. Our team has defined these errors, and worked to find means of correcting or avoiding them. Other matters were also examined, including the difference between composite and digital video.

A Novel Third Isoform of Zebrafish Cytochrome Oxidase IV

Faculty Advisor: **Dr. Nancy Bachman**
Student Researcher: **Brandon Smith**

Mitochondria produce the molecular energy in eukaryotic organisms that is vital for life functions. Part of this cell structure is the cytochrome oxidase complex. Cytochrome oxidase is composed of 13 protein subunits; our particular interest is subunit IV, and the variations that we have found in zebrafish. It is currently believed that this subunit plays a role in the regulation of the production of ATP, a universal energy molecule. By using various molecular biology techniques and bioinformatics tools, we have been able to characterize a third isoform of cytochrome oxidase subunit IV. Isoforms are naturally occurring variations in proteins. Since this subunit of the cytochrome oxidase complex may be involved in regulating ATP production, the various isoforms may have a role in tissue-specific energy needs, or may be adapted to various environmental oxygen conditions.Plasmid DNA was isolated from bacteria containing genes for each of the three isoforms. The DNA was then sequenced and analyzed using software programs that compare the DNA sequences and deduce the encoded protein sequences. We plan to compare expression patterns using mRNA samples gathered from specific tissues by real-time reverse transcriptase PCR to determine where a third isoform may be expressed in zebrafish, and to help learn the role a third isoform may play.

POSTER SESSIONS

(BY SPRING 2004 AND FALL 2004 GRANT RECIPIENTS)

An Analysis of the Chemical Features of Calhoon Creek using Ion-Chromatography

Student Researcher: **Wyatt Green**
Faculty Advisor: **Dr. Paul J. Bischoff**

Water pollution in the United States remains a serious problem; over 40% of assessed waters still do not meet established water quality standards. The Environmental Protection Agency cites large scale agriculture, hydrologic modification, habitat modification, urban runoff/storm sewers, forestry, municipal point sources, and resource extraction as primary causes of this impairment. This project seeks to determine the severity and sources of a variety of pollutants in Cahoon Creek, a 1st order stream in an undeveloped, rural area of the Upper Susquehanna Watershed – an area not expected to be impacted by the above-listed primary sources of water impairment in the U.S. To this end, six sampling stations were established, beginning at the headwaters and ending prior to the junction of the stream's merger with Butternut Creek. Sampling was conducted for chloride, bromide, nitrate, phosphate, and sulfate and analyzed utilizing ion-exchange chromatography. Preliminary results indicated an increase in chloride concentration from 1.4725 ppm at the headwaters to 12.1548 ppm at the final sampling station. Similar trends were demonstrated for nitrate (.5066 ppm at headwaters; 1.2103 ppm at final station) and sulfate (4.4584 at headwaters; 6.4779 at final station). Negligible increases were noted in bromide (.0062 ppm at headwaters; .0069 ppm at final station) and phosphate (.0354 ppm at headwaters; .0358 ppm at final station). The project is currently awaiting the results from a second round of sampling and complete statistical analysis of all samples. Results from this project will be useful in pinpointing sources of contaminants and may suggest means of reducing impacts from these sources. The results may also serve as a baseline that can be used to quantify the impact of the inevitable future development of the watershed, as well as serving as useful data for anyone monitoring similar types of water bodies.

An Assessment of Microbe Abundance and Diversity in Varying Niches of Silver Creek

Student Researcher: **Christine Venton**
Faculty Advisor: **Dr. Paul J. Bischoff**

Microbes are ubiquitous members of all ecosystems. They play important roles in nutrient cycling and, they are an important link in virtually all trophic relationships. The purpose of this study is to examine a variety of microhabitats in Silver Creek for the biodiversity of protozoans. Microhabitats examined thus far included gravel from the creek bottom, mud from the creek bank, moss scraped from a submerged rock, and leaf and twig litter. Data will be analyzed for density and biodiversity for each major category of protozoan identified.

