



CELEBRATION *of*  
ACADEMIC EXCELLENCE

UB UNDERGRADUATE  
RESEARCH AND  
SCHOLARSHIP PROJECTS

UNIVERSITY AT BUFFALO  
FRIDAY, APRIL 29, 2005

*Center for the Arts*

## **ARCHITECTURE & PLANNING**

*Student*

**Jamie Benz**

*Faculty Advisor/Mentor*

Dr. Daniel B. Hess, Assistant Professor

*Project Title*

**Environmental Design  
Skill Building Studios**

*Abstract*

The first set of projects focuses on information retrieval, analysis, and communication. Students analyzed census data, performed investigative field work in various communities, and conducted research using all types of media to communicate findings and develop recommendations. The second set of projects focuses on graphic communication. Students learned to use such programs as Photoshop, Illustrator, and Front Page, to visually communicate information in urban planning and environmental design. My poster presentation offers a selection of my individual studio work and products demonstrating the yearlong range of skills.

*Student*

**Almarie Johnson**

*Faculty Advisor/Mentor*

Alex Bitterman, Adjunct Professor

*Project Title*

**Planning for Social Services in the  
Broadway-Fillmore District**

*Abstract*

In Fall 2004 seniors in Environmental Design participated in a workshop to analyze and propose social, economic, and design recommendations for revitalization of the Broadway-Fillmore neighborhood of Buffalo, New York. Centered around the Broadway Market, this area has a rich history as home to the region's vibrant Polish community. my research focused on the area's unmet social service needs, focusing notably on child care gaps. My project

recommends new programs and policies to address this community concern.

*Student*

**Jajeon Rose-Burney**

*Faculty Advisor/Mentor*

Elizabeth Cheteny, Adjunct Professor

*Project Title*

**Roycroft Redevelopment  
Planning Project**

*Abstract*

In Fall 2004 seniors in Environmental Design participated in a planning studio to create a plan for revitalization of the Roycroft Campus in East Aurora, New York. My recommendations for recreating the Roycroft's historic landscape design along with other studio-based recommendations for artisan industry and tourism development have been subsequently adopted by the Roycroft Campus Corporation, client agency for the studio work.

*Student*

**Matthew Thomas Hume**

*Faculty Advisor/Mentor*

Omar Kahn

*Department/Major*

Architecture

*Abstract*

There is a dialect between user and environment. These may be utilized or passively expressed. it is the conversation between the two that mentions interest, emidiacy and intimacy.

*Student*

**Sylvia Feng**

*Faculty Advisor/Mentor*

Mehrdad Hadighi

*Project Title* Transprogramming and  
Translucency

*Abstract*

A selection of design projects in light of transprogramming. Transprogramming

is a way of designing and placing spaces so that the functions of the space intermingles (as opposed to the more traditional approach of walling off and secluding designated areas for different functions).

## **ARTS & SCIENCES**

*Student*

**Stefan Vujcic**, Chemistry

*Faculty Advisor/Mentor*

Dr. Frank V. Bright

*Project Title*

**Nanoscopically Tailored Sensors for  
Ischemia Monitoring**

*Abstract*

Cardiovascular Disease/Sleep Apnea. This poster summarizes the analytical figures of merit and performance factors for a series of novel chemical sensor platforms based on hexagonal surfactant/silicate mesostructured thin films that have been doped with an O<sub>2</sub> responsive luminophore, tris (4,7-diphenyl-1, 10-phenanthroline) ruthenium (II) ([Ru (dpp)<sub>3</sub>] 2+) sequestered within the mesostructured films.

*Student*

**Daniel Cross**, History

*Advisor/Mentor*

Professor McDevitt, Professor Gerber

*Title*

**The Evolution of Saint Patrick's  
Day in Buffalo, New York, 1845-  
1925: A Reflection of Buffalo's Irish  
Community**

This project explores the invention of Buffalo's St. Patrick's Day tradition, the ways that Buffalo's Irish utilized this tradition to service their changing needs, and the light that this tradition shed on the community itself.

*Student*

**Heather Jung**, Political Science

*Faculty Advisor/Mentor*

Prof. M. Eagles

*Title*

**Active Campaigning and Canadian Election Results**

This is a statistical analysis of the effects of different forms of campaigning. The candidate studied participated in a variety of forms of campaigning leading up to a Canadian election in 2004.

*Student*

**Adam Sokolow**, Physics

*Advisor/Mentor*

Surajit Sen

*Title*

**How Hertizan solitary waves interact with boundaries in a 1-D granular medium**

The study opens up the possibility of observing the disintegration of solitary waves in granular alignments placed within boundaries.

*Student*

**Elizabeth Blake**, Department of Anthropology

*Advisor/Mentor*

Dr. Ezra Zubrow

*Title*

**The origin of Music and Rhythm: A Question of Innate Tendency and Cultural Praxis**

The purpose of this study is to determine the existence of syncretism between such early craft occupations as flint knapping with heart rhythm. This study focuses on the origin of rhythm.

*Student*

**David Turnbull**, Romance languages and Literatures/International Studies

*Advisor/Mentor*

Professor Jeannette Ludwig, Professor Claude Welch

*Title*

**The rise of anti-Semitism in contemporary France**

Paper was written in English, the research was done bilingually. The paper analyzes historical anti-Semitism in France through a political lens and provides a special consideration for the recent outbreak of violence. The work

culminates with policy suggestions for ameliorating the complex demographic conditions that have, in part, led to the current problems.

*Student*

**Elizabeth Benware**, Romance Languages and Literatures/Anthropology

*Advisor/Mentor*

Professor M. Jameson/  
Professor P. Steves

Litgloss edition of Claude Levi-Strauss's "La Structure des Mythes"

The project consists of creating an online annotated version of the article "La Structure des Mythes" by Claude Levi-Strauss and researching companion websites to complement it. Article was chosen in order to draw on the joint French and Anthropology majors.

*Student*

**Candie Syphrit**, Special Studies

*Advisor/Mentor*

Professor Mitsuaki Shimojo

*Title*

**Litgloss edition of Akutagawa Ryunosuke's "Rashomon"**

The work is a translation of the above work. The Litgloss project allows learners of Japanese to view this text in Classical Japanese with annotation appearing whenever a word is clicked on.

*Student*

**Jackie English**, Romance languages and Literatures/History

*Advisor/Mentor*

Professor Maureen Jameson

*Title*

Identifying primary source readings in history courses for inclusion on the Litgloss website.

As an undergraduate assistant on the Litgloss project, I collected History Department and World Civilization course syllabi from UB and peer institutions across the country. Similar lists were based on high school AP reading lists for History classes and published "readers" accompanying World Civilization and other history textbooks.

*Student*

**Aimee Woznick**, Romance Languages and Literatures/English

*Advisor/Mentor*

Professor Maureen Jameson

*Title*

**Developing bibliographies and contextual materials to accompany primary texts on the Litgloss website.**

As an undergraduate research assistant I prepared bibliographies for print - and electronic-media resources to accompany primary texts included on the Litgloss website.

*Student*

**Izuma Inaba**, Theatre and Dance

*Advisor/Mentor*

Catherine Norgren & Lynne Koscielniak

*Title*

**Costume Design Portfolio**

Presentation is a costume design portfolio which features the process work for two departmental productions. Through this process I learned how to transform the inspirational images and words into the finished design. The costume design for "Spinning into Butter" was honored at the Kennedy Center American College Theatre Festival, Region II.

*Student*

**Bryan Kaczmarek**, Theatre and Dance

*Advisor/Mentor*

Lynne Koscielniak, Theatrical Lighting Design

Story of being assigned to provide lighting designs for "We Tell The Story" and the "Fall 2004 Zodiac Dance Concert." Utilizing CAD drawings and WYSIWYG software to create a three dimensional drawing of the lighting plot for each production.

