Celebration of Academic Excellence

UB Undergraduate Research and Scholarship Projects

University at Buffalo
Thursday, April 17, 2008

Center for the Arts
SCHOOL OF ARCHITECTURE & PLANNING

Student Allison Bodine
Major Environmental Design & Geography
Research Mentor Jordana Maisel
Title Ecovillages: An Innovative Solution
Abstract
One growing concern in the community planning arena today is the aging population in the United States. As the Baby Boomer generation reaches retirement, they become the group to plan for. Ecovillages are intentional communities that work to integrate the social, environmental, and economic facets of a community and offer a unique solution to some of the issues that will be faced with this aging population. The low impact way of life and strongly encouraged social networks that are distinct characteristics of ecovillages provide numerous benefits for not only the Baby Boomer generation, but those to come as well.

Student Lora Cunningham
Major Environmental Design
Research Mentor Li Yin
Title East High Neighborhood Study
Abstract
In this project my partner and I studied the impact of poor housing on a neighborhood in the East High School area in Buffalo, New York. The purpose of our investigation was to identify specific troubled areas within the neighborhood and develop an effective methodology to tackle how to redevelop the East High School neighborhood. The future goal is to improve the housing conditions in the area and to encourage people to move into the neighborhood and take advantage of the newly renovated high school. This project involved data collection using housing inventory surveys and the program ArcGIS for data processing.

Student Daniel Ellis II
Major Environmental Design
Research Mentor Jordana Maisel
Title Designing a Livable Community: Innovative Alternative Housing
Abstract
There are many problems in the United States that must be addressed in order to create livable communities for all. One of these problems has to do with the housing market and the ability for the average person to purchase a home. Throughout history the general idea of what the average person considers to be a home has changed drastically. Since 1950 the average home size in the United States has almost doubled from 1500 square feet to 2400 square feet (Tumbleweed Tiny House, 2007). The current trend that the U.S. housing market is in has caused many Americans to be completely priced out of any chance at purchasing a home. There is however a movement that has abandoned the materialistic lifestyle and the luxurious asset of owning a huge expensive home in exchange for a simple more economical lifestyle. Two organizations at the forefront of this movement are the Tumbleweed Tiny Home Company based in San Francisco, California and the Swedish Flat-Pack furniture company Ikea. These organizations have taken two completely different approaches to solving modern day problems with housing.

Student Stewart F. Gohringer
Major Architecture
Research Mentor Annette LeCuyer
Title CIVITAS
Abstract
On a heavily trafficked corner of downtown Toronto, this high-density cooperatively owned apartment building is planned to provide long-term living accommodations for low and moderate-income families in an area of the city where property values are escalating dramatically. The building is also designed for short-term renters that are finding it increasingly difficult to find affordable apartments in this part of the city.

Student Christina Guenther
Major Environmental Design
Research Mentor Jordana Maisel
Title Community Supported Agriculture and the Baby Boomer Generation
Abstract
As the largest segment of the American population, Baby Boomers are likely to have a significant influence on the direction of planning in America. Food security is one of the most important issues facing any community, and for Baby Boomers in particular there is a need to plan ahead and build the best possible solution. In recent years several food institutions have emerged that may offer alternatives to the traditional supermarket system. Community Supported Agriculture, also known as CSA, has shown itself as a promising alternative that helps to connect the consumer with local, fresh produce at a lower price.
reasonable cost. By exploring what CSA is and how it helps to address food security issues, solutions can be found which will not only provide healthy and accessible food but also a strong sense of community for those who participate.

Student
Eric Poniatowski
Major
Environmental Design
Research Mentor
Jordana Maisel
Title
Public Health and Active Living in Buffalo
Abstract
In Environmental Design Workshop III, I explored the topic of active living as a solution to the trend of decreasing physical activity and increasing obesity. I identified characteristics that create a pedestrian and bicycle friendly environment and looked at the practices of Minneapolis and Seattle, two cities known for their great strides in active living. Then, I evaluated the City of Buffalo’s current programs and street designs that encourage walking and biking and made recommendations for improvement.

Student
Danielle Rovillo
Major
Environmental Design
Title
Mapping Urban Conditions
Abstract
A tool utilized by many urban planners and architects, mapping is an interesting way to study urban form. There are numerous ways to illustrate density, character, circulation and history through maps and graphic representation. By using maps to study cities, we can learn about the original intentions of a city’s layout and how social evolution fostered changes in the urban landscape.

This look at public space in Downtown Buffalo illustrates changes in circulation and viewsheds as a result of a changing population and economy.

Student
Kelly Zona
Major
Architecture
Research Mentor
Eva Franch Gilabert
Title
Architopia- The Dynamic City of Encounter
Abstract
This project creates a utopia, located in the Eastern Pacific. Through research of the site I became interested in the concepts of the archipelago and the lacuna, looking into the writings of Rem Koolhaas and O.M. Ungers, both of whom have written on the archipelago as an urban model. In relation to utopia, I became interested in psychological encounter with the other, looking into the works of Lacan and Foucault. I want to bring this encounter into the built environment.