Breast Cancer and Hormone Therapy

Student Researcher: **Lisa Kiesow**
Faculty Advisor: **Dr. Nancy Bachman**

Breast cancer is the most commonly occurring cancer in women. The major types of breast cancer are invasive ductal carcinoma, ductal carcinoma in situ, invasive lobular carcinoma, and lobular carcinoma in situ. Once a woman is diagnosed with breast cancer, information is gathered to determine the stage of breast cancer. Treatment depends on the size and location of the tumor in the breast and treatment options include surgery, radiation, chemotherapy, hormone therapy and biological therapy. Estrogen promotes the growth of breast cancer cells and about two-thirds of women have estrogen receptors which can be affected by hormone therapy. Tamoxifen (Nolvadex), toremifene (Fareston), anatrozole (Arimedix), exemestane (Aromasin), letrozole (Femara) and goserelin acetate (Zoladex) are common hormone therapy drugs. The manner in which these drugs affect the biosynthesis or signaling of estrogen and ultimately interfere with breast cancer progression is examined.

Connections between Geology and Stream Characteristics in Otsego Lake Tributaries

Student Researcher: **Stephen Cohn**
Faculty Advisor: **Dr. Paul J. Bischoff**

Does the bedrock geology and land use of an area where streams run over affect their pH, conductivity, temperature, and dissolved oxygen? The areas studied include Glimmerglen Stream, Willow Brook, Shadow Brook, Hayden Creek, and Cripple Creek, all of which are tributaries of Otsego Lake.

Determination of Formaldehyde in Commercial Products

Student Researchers: **Mark Seigers** and **Carolyn Bauer**
Faculty Advisors: **Drs. Paul J. Bischoff** and **John Schamumloffel**

A review of manufacturing labels reveals that formaldehyde is a ubiquitous component of many products. For example, it is found in carpeting, floor boards, cosmetic and hygiene products, and stains and varnishes. Formaldehyde is also commonly used to preserve biological specimens. Studies with laboratory rats have shown that exposure to as little as 14.3ppm for 2-years cause nasal cancer, and concentrations of 10-20ppm cause breathing problems in humans. This research project focuses on the quantitative analysis of formaldehyde in commercial products. We analyzed shampoo, body gel, and nail hardener using solid phase micro extraction and gas chromatography. To obtain our results we calibrated the concentrations of formaldehyde in each product by comparing them to a known formaldehyde standard. Our expected results are that shampoo, shower gel, and nail hardener will all contain a detectable amount of formaldehyde which may be harmful to humans after long term exposure.

Determination of Toxic Elements in Fish Species by ICP-AES

Student Researcher: **Jen Fusco**
Faculty Advisor: **Dr. John Schaumloffel**

The objective of this project is to determine concentrations of toxic elements (Cadmium, Arsenic, Lead, Copper, Tin, and Nickel) in fish by Inductively Coupled Plasma Atomic Emission Spectroscopy. Due to bioaccumulation, the amount of toxic elements in fish has been a concern for many individuals. Mercury has been the main element of interest in the media, but mercury is not the only harmful element in fish that could be detrimental to human health. Canned fish, store bought fish, and fresh fish from nearby lakes or ponds in Upstate NY were analyzed. Methods were validated using NIST SRMs. Canned clams had a mean calculated concentration of 3.319 ppm Copper. An Adirondack Lake perch was analyzed and the mean calculated concentration of Nickel was 1.122 ppm. A clam was taken from the same lake and the mean calculated concentration of Cadmium was 6.429 ppm.