*Student*

**Darcy Engel**, Theatre

*Advisor/Mentor*

Lynne Koscielniak

*Title*

**Scenic Design & Properties**

As a Scenic Designer I create environments based on research, along with an interpretation of text, sketches and renderings. My presentation examines the process I use in order to form a design.

*Student*

**Soyeon Jung**

*Title*

the EATER (2005)

A short film

*The Actress*

Hyeyoung Shin

A two-channel Video Installation by

Soyeon Jung.

### **(CSTEP) COLLEGIATE SCIENCE AND TECHNOLOGY ACHIEVEMENT PROGRAM**

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*Student*

**Okyro Collazo**, Natural Science

*Title*

**Development of a Method for  
Incorporating Site Specific Lesions  
in a Plasmid**

*Abstract*

DNA damage is the prime cause of chromosomal rearrangements, mutations and cancer, and can lead to lethality of all cells. Damage is especially serious to the cell during S-Phase, when DNA is being synthesized. When damaged DNA gets to the replication fork during S-phase, DNA damage becomes exacerbated. It is hard to control in-vitro where DNA damage occurs, and it is very difficult, overall, to observe a replication fork. This project entailed developing a technique that allows the incorporation of a single DNA damage site at a specific location on a DNA plasmid. A specific site in plasmid pUC119 was selected, where two enzymes, EcoR I and BamH I, with unique restriction sites, cut the plasmid. A customized linear oligonucleotide was synthesized and cut with MfeI and Bgl II and ligated to the cut plasmid

with T4 DNA ligase. Ligation was carried out in the presence of all four restriction enzymes to prevent reforming of the original restriction sites. Carrying out the ligation in the presence of the four enzymes should have forced the short oligonucleotide into the plasmid with very high efficiency. If efficient production of a covalently closed plasmid was detected, the system can be used to produce plasmids with a site-specific lesion by using a short damaged oligonucleotide in place of our test oligonucleotide.

*Student*

**Royston Ogbuagu**, Physical Sciences

*Title*

**Construction of Recombinant  
Adenovirus expressing the Ras  
proto-oncogene**

*Abstract*

Ras genes have been known to encode certain proteins to serve as an essential transducer of diverse physiological signals. As a result of the Ras protein unique structure, function and regulation, relevant scrutiny of its features has revealed an important relationship between Ras and diverse areas of research such as: human cancer; tumors induced by chemical/physical agents; and cell growth and cell differentiation.

The biological importance of Ras genes has led to the systemic analysis of their encoded proteins. A series of validated methods and treatment techniques were applied in the exploration of a specific Ras to facilitate better comprehension of the mechanism and function of the Ras gene, and to support a hypothesis stating the use of Ras in monitoring and regulation of cell growth, tumors and differentiation.

Two mutant alleles that were utilized in this protocol; R12 and N 17. The R12 alleles is spontaneously active and does not require an external signal to begin a reaction, as opposed to the N17 alleles, which is dominant negative and restricts the action of R12 due to its dominant expression and inhibitory

action on Ras. In the process of introducing the R12 and N17 alleles' mutant into prospective mammalian or bacteria cells, the Adenovirus is used as a vector for the enhancement, accuracy and successful transmission of R17 and N17 into the cells.

Several relevant topics that were considered in the progression of research on Ras R12 included: analysis of mammalian Ras protein; identification of factors that positively or negatively regulate Ras activity; involvement of these factors in physiological signaling in tumors; and the ability of Ras to induce cell proliferation.

### **ENGINEERING & APPLIED SCIENCES**

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*Student*

**Brian Peer**

*Advisor/Mentor*

Mark Swihart

*Title*

**Production and Surface  
Functionalization of Luminescent  
Silicon Nanoparticles**

*Abstract*

This poster will focus on the functionalization of luminescent silicon nanoparticles that have potential as components of hybrid inorganic/organic materials for photonic and biophotonic applications. Silicon nanoparticles with bright visible photoluminescence are being prepared by a combined vapor-phase and solution-phase process in our lab. CO<sub>2</sub> laser-induced pyrolysis of silane followed by the etching with mixtures of hydrofluoric acid (HF) and nitric acid (HNO<sub>3</sub>) produces these brightly luminescent nanoparticles. These particles have exciting potential applications in optoelectronics, display technology, chemical sensing, biological imaging, and other areas. Both hydrosilylation reactions on hydrogen terminated silicon particles and silanization reactions on hydroxyl

terminated silicon particles are being used to graft functional molecules to the nanoparticle surface. Most specifically, recent advances and attempts to functionalize the surface of silicon nanoparticles with molecules that will lead to attaching aminoallyl-dUTP (for use in bioimaging) will be presented.

#### *Students*

**Mike Licitra and Stefan Zickler**

#### *Advisor/Mentor*

Dr. M. Safiuddin, Dr. W. J. Sarjeant, and Dr. J. L. Zirnheld

#### *Title*

**Advanced Mobility Platforms**

#### *Abstract*

This project reports on research and development of a new class of mobility platforms for very high agility applications. The students of the UB Robotics Club (Dr. M. Safiuddin – Club Advisor) undertook this project to create a self sensing platform for planar motion, with the capability of adding 360 degree sensing with over head video monitoring. The RoboCup organization emphasizes scientific research in robotics by offering annual competitions. These “soccer bots” were designed to compete in the Domestic and International RoboCup Competition in the small size league. The hardware system of the robots incorporated an omni-directional drive system, a high speed kicker and a dribbling device. The software system incorporated components of machine vision and artificial intelligence which controls the robots autonomously. The designs were implemented as part of a research focus area of mobility platforms for the US Army. In addition to the advanced mobility and sensing suites the power and energy use and efficiency aspects of the design were addressed and as a result a long runtime energy system was developed which allows for rapid charging during operation. These new types of mobility platforms are capable of operation either alone or in a self-coordinated fashion using a learning curve associated with artificial intelligence. The developments summarized have extremely far reaching implications with respect to the commercial/ industrial/medical and military arenas.

#### *Students*

**Karen Beljan, Colleen Bronner, Brian Doyle, Caitlin Mahon, Dan McDaid, Shahrooz Soltani Bidokhti, Jeffrey Tudini**

#### *Advisor/Mentor*

Joe Atkinson

#### *Title*

**A Lake Divided: Modeling DO in Onondaga Lake**

#### *Abstract*

Many waterways in the world today suffer from poor water quality. A prime example of this is Onondaga Lake, located in Syracuse, NY. A way to improve the lake’s water and ecosystem quality is to increase the amount of dissolved oxygen (DO). The DO level in the lake must be raised to 5 mg/L on a daily basis to meet New York Department of Environmental Conservation (NYSDEC) standards. By raising the DO, it is hoped that Onondaga Lake can become a safe, clean lake, one that the people of Syracuse and Onondaga County can enjoy. In this project a model is developed using Stella, a visual model development software program, to evaluate the impact of several remediation alternatives being considered to raise DO in the lake, specifically in the hypolimnion during summer. These alternatives include pumping and artificially aerating water in the lower layer of the lake, and a major use of the model is to help in the design of the proposed system(s). In addition, the impact of stratification is being evaluated by considering both a well-mixed and a two-layer lake, with a summer thermocline separating the upper and lower layers. Model formulation and preliminary results are presented.

#### *Students*

**Brian Belmont, Kelly McCorry, Mike Ide, Robert Bouza, Eric Peckham, Dan Bugbee, Steve Battaglia**

#### *Advisor*

#### *Title*

**Clean Snowmobile**

#### *Abstract*

The University at Buffalo Clean Snowmobile Team’s 2005 design incorporated a 600cc four stroke engine which is turbo charged, fuel injected, and intercooled into a standard chassis. Team Buffalo concentrated on

emissions and noise analysis which are the largest environmental concerns today. Our main objective was to design a marketable snowmobile that is pure excitement and environmental conscious. The team was able to have great success at the 2005 SAE Clean Snowmobile Competition due to our main concentration of reliability, clean burning and low noise output. By incorporating sound absorbing materials, testing, and making modifications to the snowmobile, the University at Buffalo was able to have the quietest snowmobile at competition. Additionally our powertrain setup allowed us to achieve the best fuel economy, most practical design, and best performance at the competition. The University at Buffalo Clean Snowmobile Team would like to thank all of our Sponsors for helping us achieve our goal of First Place.

#### *Student*

**Yie Meng Hoi**

#### *Advisor/Mentor*

Deborah D.L. Chung

#### *Title*

**Electronic applications of flexible graphite**

#### *Abstract*

Flexible graphite is effective for electronic applications, specifically electromagnetic interference (EMI) gasketing, resistive heating, thermoelectric energy generation and heat dissipation. It is comparable to or better than conductive filled silicone materials for EMI gasketing. The shielding effectiveness reaches 125 dB. Flexible graphite as a heating element provides temperatures up to 980°C, response half-time down to 4 s and heat output at 60 s up to 5600 J. The through-thickness absolute thermoelectric power of flexible graphite is  $-2.6 \text{ } \mu\text{V}/^\circ\text{C}$ . Flexible graphite is effective as a thermal interface material if the thickness is low (0.13 mm), the density is low (1.1 g/cm<sup>3</sup>) and the contact pressure is high (11.1 MPa). These applications make use of the flexibility and compliance of flexible graphite, in addition to the electronic and thermal behavior. Compliance is particularly important for the use of flexible graphite as interface materials, whether the interface is electromagnetic, thermoelectric or thermal.

CELEBRATION OF ACADEMIC EXCELLENCE  
UB UNDERGRADUATE RESEARCH AND SCHOLARSHIP PROJECTS

*Students*

**Gregory Chapman, Justin Boyd, Kabir Jalal, Ken Camann, Marvin Findlayter, Matthew Watkins, Michael Kozelsky, Tim Silverstein**

*Advisor*

Mike Buckley

*Title*

**DISCO: Sensory Feedback System to Teach Cause-and-Effect**

*Abstract*

This hardware and software system provides a programmable light and sound station for therapists and teachers to use to enhance choice-making and cause-and-effect-related physical, speech, and occupational therapy sessions with physically and developmentally impaired children. Utilizing light and sound (including music and spoken-word), the station helps therapists and teachers create a choice-making, positive feedback, or a calming environment for students who react positively to enhanced sensory experiences. The DISCO system includes a wireless Tablet PC to present “puzzles” or choice-making opportunities to the students. Therapists use a second Tablet PC to take notes, view progress, and customize the system’s reaction to the student’s attempts at selection. Tablet PCs are essential, in that keyboards are inappropriate for both students and therapist during the sessions. An array of output devices, such as lights, bubble machines, fog machines, music, sound, and video serve as the rewards for students upon successful completion of puzzles. When successful choices are made, the system reacts with a light show catered to that student. The results of each session are saved as an accumulation of right and wrong choices, time to answer, and whether verbal/physical assist was required, so that teachers can chart the student’s progress over many weeks and months. Children can not progress to the use of augmentative communications devices until the concepts of choice-making, cause and effect, and menus-to-sound (or speech) is solidified. This DISCO

station will be a staple in early intervention and education for those who will eventually depend upon technology to speak and make their needs known.

**HONORS PROGRAM**

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*Student*

**Teal Darkenwald**, Dance & Exercise Science

*Title*

**Lucid Dreams**

The goal of this research was to integrate dance and film through collaboration with the Theater and Dance Department and the Department of Media Study. In doing so, I created a work entitled “Lucid Dreams” that was featured in Zodiaque Dance Company’s performance “Voices that Dance” for the Fall and Spring concerts. “Lucid Dreams” was a work that combined projected film and live dance. From the video of these performances further editing will take place to create a dance film that will be sent to film festivals throughout the world.

*Student*

**Erich Devendorf**, Mechanical Engineering  
Minors: Finance & Mathematics

*Title*

**Not Just Horseplay: Adapting Kelly Betting and Neural Networks to Engineering Decision Making**

*Faculty Advisor*

Dr. Kemper Lewis

By adapting J.L. Kelly’s findings, outlined in “A New Interpretation of Information Rate,” to engineering decision making a method to effectively allocate resources under uncertainty has been developed. The inputs to this method are probabilities that will be generated using a Neural Network and Monte Carlo simulation. Future work will focus on refining the adapted Kelly

equation and creating the software to effectively generate probabilities.

*Student*

**Elisa Giroux**, Biotechnology  
Minor: Biochemical Pharmacology

*Title*

**The release of ATP in Salmonella via the CFTR pathway**

*Advisor/Mentor*

Dr. John Crane, Medicine

Salmonella is one of the most common causes of food poisoning across the world. Salmonella invades the gastrointestinal lining and causes severe diarrhea. The mechanisms of Salmonella’s effects are not completely understood. Our hypothesis, based upon our research and research done on other enteropathogenic bacteria, is that the effects of salmonella are produced in part by the release of ATP by the invaded host cell and that one of the mechanisms for release is via the CFTR pathway.

*Student*

**Samantha Gosch**, Communication,  
Minor: Anthropology

*Title*

**The Great Kate 5K**

*Advisor/Mentor*

Dr. Mary Cassata & Kim-Alla Swanton, Communication

The Great Kate 5K Race is in memory of Katlyn Elise Gosch, who was killed in a car accident on her way home from high school on March 16, 2004. All proceeds from this event are going to The Boys and Girls Clubs of the Northtowns of Western New York. The purpose of this project was to give me first-hand experiences in event planning, public relations, media relations and marketing. It is expected that we will have somewhere between 500 and 1,000 runners at the event on race day, and that we will raise close to \$10,000 for The Boys and Girls Club.

*Student*

**Tom Liebner**, Mechanical & Aerospace Engineering, Minor: Mathematics

*Title*

**Evaluation of the Energy Dissipation Loss of the Deadzone in Linear and Sublinear Fluid Dampers**

*Advisor/Mentor*

Dr. Mai Tong, MCEER (Multidisciplinary Center for Earthquake Engineering Research) and Civil Engineering

Recent advances in the development of fluid dampers have led to their use in load carrying structural systems to mitigate ground shaking induced vibrations. The force characteristics of the fluid damper are often idealized as a linear or sublinear function of the piston velocity while small losses in the damper force output due to air entrainment or fixture tolerances are neglected. Simplified models of the deadzone were created in order to estimate the associated energy dissipation capacity loss and the decrease in the effective damping ratio of the structural system. The simulated models predicted that energy dissipation losses due to the presence of the deadzone were around 10-15% for a percent deadzone of 30%.

*Student*

**Elizabeth Osborn**, Dance & History

*Title*

**The 1960's: A Comparative Study of the Counterculture and Postmodern Dance**

*Advisor/Mentor*

Jeanne Fornorola, Dance, Susan Cahn, History

For this thesis project, I have combined my two majors of history and dance, and limited my research to within the decade of the 1960's in America. My hypothesis was that the counterculture movement and the postmodern dance movement did not exist exclusive of each other. Through extensive research, I have found that the two movements shared and inspired one another, through such common principles as freedom of human choice, exploration of the human body and interpersonal relationships, and open experimentations with drug use, to name a few.

*Student*

**Brian Peer**, Chemical Engineering

*Title*

**Surface Functionalization of Luminescent Silicon Nanoparticles**

*Advisor/Mentor*

Dr. Mark Swihart, Chemical Engineering

This poster will focus on functionalization of luminescent silicon nanoparticles that have potential as components of hybrid inorganic/organic materials for photonic and biophotonic applications. These silicon nanoparticles with bright visible photoluminescence are being prepared by a combined vapor-phase and solution-phase process, using only inexpensive commodity chemicals. These particles have exciting potential applications in optoelectronics, display technology, chemical sensing, biological imaging, and other areas.