Extraction and Analysis of DNA of Echinacea (Asteraceae), the Purple Cone Flower

Student Researcher: **Stephen Stannard**
Faculty Advisors: **Drs. Adam Ryburn** and **William Pietraface**

Echinacea is a North American genus comprised of 4-9 species, depending on which classifi-cation scheme is followed. Taxonomists differ in their opinion as to the number of species. Using DNA sequencing techniques we can determine the taxonomic position of *Echinacea* in the family and the relationship of its species. Until now, extraction of good quality DNA has been hindered by the secondary compounds that give the genus its reputed medicinal properties. In an attempt to eliminate this problem, DNA was extracted using three atypical techniques: from seed, seedling leaf material, and callus obtained from plant tissue culture techniques.

Failure of Vernier Accuracy with a Vertical Target and a Long Horizontal Line

Student Researchers: **Jennifer Zeman**, **Kristen Rabbia**, **Shannon Mulz**, **Alexander Vito**, and **JoEllen Tarbox**
Faculty Advisor: **Dr. Lawrence Guzy**

Participants align a left-right moving vertical target at the end of a horizontal long line. The results showed that the target was not located at the end of the long illuminated line, but significantly to the left. A stronger effect was found with a target four inches above the long line than with a target one inch above the long line. Thus, a target that is not in the same plane as the stationary reference line, vernier accuracy does not apply. The target was apparently being misaligned along the converging angle, i.e., the monocular cue of linear perspective, produced by the long illuminated line.

Field Evidence Indicates Substantial Subglacial Water Erosion on an Outwash Substrate, Bering Glacier, Alaska

Student Researcher: **Samuel McTavey**
Faculty Advisor: **Dr. P. Jay Fleisher**

Outwash terrain overridden during the 1993-95 surge on the eastern ice front of the Bering piedmont lobe is now being uncovered by rapid retreat. Two recently exposed subglacial basins that did not exist prior to the surge, the largest being 0.75 km2, project a minimum of 15 m downward into the pre-surge landscape. They are located immediately upglacier from the 1995 surge-limit moraine and in the vicinity of outburst sites and extensive sandar on Weeping Peat Island. Topographic information gathered prior to the surge is compared with post-surge landforms, with specific focus on formative processes leading to an assessment of the relative significance of erosion by ice versus water. The dominate effects of overriding ice include the formation of fluted drumlinoid hills, deposition of a new till, and construction of a semi continuous push moraine. Substrate glacial erosion appears limited to the truncation of outwash bedding beneath streamlined slopes. Basins cut in outwash do not appear gouged by ice. Annual field observations indicate that ice marginal streams were not a factor in basin formation. Instead, the basins appear to have been scoured by pressurized, subglacial meltwater moving through conduits toward outburst sites. The erosional effects of this process working on an unconsolidated substrate appear to far exceed that of the overriding ice.

Field Investigation of the Lateral Misplacement Effect and Pedestrian Safety

Student Researchers: **Norah Borris**, **JoEllen Tarbox**, **Joe Hladis**, and **Melissa Donahue**

Faculty Advisor: **Dr. Lawrence Guzy**

In this study we found an illusion opposite of what we were predicting. This is a brand new illusion that hasn't been identified before in the literature. The study that we submitted (Zeman, et al.) added new variables and we put this into a different and more appropriate subsequent context, i.e., vernier inaccuracy. Recently, we have tweaked the apparatus and have found the effect we were originally looking for. We are now running subjects and the "pedestrian" misperception is now being found.

The Flora of Otsego County

Student Researcher: **Connie Tedesco** (Graduate Student)
Faculty Advisors: **Dr. Adam Ryburn**

Biodiversity studies depend heavily on known distributions of vascular plants. Plants are indicator species of a wide variety of ecological conditions, and many NY species of plants are themselves endangered, or likely to be threatened with extirpation in the near future. The spread of invasive species are also monitored by regional surveys.

Among the 62 counties of New York, the number of known species of vascular plants per county varies fivefold from below 300 species to over 1500 species (www.nyflora.org). Species richness (the number of different species in an area) is typically attributed to three major factors: 1) area, 2) distance to neighboring populations (MacArthur and Wilson, 1967), and 3) habitat heterogeneity (Nichols et al., 1998). In particular, the species richness–area relationship (SA curve) is among the strongest ecological correlations recognized by ecologists (Gotelli, 1998). Thus, large and ecologically diverse counties situated near other diverse counties would be expected to have the greatest species richness. This prediction assumes that all areas (counties) are sampled with equal effort, and that these samples are equally recorded, a condition that is almost certainly invalid in our flora.

We plotted an S-A curve for our 62-county flora data set. The relationship was not statistically significant (R2 p = .37), suggesting substantial over- or under-sampling of some counties. Among the ten counties that deviated by the greatest amount below the predicted line was Otsego County.

This project will entail field surveys, herbarium work, and an online component. The field surveys will consist of weekly trips to locations across the county to collect plant specimens for the Oneonta herbarium. For instance, in 2004, the rare *Scheuchzeria palustris* (Pod grass) and threatened *Orontium aquaticum* (Golden Club) were located in a Schenevus Creek bog. These were both listed on the NYNHP Rare Plant List. These surveys will update our local collection as well as more accurately represent the species richness for Otsego County in the NY Flora Atlas. The herbarium work consists of accessioning local collections to the SUNY herbarium. The final component is to compile an Otsego County Flora website that will eventually list all vascular plant species found in all Otsego County herbariums.

Headspace Solid-phase Microextraction for the Determination of Organophosphorus Pesticides in Organic Vs. Conventionally grown Fruit Juices

Student Researchers: **Amanda Barnes**; **Leah Herr** and **Cheryl Lyons**
Faculty Advisors: **Drs. Paul J. Bischoff** and **John Schaumloffel**

In this study we used headspace solid-phase microextraction and gas chromatography/mass spectrometry (HS-SPME and GC/MS) for the detection of organophosphorus pesticides (Diazinon, Malathion, Fenitrothion, Atrazine) in fruit juices (pineapple, grape, cranberry, orange, pink grapefruit). The SPME method uses a rod of fused silica that is coated with an absorbent polymer. This method allows fast, inexpensive analysis of samples. Also, we will run analysis on organically grown fruit juices and compare the test results to the results of the conventionally grown fruit juices.

An Investigation Into Possible Concentration Patterns of Deicing Road Salt Movement Through Topsoil Systems Adjacent to Roads

Student Researchers:
Jason Batus, **Matthew Greenberg**, **Eric Johnsen**
Faculty Advisor: **Dr. Paul J. Bischoff**

In the Oneonta area and in most of the roadways in North America, road salt is being used to treat roadway-icing conditions. The road salt is then dissolved into solution by rain and carried into the surrounding soils. The objective of this study is to find out if and how the salt migrates through these soil systems. It is anticipated that salt concentration in the roadside soil will have the greatest concentrations near the road way and decreases as distance from the roadway increases. Our investigation was to find if the salt concentrations would follow the gradient of the surrounding surface or if the salt concentrations would buildup in close proximity to the roadway. Samples were taken from three locations at weekly intervals. The first sample area, acting as our control, is a limited-use private road in which no road salt is used. The remaining sample areas are soil strips adjacent to salted roadways. Data collected on soil conductivity and the concentration of salt within soil will be presented as well as associated weather data.

Leukemia

Student Researcher: **Crystal MacClintock**
Faculty Advisor: **Dr. Nancy Bachman**

Leukemia is characterized by a disruption in hematopoiesis, the process by which blood cells are formed. Leukemia cells have increased self renewal that subsequently sacrifices the cell's maturation, resulting in their abnormal or incomplete differentiation. These abnormal cells, referred to as leukemic "blast" cells, are no longer able to function properly and interfere with the quantity and functions of other non-cancerous blood cells as they accumulate in the body. There are four major types of leukemia: acute lymphocytic leukemia (ALL), acute myelogenous leukemia (AML), chronic lymphocytic leukemia (CLL), and chronic myelogenous leukemia (CML). These are classified using general criteria, the onset of disease and the blood cell lineage affected. However, due to continually advancing research and technology, each of those subtypes can be further sub-classified based on more specific aspects of the cancer, primarily the genetic aberrations that cause it. The discovery of recurring genetic mutations can help refine the diagnosis and treatment of leukemia using technology such as florescence *in-situ* hybridization (FISH) and microarrays. A great deal of work is being done to construct microarrays that would help diagnose leukemia, especially acute lymphocytic leukemia, which is known for its heterogeneity and prevalence in children.