*Student*

**Michael Pfetsch**, Electrical Engineering, Minor: Computer Science

*Title*

**Determining the Activation Energy of Silicon Thin Films Deposited by Microwave Electron Cyclotron Resonance Chemical Vapor Deposition (MECR CVD)**

*Advisor/Mentor*

Dr. Wayne Anderson, Electrical Engineering

Activation energy is an important property of a semiconductor, and it can be modified by the process in which silicon thin films are deposited onto a substrate. The purpose of this project has been to determine how deposition temperature, the concentration of hydrogen gas, and the concentration of silane gas affect the activation energy of a semiconductor. Initial findings have shown that activation energy is higher in semiconductors deposited at 300 degrees Celsius than it is in samples deposited at 400 degrees Celsius.

*Student*

**Robert Spengler**, Anthropology Minor: History

*Title*

**Palynographic Analysis of Archeological Sites from Western New York and Northern Denmark**

*Advisor/Mentor*

Dr. Ezra Zubrow & Dr. Douglas Perrelli, Anthropology

The purpose of this project is to learn about the people and culture of archeological sites from Western New York and Northern Denmark. This goal is accomplished through palynographic analysis of the soil in the sites. Optimally the data produced will either support current theories of the people or help lead to new ones.

*Student*

**Danielle Wilbur**, Biotechnology, Minor: Biochemical Pharmacology

*Title*

**Glycohistochemical Analysis of Drug Targeting in Human Breast Cancer**

*Advisor/Mentor*

Dr. Kate Rittenhouse-Olson, Biotechnology, Dr. Janet Morgan, Roswell Park Cancer Institute

Due to the increased expression of galectin receptors in tumor cell lines, the absence or minimal occurrence of beta-galactoside uptake in normal cells will enable carbohydrates to be attached to chemotherapeutic agents, allowing for more potent and higher dosage chemotherapy to be administered to cancer patients. The carbohydrate-lectin interactions between tumor cells and normal cells will be evaluated via glycohistochemical analysis of drug targeting, with successful endeavors leading to reduction in the metastasis of breast cancer and an overall increase in the success rate of chemotherapy.

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## INFORMATICS

*Student*

**Samantha Gosch**, Communication

*Advisor/Mentor*

Dr. Mary Cassata and Kim-Alla Swanton

*Title*

**The Great Kate: A Legacy in Giving**

*Abstract*

Using her academic skills in Marketing, Public Relations, Mass Media Campaigns, and Event Planning, University and School of Informatics Communication Honor student, Samantha Gosch decided to form an organization called "The Great Kate" in memory of her younger sister Katlyn, who was killed in a car accident on March 16, 2004. The mission of this

organization is to create a legacy of giving, and its foremost initiative, “The First Great Kate 5k Race”- a fully sanctioned and certified 5k race-taking place on Sunday, April 10, 2005, was designed to accommodate 500 runners and walkers. All of the money raised in this event will go to The Boys and Girls Clubs of the Northtowns of Western New York to establish additional athletic programs for underprivileged youths

*Student*

**Amy Pagnanella**, Communication

*Advisor/Mentor*

Kim-Alla Swanton

*Title*

**Walking in Someone Else’s Shoes**

*Abstract*

Intercultural Communication class has a project where each student attempts to “Step Out of Their Comfort Zone.” With this project, the students get to experience what it feels like to be part of a different culture for a day. The idea is for students to walk a mile in the shoes of someone from a different culture to get a better understanding for that culture. Our students have walked in the shoes of people from different races, cultures, abilities, economic classes and lifestyles and have said that it has opened their hearts as well as their minds. Amy Pagnanella stepped out of her comfort zone by seeing what it felt like to be homeless for a day. She spent a day begging outside an upscale mall in New Jersey and began her journal on the experience by writing, “Staring, pointing, laughing, avoiding and jokes; I wanted to curl up in a ball and hide. Every person who walked by seemed to do something different to let me know that they saw me and wanted nothing to do with me. All I wanted was to be seen as a human being, but, apparently, no one considered me one ...”

*Students*

**Dana Piazza and Jin Kuk**

*Advisor/Mentor*

Kim-Alla Swanton and Kathy Curtis

*Title*

**Cultural Partners**

*Abstract*

Intercultural Communication class works with the U.B. English Language Institute to run the “Cultural Partners Program.” The goal is to match each American student from Intercultural Communication with a U.B. international student. They meet together throughout the semester, come to know one another’s cultures better and journal about their experiences.

*Students*

**Nathalie Desrayaud, Tom Diehl, Ben DiPaola, Sarah Haas, and Adam Moore**

*Advisor/Mentor*

Frank Tutzauer

*Title*

Conflict and Cooperation: Strategic Evolution in Various Matrix Games

*Abstract*

This project examines the long-term evolution of strategic behavior in a variety conflict situations. The conflicts vary in their structural features, and each is modeled by a different game-theoretic matrix. The particular games employed are the Prisoner’s Dilemma (which captures the tension between individual and group preferences), Chicken (which is suited to situations of threat and blackmail), Assurance (which models mutual dependence), and Hero (which captures the spirit of volunteerism). In each case, we use the iterated version of the game where the disputants play the game repeatedly and a strategy’s success is determined by its total winnings after a large number of iterations. For each conflict type, we examine the behavior of strategies that have been shown to be theoretically important in previous research. To

model long-term behavior, the strategies engage each other in a round-robin format. They then reproduce in proportion to their success in the previous generation and this process continues until no further change is observed.

**(LSAMP) LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION**

*Student*

**Mame B. Afrane**

*Advisor/Mentor*

Dr. Richard Gronostajski and Dr. Elena Lazakovitch

*Title*

**The Deletion of the Nuclear Factor I (NFI) Gene in C. elegans that Causes Defects in Pharyngeal Pumping**

*Abstract*

The Nuclear Factor I (NFI) gene family encodes transcription factors that are expressed in all mammals. They are responsible for the expression of many genes required for development in vertebrates. There are four homologous genes in the NFI family in vertebrates: Nfia, Nfib, Nfic and Nfix. Each gene plays a special role in development. There is a single nfi-1 gene expressed in different types of cells such the Caenorhabditis elegans in the pharynx. The pharynx is responsible for food pumping. In an ongoing study, I examined whether the loss of the nfi-1 gene in C. elegans causes defects in pharyngeal pumping. To determine whether this gene caused defects in pharyngeal pumping, the pharynxes of nfi-1 mutant worms were compared to wild-type worms. The results of the experiment indicated that the rate of pharyngeal pumping decreased in nfi-1 mutant worms when they were compared to wild-type worms. Rescue experiments were also performed using transgenic strains, which contained the nfi-1 locus. The results demonstrated that the pharyngeal pumping defects in nfi-1



mutant worms were partially rescued by nfi-1 transgenes.

*Student*

**Okyro Collazo**

*Advisor/Mentor*

Dr. Thomas Melendy, University at Buffalo Department of Microbiology and Immunology

*Title*

**Development of a Method for Incorporating Site Specific Lesions in a Plasmid Abstract**

*Abstract*

DNA damage is the prime cause of chromosomal rearrangements, mutations and cancer, and can lead to lethality of all cells. Damage is especially serious to the cell during S-Phase, when DNA is being synthesized. When damaged DNA gets to the replication fork during S-phase, DNA damage becomes exacerbated. It is hard to control in-vitro where DNA damage occurs, and it is very difficult, overall, to observe a replication fork. This project entailed developing a technique that allows the incorporation of a single DNA damage site at a specific location on a DNA plasmid. A specific site in plasmid pUC119 was selected, where two enzymes, EcoR I and BamH I, with unique restriction sites, cut the plasmid. A customized linear oligonucleotide was synthesized and cut with MfeI and Bgl II and ligated to the cut plasmid with T4 DNA ligase. Ligation was carried out in the presence of all four restriction enzymes to prevent reforming of the original restriction sites. Carrying out the ligation in the presence of the four enzymes should have forced the short oligonucleotide into the plasmid with very high efficiency. If efficient production of a covalently closed plasmid was detected, the system can be used to produce plasmids with a site-specific lesion by using a short damaged oligonucleotide in place of our test oligonucleotide.

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## MANAGEMENT

*Students*

**Kit U. Leong and Mai H. Ling**

*Advisor/Mentor*

Dr. Natalie Simpson

*Title*

Project Scheduling in the Face of

Conflicting Objectives: the Case of Native Sun

*Abstract*

Project managers are often required to coordinate a complex array of inter-related tasks in the presence of conflicting objectives, such as the simultaneous desires to complete a project as soon as possible, while keeping spending at a minimum. In Spring 2005, 388 operations management students tackled this dilemma in the form of scheduling the production of Native Sun, a fictitious motion picture. Working alone or in teams of two, student schedulers marshaled personnel and equipment across multiple locations on two different continents, checking issues such as travel time and payroll spending through a class-wide simulation. Only one schedule rose to the top of this cohort, winning the ultimate class championship for best combined rank of completion time and project cost. Native Sun championship partners Kit Leong and Mai Ling describe the strategies and tools they developed in their highly successful effort to unlock the conflicting nature of a realistic project.

*Students*

**Gail Rink, Walker Adams, Ryan Marie Feldman, Sharon Loh**

*Advisor/Mentor*

D. Lawrence Davis

*Title*

**Marketing Plan for Catacan ACV**

*Abstract*

As part of the MGM 301 Principles of Marketing course the four member team identified a target market with an unfilled need, created a hypothetical new product that provided a solution and developed its marketing plan. The team chose to position themselves as part of the marketing department of GlaxoSmithKline Inc., a leading research-based pharmaceutical firm. Catacan ACV is a breakthrough cancer vaccine effective against a selected type of cancer. The team developed a marketing plan with an integrated mix of product, price, place, and promotion targeted at physicians specializing in oncology and providing services to patients with the specific cancer. The plan included concisely written sections for product description, marketing environment, analysis of strengths,

weaknesses, opportunities, and threats (SWOT) of the Catacan ACV product, pricing strategy, distribution methods, coordinated advertising and promotion, budget, and a Gantt chart timeline for the entire project from ideation through to commercialization. The Catacan ACV written marketing plan was presented orally to a simulated marketing committee comprised of faculty, guest judges and marketing students.

*Students*

**Ayman Ezzat, Crystal Fruehauf, Erin Hoag, Kyle Vail, Mai Ling, Simon Wong**

*Advisor/Mentor*

Amresh Kumar

*Title*

**Verizon: Can You Hear Me Now?**

*Abstract*

What we came up with that would help in the sales of Verizon is a new PC Ready phone. This phone would allow you to have a phone that has a built in flash drive for those days when you need to save your files. Advertising the product will be hard but we have concluded through the ideas of marketing strategy, we will be successful in marketing the product. We have an firm idea of the Product, Promotion, Place and Price which are the essential 4 P's in marketing to the world.

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## MCNAIR

*Student*

**Candice Cooper**

*Mentors*

Dr. Shira Gabreil and Marian Shafir

*Title*

**Behavioral Impacts of Romantic Partners on the Self: Close Relationships and Personality Traits**

*Abstract*

This study examines how close romantic relationships promote similarity between partners. A board game intelligence test and self-report questionnaires were administered to measure the intelligence of college students in romantic relationships. Each student wrote about intelligent aspects, non-intelligent aspects, or physical characteristics of their partner. We expect that non-avoidant/secure individuals will score highest in

intelligence when writing about intelligent aspects of their partner; therefore having more desire to become similar to their partner. With non-avoidant attachment styles, we expect that these individuals will score highest in non-intelligent aspects and will have less desire to become similar to their partner.

*Student*

**Audra Foote**

*Advisor/Mentor*

Dr. Craig Colder, Roisin M. O'Conner

*Title*

**Activation of Implicit Alcohol Associations in a College Sample**

*Abstract*

The role of expectancies in alcohol use has been shown in many studies to be predictors of prospective and retrospective alcohol use. Specifically, more positive expectancies of alcohol are correlated with a greater alcohol use. The more positive the outcome of alcohol is expected to be the more likely we are to drink. It seems then, that identifying the associations or expectancies one has with alcohol will tell us a lot about a persons risk for heavy use. We wanted to develop a tool that assesses individual's implicit associations with alcohol use better than previously used tasks. Also, although contextual cues have been shown to increase implicit activation and association, the studies on how context cues effect alcohol use are still relatively new and problematic. Therefore, another goal of this study will be to examine the influence of alcohol related contextual cues and their implicit associations with alcohol use. Lastly, pilot studies conducted previously by the lab suggested that inhibition was occurring when negative information was given following an alcohol related prime. Therefore, the Memory Network model and the idea that semantically unrelated information takes longer to activate will also be of interest in this study.

*Student*

**Marie Anne Sanon**

*Advisor/Mentor*

Dr. Linda Caley

*Title*

**Systematic Review of Transitions in Children and Families with Special Health Care Needs**

*Abstract*

An important component of conducting research is doing a literature review and systematically analyzing and synthesizing previous research papers on a specific subject. It is important to use a method that simplifies the organization of the literature for ease of analysis and synthesis. Garrard, J. (1999) proposed a matrix method to organize one's data, thoughts and findings. The matrix method "is both a structure and a process for systematically reviewing the literature" (Health Sciences Literature Review Made Easy, The Matrix Method, p17.). This poster describes the process of doing a systematic literature review of fetal alcohol spectrum disorder. The system of the literature review will be illustrated using examples from literature on transitions experienced by families with children with chronic illnesses. A transition is defined as "time marked by a passage from one life phase, condition, or status to another and increasing stress" (Meleski, 2002). To facilitate this review process, the following variables are used: type of study, type of population, types of transitions, time of transition, models of transition, type of health problem, type of study trial, research question, research answer, and recommendation about transitions. The poster demonstrates the matrix set-up and gives an example of the information entered.

*Student*

**Jeff Thomas**

*Advisor/Mentor*

Dr. Leonard Simms

*Title*

**Comparisons between Two Competing Models of Personality**

*Abstract*

The "Big Five" Model of Personality has shown that individual differences in personality generally group into five higher-order dimensions. However, early studies of the Big Five excluded evaluative terms. Later studies identified a "Big Seven" model which included two additional, clearly evaluative dimensions. This study's objective was to determine whether the evaluative dimensions of the Big Seven are in fact independent from the Big Five. Measures of the Big Five and Big Seven were administered to 325 undergraduates at two time points. Data will be analyzed using correlational, factor, and temporal stability analyses designed to compare the two competing models.

*Student*

**Lindsey Vedder**

*Advisor/Mentor*

Dr. Antonia Monterio

*Title*

Linkage Between Missing and Distal-less Genes in *Bicyclus anynana*  
Abstract: *Bicyclus anynana* is a butterfly of central Africa and has become a major subject of evolutionary and developmental biology because of its eyespot variation. Missing butterflies carry a mutation that causes two of the seven eyespots from the hind wing not to form. Previous research has shown that Distal-less, a gene that is expressed in the regions of early eyespot formation, is linked to variation in eyespot size. The eyespot size of the butterfly can be gradually reduced with artificial selection until the eyespots are no longer present. This connection suggests Distal-less as a very likely candidate for linkage to the Missing gene.