Managers and Intuition

Student Researchers: **Olga Buzaeva** and **Zaid Ghori**
Faculty Advisor: **Dr. Richard Insinga**

In our research "Managers and Intuition" we define the importance of using intuition for managers nowadays as the world in general and the business world in particular is more complex to manage. Logical thinking and research information are not enough to create a successful business plan and to make an important decision. Many examples from business history state that the real success is often built on intuition and an unusual way of thinking. In this project we developed the research that was conducted by Olga Buzaeva in Russia using Russian literature and interviewing Russian managers. After our study of American literature we made research questions to interview 15 or more American managers and owners of enterprises to identify the extent to which they rely on intuition and *their* unusual way of thinking. After the interviews we have concluded the results and developed our own recommendations on the use of intuition in the business world. We believe that this research will help to identify the importance of intuition and to make recommendations on how to teach students who are going to be managers.

An Old Photographic Process, Using Modern Day Equipment

Student Researcher: **Lucas Strohmenger**
Faculty Advisor: **Mr. Charles Winters**

For my study I have been experimenting with palladium printing. The process is an old 19th century process, which has been around for longer than todays silver printing technique. I use new technology in which I take a digital image and create a negative in Adobe Photoshop. I then take this negative and make a print with a contact printing method in which I put the photography paper right up against the photo sensitive paper. The paper is plain paper until I hand coat it with a palladium mixture which is sensitive to UV light. After I expose the negative and paper to UV light a permeant image is created. This image can last 1000 years. Using today's technology I have an option to color the image. I can either print color on the photo paper before I expose the image to light, or I can send the photograph back through a printer and print over the photograph. I can also color an image with watercolor, colored pencil, and pastels among other things.

A PacMan Game in Java

Student Researcher: **Aimee Wolons**
Faculty Advisor: **Mr. Dennis Higgins**

This game developed out of a final project in CS1 (First programming course in Java) for which I built a simple PacMan implementation with the maze, a pacman and dots for the pacman to eat. For this, I created a total of eight Pacman images, one of which is displayed depending on direction with alternating open/closed mouth. The Pacman moves around legal positions randomly and eats the dots. My professor (Dennis Higgins, SUNY Oneonta) was interested in this project and I continued working on it in a Modeling course. I next added a blue ghost and when he was successfully navigating the maze with random moves, I added several more ghosts of different colors. With checking to see if the game has ended (ghost catches pacman or pacman eats all of the dots) this second increment was completed. The final version supports "smart" ghosts, which use shortest path length checking to try to catch the pacman. We also hope to add a joystick for interactivity. Although the most noticeable feature of the game is the graphics representation, the implementation involves multi-threading using synchronized methods and algorithms from CS2 (Data Structures).

Persistence of Sopite Symptoms Following a Less Provocative Optokinetic Drum (OKD)Procedure: Preliminary Findings

Student Researchers: **John Finley**, **Elizabeth Kiniorski**, **Theresa Brancato**, and **Stacey Czmara**
Faculty Advisors: **Drs. Peter DiNardo** and **Lawrence Guzy**

Sopite syndrome is a form of motion disturbance characterized primarily by drowsiness and mood changes. Sopite symptoms may occur in the presence of stimuli that are too weak or brief to cause classic motion sickness symptoms. Our purpose was to determine if we could generate sopite symptoms and mood symptoms without gastric symptoms in a less provocative OKD procedure (fewer and wider stripes) and to track the persistence of these symptoms.