*Student*

**Samantha Wallace**

*Advisor/Mentor*

Dr. Jamie M. Ostrov

*Title*

**A short-term longitudinal study of the development of positive and negative peer experiences and associated features during early childhood**

*Abstract*

Previous research has demonstrated that there are gender differences in relational and physical aggression in young children. Moreover, few studies have investigated gender differences in relational and physical victimization among preschoolers. The purpose of this short-term longitudinal study is to investigate the development of both positive and negative peer experiences (e.g. physical, relational, verbal aggression/victimization, prosocial and play behaviors) during early childhood. This study tests questions related to these social relationships and behaviors among boys and girls using both observational and teacher report methods. Sixty-five children enrolled in the toddler or preschool classrooms that were between the ages of 30 and 60 months were observed in two different social contexts. The predictions are that boys will display more physical and verbal aggression than girls and girls will use more relational aggression than boys. Victimization will also be gender specific (e.g. boys will receive more physical and verbal aggression from male peers). This research has implications for practitioners who design and implement prevention and intervention programs with young children.

## **NURSING**

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*Student*

**Marie Anne Sanon**, Mc Nair Scholar

*Advisor/Mentor*

Linda M. Caley PhD, RN, School of Nursing

*Title*

**Systematic Review of Transitions in Children and Families with Special Health Care Needs**

*Abstract*

An important component of conducting research is doing a literature review and systematically analyzing and

synthesizing previous research papers on a specific subject. It is important to use a method that simplifies the organization of the literature for ease of analysis and synthesis. Garrard, J. (1999) proposed a matrix method to organize one's data, thoughts and findings. The matrix method "is both a structure and a process for systematically reviewing the literature" (Health Sciences Literature Review Made Easy, The Matrix Method, p17.). This poster describes the process of doing a systematic literature review of fetal alcohol spectrum disorder. The system of the literature review will be illustrated using examples from literature on transitions experienced by families with children with chronic illnesses.

*Students*

**Rebecca Tucker, Christy Varrenti  
Xing Guang Lin, Elise Melancon**

*Advisor/Mentor*

Janice Jones, PhD, RN, CNS

*Title*

**What is the Effect of Preoperative Fasting on Surgical Preparation for Surgical Patients?**

*Abstract*

The American Society of Anesthesiologists (ASA) wrote guidelines for healthy individuals, excluding women in labor and patients with co-existing diseases or conditions that affect emptying or fluid volume. It is recommended that a patient fast from clear liquids for two or more hours preoperatively, and fast six hours from a light meal or non-human milk before elective procedures. Meta-analysis research has validated that the shortened fluid fast recommended by the ASA does not result in aspiration or regurgitation. It has also been found that many patients are fasting longer than the guidelines, and keeping a patient NPO after midnight has potential to result in dehydration, hunger, irritability, anxiety, and hypoglycemia. The standard "NPO after midnight" continues to be implemented for convenience. The research shows that there is a gap between research and practice, and there might be potential for nurses to facilitate a change to enhance patient care.

*Student*

**Kimberley Ennis and Sharon Pratt**

*Advisor/Mentor*

Mary Ann Meeker, DNS, RN

*Title*

**Pain Management for Infants during Circumcision**

*Abstract*

A classroom research group was presented with a clinical practice scenario about neonates in a newborn nursery having no analgesia provided to them prior to or following circumcision. It was believed that infants could not feel pain because their nerves are not completely myelinated. Based on the scenario provided a literature search was conducted regarding ethical issues and the value of analgesia during circumcision.

*Student*

**Katherine M. Stiefel**

*Advisor/Mentor*

Sherry L. Pomeroy, PhD, RN,

*Title*

**Childhood Obesity:  
A Public Health Threat**

*Abstract*

The purpose of the study was to review the literature about childhood obesity, evaluate intervention programs to prevent and treat childhood obesity, and understand implications for nursing practice, education, and research.

Background and Significance:

Approximately 15% of children in the United States are obese, and this increases to almost 25% among ethnic minority children (Cossrow & Falkner, 2004; Holcomb, 2004). The subsequent negative health outcomes of childhood obesity include conditions such as type 2 diabetes, hypertension, asthma, and psychosocial problems.

*Students*

**Shannon McCrory**, RN (*Presenter*)

**Laramie Dixey**, RN, BS

**Matthew Mclean**, RN, BS

**Cristina Virtuoso**, RN

**Megan Jones**, RN

**Lisa Bohlen**

*Advisor/Mentor*

Linda McCausland, RN, Ed.D

*Title***Knowledge of Stroke Risk Factors and Warning Signs Among Adults in Western New York State***Abstract*

Strokes are the leading cause of adult disability and the third leading cause of death in the U.S. The purpose of this study was to determine the public's knowledge of warning signs and risk factors for stroke.

**Method:** Participants were chosen through convenience sampling at 17 different flu clinics throughout Western New York State, between 10/8/03 and 11/20/03. Information was gathered from participants through an anonymous five question written survey. Participants were asked four open-ended questions regarding knowledge of strokes: to identify three risk factors, three warning signs, what they would do if they thought someone was having a stroke, and how soon victims should receive medical treatment. A fifth question asked for demographic information.

**Data Analysis:** Data from the survey was entered into the SPSS database and analyzed to determine extent of participants' knowledge of critical information related to occurrence of stroke as well as identification of relationships between demographic characteristics and knowledge level.

**PHARMACY &  
PHARMACEUTICAL SCIENCES***Students***Danny McNatty***Abstract*

This laboratory has proposed that the administration of anti-drug antibodies may be used within an "inverse targeting" strategy to enhance the pharmacokinetic and therapeutic selectivity of intraperitoneal (i.p.) chemotherapy. This hypothesis has been supported by the results of pre-clinical studies utilizing methotrexate as a model anti-cancer drug. In these

studies, the administration of murine monoclonal anti-methotrexate antibodies. These modified antibodies may facilitate future clinical investigations of the targeting strategy, as the modified antibodies may be expected to be less immunogenic in man (i.e., relative to murine anti-methotrexate IgG).

*Students***Tyler M. Smith-Strutz**, Pharm. D. Candidate, State University of New York at Buffalo (SUNY) School of Pharmacy**Edward M. Bednarczyk**, Pharm. D., SUNY at Buffalo School of Pharmacy, **Hani A. Nabi**, M.D. and PhD., SUNY at Buffalo Department of Nuclear Medicine**Lisa B. Martin**, DVM, SUNY at Buffalo School of Medicine*Title***Assessment of an Encapsulated Dosage Form for Oral Administration 18-F-2D2-fluorodeoxyglucose and Biodistribution of 18-F-2D2-fluorodeoxyglucose Administered by Gavage in a Rat Model***Abstract*

FDG is a diagnostic radiopharmaceutical for positron emission tomography (PET). FDG is typically given intravenously. Administration of an oral solution has been reported but showed substantial oropharyngeal and esophageal uptake. The purpose of this study assesses the feasibility of delivering FDG in an encapsulated dosage form. Additionally, the biodistribution of gastrically administered FDG in an animal model will be evaluated.

Again highlight the first name (student) School of Pharmacy & Pharmaceutical Sciences

Pharmacogenetics of Human Carbonyl Reductase 3 (CBR3)

*Students***Jessica A. Haas**<sup>\*</sup>, **Sukwinder S. Lakhman**<sup>\*</sup>, **Debashis Ghosh**, and **Javier G. Blanco**, Department of Pharmaceutical Sciences, SOPPS, University at Buffalo; Department of Structural Biology, Hauptman-Woodward Medical Research Institute; Department of Pharmacology and Therapeutics, Therapeutics Program, Roswell Park Cancer Institute

<sup>\*</sup>Equal contribution

*Title***Expression and Purification Development of B-Domain Deleted Factor VIII in CHO/Dihydrofolate Reductase Deficient Cells Using Anti-Heavy Chain Monoclonal Mouse Factor VIII Antibody***Purpose*

Human carbonyl reductase activity accounts for a significant fraction of the metabolism of endogenous and pharmacological carbonyl compounds. Genetic polymorphisms in CBR3 may play a significant role in the unpredictable pharmacodynamics of some CBR drug substrates. This study pinpointed single nucleotide polymorphisms (SNPs) in the coding region of CBR3 and evaluated whether they resulted in proteins with variable enzymatic activity.

*Student***Renata M. Bator**, Department of Pharmaceutical Sciences, School of Pharmacy and Pharmaceutical Sciences,*Purpose*

The cost and availability of B-Domain Deleted Factor VIII (BDDFVIII) make it difficult to acquire and purify for experimental use. This study investigates transfection efficiencies of calcium phosphate and lipofectamine for producing BDDFVIII in CHO/dhfr-cells. In addition, steps were taken to develop an affinity chromatography column to purify BDDFVIII using anti-heavy chain mouse FVIII antibody from a

hybridoma cell line.

*Student*

**Michelle Tumminello**

*Title*

**Binding Affinity of Topotecan to Anti-Topotecan Antibodies**

*Author*

Michelle L. Tumminello,  
Joseph P. Balthasar, Department of  
Pharmaceutical Sciences, School of  
Pharmacy and Pharmaceutical Sciences,

*Purpose*

Ovarian Cancer has become an important target disease for chemotherapy. The problem is many chemotherapeutic drugs are rapidly absorbed into the systemic circulation causing toxicity. It has been shown in other drug models, that antibodies are able to form complexes with the free drug in the systemic circulation. By this process, less free drug will be available to affect healthy cells and elimination of the drug will increase. This study investigates the binding affinity of anti-Topotecan antibodies to a free Topotecan (TPT) drug concentration using fluorescence detection.

## **SCHOOL OF PUBLIC HEALTH AND HEALTH RELATED PROFESSIONS**

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*Students*

**KE Personius, JM Spiegel,  
KH Supple, JL Karnes**

1. Department of Exercise and Nutrition Science, School of Public Health and Health Professions, University at Buffalo 2. Division of Rehabilitation Science, D'Youville College

*Abstract*

Neuromuscular synapses undergo a transition from multiple to single innervation during postnatal life. Competition for synaptic territory appears to be modulated by the patterns of neural activity among motor neurons which are vying for innervation of the same muscle fiber. At birth, temporally correlated activity is present among motor neurons innervating the same muscle, but these correlations disappear during the second postnatal week, in part due to the loss of gap junctional coupling among motor neurons. Postnatal injection of MK801, a specific glutamate NMDA antagonist, has been

shown to maintain gap junctional coupling. Here, we show that blocking glutamatergic inputs to the spinal cord results in an immature pattern of correlated motor neuron activity and slows down the time-course of synapse elimination compared to control saline injection or blockade of spinal cord serotonergic inputs. Together, these results suggest that glutamate blockade prevents the developmental decline in gap junctional coupling, maintaining temporally correlated neural activity, and results in a slowed synapse elimination time-course.

*Students*

**Thomas J. Corso, Kevin A. Ball,  
PhD, Ryan Trask, ATC**

*Title*

**“The hip bones connected to the knee bone...” Implications for hip control on ACL injury at the knee**

*Abstract*

The Anterior Cruciate Ligament (ACL) restrains anterior motion of the tibia from beneath the femur. While catastrophic ACL injury from direct contact produces severe social and medical costs, surprisingly many ACL injuries are non-contact; apparently, some “design flaw” exists within the human body. Excessive quadriceps contraction causes ACL injury (in cadaveric studies), however vigorous quadriceps contractions are routine in sports. At the knee, the antagonist hamstrings muscle group provides stability and possesses an angle of pull similar to the ACL. Therapists have focused on hamstrings strengthening but the effects of hip flexion on this biarticulate muscle group remain unconsidered. Muscle provides greater contractile force when lengthened. Since the hamstrings group crosses both hip and knee, use of an increased hip flexion posture could increase knee stability thereby reducing ACL injury risk.

*Students*

**Denysschen, C., J. Halstead,  
H. Labigan, J. Marcotte and H.  
Burton**

*Title*

**Resistance training, blood cholesterol levels and cardiovascular disease risk reduction**

*Abstract*

Individuals at risk for developing cardiovascular disease (CVD) are initially encouraged to reduce risk factors through diet and exercise before resorting to drug treatment. Regular exercise can reduce many risk factors, in particular high plasma triglycerides and high LDL-cholesterol while raising low HDL-cholesterol. We are studying the effect of resistance training on body weight/composition, plasma lipids, plasma C-reactive protein (a marker for systemic inflammation), and blood oxidative status during and after 12 weeks of resistance training. The individuals being studied (overweight, at-CVD risk men) represent a growing segment of the population. Subjects are initially screened for total cholesterol, LDL and HDL cholesterol and general health status. Inclusion criteria include total cholesterol 200-240 mg/dl, and LDL cholesterol 130-160 mg/dl (but otherwise apparently healthy), normal fasting plasma glucose (80-110 mg/dl) and BMI index between 25-30 (defined as overweight, but not obese). To ensure subjects maintain their normal diet, each subject completes a 3-day food record (i.e. type, portion size, and preparation of the food) at the end of each of the 4 training blocks. This is an ongoing study – preliminary results indicate no significant change in total and LDL cholesterol, but a significant increase in HDL cholesterol. A significant reduction in body fat and concurrent increase in lean body mass were also observed.

Soy supplementation, oxidative stress and cardiovascular disease risk reduction

*Students*

**Denysschen, C., T. Feinkind, C.  
Owens, Christopher Howard and  
H. Burton**

*Abstract*

Oxidative stress is a state wherein disequilibrium exists between production of reactive oxygen species (ROS) and natural defenses against them. ROS are reactive molecules that contribute to plaque formation in coronary arteries through oxidation of LDL-cholesterol. This process is also linked to inflammation – another factor associated with plaque development. Cardiovascular disease (CVD) is a leading cause of death in the USA and is linked to high intake of animal

protein. CVD is less prevalent in those with diets that are soy-based, which lowers serum lipids and in improving blood oxidative status. This study uses overweight, at CVD-risk men as subjects. Inclusion criteria include total cholesterol 200-240 mg/dl, and LDL cholesterol 130-160 mg/dl (but otherwise apparently healthy), normal fasting plasma glucose (80-110 mg/dl) and BMI index between 25-30 (defined as overweight, but not obese). Each subject supplements their normal diet with 25g of soy or whey protein such that total protein intake is at least 1.2 g/kg body mass/day, for 12 weeks. Blood is analyzed for total cholesterol, HDL cholesterol, LDL cholesterol, triglycerides, markers of oxidative stress and C-Reactive protein. This is an ongoing study – preliminary results indicate a significant reduction in total and LDL cholesterol, and markers of oxidative stress in subjects consuming soy.

*Students*

**Lo Bue-Estes, C., P. Horvath, B. Willer, H. Burton, D. Rodda, and J. Leddy**

*Title*

**Exercise to Exhaustion Affects Cognitive Function in Trained and Untrained Women**

*Abstract*

The effects of exercise on cognition are not well understood and less studied than the physiological effects. The purpose was to determine if exercise to exhaustion affected cognition, and if it was the same in trained and sedentary subjects. Trained and sedentary females (9 in each group being 20.8 and 20.6 yrs; having 55.3 and 38.1 VO<sub>2</sub>max, ml/kg/min, respectively), were studied prior to, during and following treadmill exercise to exhaustion. Simple reaction time and working memory (the ability to look at novel data and manipulate it) was observed pre exercise, during exercise at 25%, 50%, 75%, and 100% VO<sub>2</sub>max, post exercise, and during recovery. Simple reaction time did not

change with exercise, but was faster in trained subjects. Working memory was not different between groups but pre exercise values were different compared to 100%, post exercise, and after recovery. Simple reaction time, a simple cognitive variable was not affected by exercise to exhaustion. Working memory, a complex cognitive variable was affected by exercise to exhaustion. Complex cognitive variables may be affected by exercise due to the level of integration and difficulty associated with the mental task.