Purification of polyclonal antibodies from Largemouth Bass (Micropterus salmoides)

Student Researcher: **Jonathan Lesh**
Faculty: **Vicky Lentz**

Largemouth Bass (Micropterus salmoides) have an immune system that is similar, yet simpler than humans. This bony fish can be used to study how a simple immune system reacts when it sees an antigen. As with humans, the interaction between foreign substances and the B-cells of the fish's immune system will result in the production of polyclonal antibodies. We immunized largemouth bass with goat IgG (our antigen) to create these polyclonal antibodies. When exposed to repeated immunizations, plasma and memory B cells are generated that produce vast amounts of antibodies. We

immunized largemouth bass with goat IgG in complete Freund's adjuvant. The fish were re-immunized on days 14, 21, 28 and 35. After the immunizations, we attempted to purify the goat IgG specific antibodies from the fish. The fish were bled and the serum collected. The antibodies were purified from the serum by use of an immuno-affinity column, containing goat IgG. The sample collected from the column was saved for further purification. The antibodies were dialyzed against PBS and concentrated with a Centricon spin columns. The presence of antibodies was ascertained by SDS-PAGE analysis and Octerloni Reactions. It is anticipated that the purified antibodies will be used to generate mouse monoclonal antibodies that will recognize largemouth bass Ig and can be used for further study of the fish immune system.

Tectonic Evolution of the Southern Ruby-Southeastern Blacktail Mountains, Montana

Student Researcher: **Joshua Haugh**
Faculty Advisor: **Dr. Peter Muller**

The geological investigation of Archean age (>2.5 billon years) rocks exposed in several fault-block mountain uplifts, showing the distribution of rock units and structures in digital map format, to develop a better understanding of the tectonic history of this region.

Trait Negative Affect as a Predictor of Optokinetic Responses

Student Researchers: **Elizabeth Kiniorski**, **John Finley**, **Theresa Brancato**, and **Stacey Czmara**
Faculty Advisors: **Drs. Peter DiNardo** and **Lawrence Guzy**

Previously, we reported that the Optokinetic Drum (OKD) procedure produced changes in current (state) positive and negative affect. State positive affect was also related to milder motion sickness symptoms (MSS). Our purpose was to determine if a general characteristic (trait) negative and positive affect are predictors of OKD responses.

Video Demonstrations in the Physical Science Classroom

Student Researchers: **Carolyn Bauer**, **John Collins**, **Kyle Hauptfleisch**, and **Dustin Winn**
Faculty Advisor: **Dr. Paul French**

The purpose of this study was to design, produce, and test science videos that would help students to understand difficult topics in introductory high school and college courses. We produced and tested videos on the topics of kinematics, collisions, simple harmonic motion, and dipole moments. Test scores increased after viewing the videos, but they were not perfect.

Chinese Immigrants in a Metropolitan City: Their Families and Their Settlement
Student Researchers: **Yan Yin Ruan** and **Lee Lee Ng**
Faculty Advisor: **Dr. Ho Hon Leung**

Crime and Punishment at New York City's Newgate Prison
Student Researcher: **Jason Marlowe**
Faculty Advisor: **Dr. Thomas Beale**

Development of New Musical Instruments
Student Researchers: **Angelo Vasquez** and **Christopher Scharling**
Faculty Advisors: **Drs. Orlando Legname** and **Paul Geluso**

Producing and Manufacturing a Compact Disc of Spoken-Word Poetry
Student Researchers: **Kevin Fehr**, **Lisa Malcolm**, **Timothy Natole**, **Nicholas Reyes**, **Danny Hubbard**, **Reynaldo Melendez**, and **Stephen Raiman**

Sensitivity of High Plains Thunderstorm Activity to Surface Moisture Conditions in the Upstream Rockies
Student Researcher: **Heather Frees**
Faculty Advisor: **Dr. Richard Grimaldi**