**SIGMA XI**

*Student*

**Melanie Bogdan**, Psychology

*Faculty Advisor/Mentor*

David Smith, Ph.D.

*Title of Poster*

**Uncertainty Monitoring by Humans (*Homo sapiens*) and Rhesus Monkeys (*Macaca mulatta*) in the Categorization of Multidimensional Stimuli**

*Abstract*

Uncertainty Monitoring by Humans (*Homo sapiens*) and Rhesus Monkeys (*Macacaculatta*) in the Categorization of Multidimensional Stimuli

Decision Boundary Theory states that a decision boundary exists between two categories, and stimuli are categorized according to their location in this psychological space. This study examined uncertainty monitoring in a category discrimination task with sixty humans and two rhesus monkeys (*Macaca mulatta*). In both human and monkey subjects, accuracy decreased as to-be-categorized stimuli approached the decision boundary. Human and monkey uncertainty response curves are also similar, in that as accuracy decreased, use of the uncertain response increased. These results suggest that both species are similar in their classification of stimuli.

*Student*

**Brenna McJury**

*Faculty Advisor/Mentor*

Diana Aga

*Title of Poster*

**Extraction and LC/MS Analysis of Flavomycin Residues in Chicken Litter**

*Abstract*

Extraction and LC/MS Analysis of Flavomycin Residues in Chicken Litter  
 Department of Chemistry

This study aimed to develop and optimize extraction and analytical procedures to determine the residues of flavomycin antibiotics in chicken litter. The analyte was isolated from chicken litter using accelerated solvent extraction followed by a solid phase extraction (SPE) cleanup step. Various SPE cartridges were explored, including ENV+, C18, and C4 cartridges. The C4 cartridge produced the highest percent recovery (greater than 75%) and was therefore used in the subsequent analysis. After cleanup, the sample was analyzed by liquid chromatography-electrospray ionization-mass spectrometry for detection and quantification. Different columns for the reversed-phase liquid chromatography, including Betabasic C18, betabasic CN, Fluophase RP, and Hypercarb, were compared to achieve the best resolution. The method is needed as a tool to investigate the degradation of flavomycin during composting, which is an agricultural practice performed to reduce nitrates in animal manure prior to land application.

*Student*

**Isidore Dinga Madou**

*Faculty Advisor/Mentor*

Glenna Bett

*Title of Poster*

**Quantitative and Qualitative analyses of the voltage gated Herg Potassium Channel Models**

### *Abstract*

Quantitative and Qualitative analyses of the voltage gated Herg Potassium Channel Models

An ion channel is a specialized protein molecule that permits specific ions to enter or leave cells. The voltage gated HERG (Human Ether-a-Go-go-Related Gene) potassium channel opens or closes in response to voltage changes across the cell membrane and is selective to potassium ion. Herg contributes to the repolarization of cardiac action potential and is associated with many cardiac diseases: Long QT syndrome (the duration of repolarization is longer than normal), risk of arrhythmia, and sudden death due to an abnormality of the heart's electrical system. Herg unusual gating mechanism properties, fast voltage dependent inactivation and slow activation, are the key components in maintaining a normal cardiac electrical activity. In addition of laboratory experiments, mathematic modeling is used for a better understanding this mechanism. The present study investigates whether or not the apparent structural difference between models leads to a functional difference as well. At this point of the study, we have discovered that under the same experimental conditions and after modifying the values of some transition rates, Wang's and Clancy's models simulate the same ionic, tail, and transient currents. However, we haven't found a set of parameters to conciliate Khien's model with the other two.

### *Student*

**Brian Peer**

### *Faculty Advisor/Mentor*

Dr. Mark Swihart

### *Title of Poster*

**Production and Surface Functionalization of Silicon Nanoparticles**

### *Abstract*

Production and Surface Functionalization of Silicon Nanoparticles Chemical & Biological Engineering

This poster will focus on the functionalization of luminescent silicon nanoparticles that have potential as components of hybrid inorganic/organic materials for photonic and biophotonic applications. Silicon

nanoparticles with bright visible photoluminescence are being prepared by a combined vapor-phase and solution-phase process in our lab. CO<sub>2</sub> laser-induced pyrolysis of silane followed by the etching with mixtures of hydrofluoric acid (HF) and nitric acid (HNO<sub>3</sub>) produces these brightly luminescent nanoparticles. These particles have exciting potential applications in optoelectronics, display technology, chemical sensing, biological imaging, and other areas. Both hydrosilylation reactions on hydrogen terminated silicon particles and silanization reactions on hydroxyl terminated silicon particles are being used to graft functional molecules to the nanoparticle surface. Most specifically, recent advances and attempts to functionalize the surface of silicon nanoparticles with molecules that will lead to attaching aminoallyl-dUTP (for use in bioimaging) will be presented.

### *Student*

**Danielle Wilbur**

### *Faculty Advisor/Mentor*

Dr. Kate Rittenhouse-Olson

### *Title of Poster*

**Glycohistochemical Analysis of Drug Targeting in Human Breast Cancer**

### *Abstract*

Glycohistochemical Analysis of Drug Targeting in Human Breast Cancer

Carbohydrate receptors are present in all cells in order to initiate and participate in a variety of cell functions. Tumor cells have an increased, over-expression of specific carbohydrate molecules called galectin, which are members of the lectin family of carbohydrates. These molecules have a high affinity for beta-galactosides, and are known to play an important role in cell growth, adhesion, migration and transformation, tumor metastasis, formation of cysts, and are also elevated in human tumors. Galectin-3 is a specific lectin that is present in breast tumor epithelium, inhibiting and protecting these cells from intrinsic apoptosis due to their complex involvement in cell adhesion.

Due to the over-expression of galectin in tumor cells, there will be a proportionally increased uptake of a beta-galactoside compound in tumor

cells and a limited interaction in normal cells. The carbohydrate-lectin interactions between a multivalent beta-lactose compound and tumor cells or normal cells were evaluated via glycohistochemical analysis of the biotinylated saccharide with histological sections of tumor and normal tissues. The absence or minimal occurrence of carbohydrate uptake by normal cells will enable carbohydrates to be attached to chemotherapeutic agents and be administered to cancer patients, resulting in therapeutic effects at lower doses of chemotherapy with lower side effects.

### *Students*

**Lindsey Vedder**

**Marie Anne Sanon**

**Audra Foote**

**Jeff Thomas**

## **STUDENT POETRY AWARDS AND READINGS**

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### *The Arthur Axlerod Memorial Award*

**Devan DeCicco**

**Samantha Kowal**

### *The Friends of the University Libraries Undergraduate Poetry Prize*

**Robin Jackelow**

### *The Albert Cook, Mac Hammond,*

*John Logan Prizes*

**Christopher Drellow**

**Samantha Kowal**

**Sal Viglietta**

### *The Scribblers Prize*

**Samantha Kowal**

### *The Joyce Carol Oates Fiction Prize*

**Sal Viglietta**

### *The Early English Books Online*

*International Essay Competition*

**Meghan Fadel**

All winning works are on display as part of the "poster session."



*Student presenters were nominated by their Deans to participate in today's Celebration of Academic Excellence. Each decanal area was asked to go through their own selection process and supply a limited number of undergraduate student works. In limiting the number of student presentations from the various undergraduate schools, a wide variety of scholarly and creative works was able to be showcased. During this poster session we celebrate UB's undergraduate students and their faculty mentors who are engaged in innovative work and scholarly research. The nominated student works you are viewing are stellar examples of the undergraduate research opportunities available to UB students. Thank you for joining us today as we "Celebrate Excellence" in undergraduate research.*