I therefore propose the Architopia—a dynamic city of physical and psychological encounter, made of “ideological islands” that continuously reconfigure and engage in dialectic. The Lacuna is the blank space that enables this encounter between islands. The proposal is not made through line, as this would tie it to physical form, but rather through atmospheric gradients.

Student
Melissa Buchman
Major
Psychology
Research Mentor
Jamie Ostrov Ph.D.
Title
The Association between Anxious/Fearful Behavior and Relational Aggression in Early Childhood
Abstract
Recent studies have identified an association between relational aggression (i.e., using the removal of the relationships as the means of harm, Crick & Grotpeter, 1995) and internalizing disorder symptoms such as anxiety, exhibited throughout specific periods of child development (Loudin et al., 2003; Marsee et al., 2007). However, one considerable limitation is the inability to generalize these findings to all developmental periods. The present study sought to address this issue by examining teacher- and research assistant-reports of anxiety-fearfulness and relational aggression throughout early childhood.

We conducted a hierarchical regression analysis to show a negative correlation between anxious/fearful behavior and relational aggression.

College of Arts & Sciences
Student
Ummi Abdullah
Major
Biotechnology
Research Mentor
Dr. Paul Cullen
Title
Nutritional Chemotropism in Yeast Is Controlled by Dynamic Cdc42p-Dependent Pole Switching and Differential MAPK Regulation of Mucin Adherence Functions
Abstract
Cell polarity is a critical feature of many organisms. The ability of cells to reorient their axis of polarity allows for construction of multicellular structures in three dimensions as well as cell motility.

We discovered a novel growth mode in yeast, the filamentous biofilm, which encompasses two established fungal foraging behaviors, biofilm formation and filamentous growth. Polarized biofilm expansion was controlled by dynamic pole switching at polar landmarks and was regulated by MAPK regulatory proteins and the Rho GTPase Cdc42p.

Polarized expansion was further controlled by spatiotemporally-regulated lubrication gradients of secreted mucin isoforms. Chemorepulsion in turn was regulated by MAPK induction of the cell-associated mucin FLO11 to produce adhesive walls of connected cells. The discovery of fungal chemotropic behaviors that are regulated by nutrient-sensing signaling pathways and opposing adherence gradients has implications in the complexity of fungal biofilm communities and fungal pathogenesis.

Students
Katrina Bytschkow
Major
Psychology
Research Mentor
Dr. Jennifer P. Read
Title
Understanding Motives for Pre-gaming in College Students

Abstract
Pre-gaming is defined as the practice of consuming alcohol before going out for the night, or before a function begins (Borsari, 2007). Pre-gaming is assumed to be associated with a greater risk of high BAC, drinking and driving, and other alcohol consequences (Barnett, 2007). Yet to date, there is almost no published research on this phenomenon.

Our research objectives are to gather qualitative information about college student perceptions about pre-gaming. Accordingly, focus groups (target N=50) will be conducted to obtain knowledge about students’ reasons for pre-gaming, perceived costs and benefits of pre-gaming, and how, when, and why students engage in pre-gaming activities. Data derived from these focus groups will inform the development of an item bank for a pre-gaming motives measure.

Such a questionnaire will contribute to the field as there has yet to be any comprehensive research on the motives for pre-gaming. If these motives can be assessed accurately, this may assist in the development of interventions geared toward offering college students other, less dangerous alternatives to pre-gaming. Knowledge may also be applied to the prevent pre-gaming activities as well.

Students
Peter Czosek, Janine Doran, Shauna Hausle, Kailegh Hollowood, Elizabeth Komoroske, Aaron Loo, Sarah Mix, Lacey Stanton, Catherine Walsh

Major
Communication

Research Mentor
Mary B. Cassata, Ph.D. & Joseph Loporcaro, Co-Mentor

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Title
Powerful Images in History and Culture

Abstract
“Humanity is defined in part by its ability to produce images,” and in today’s fast-paced world we are increasingly bombarded by pictures rather than words. Images encompass the essence of the period in which they were taken, and communicate tremendous cultural and emotional meaning to people who witnessed events as well as those who did not. This project analyzes the most influential and meaningful images ever produced, and presents them in a visual collage. In addition a poster board will be created to set forth the various findings in our research as to the forces that make certain images stick and become unforgettable.

Students
Ali Davidson, Simon Gendelman, Jennifer Lynn, Diane Michaelsen, Denny Yeh

Research Mentor
Frank Tutzauer

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Title
Evolutionary Fitness and Strategic Dynamics in the Game of Chicken

Abstract
Previous research has examined strategic dynamics in the iterated game of Chicken by using local mimicry rules—at each successive generation, a player adopts the strategy of his or her most successful neighbor. In this way, successful strategies are copied and unsuccessful strategies die out. Under such a rule, it has been found that in a population of unobservant strategies universal defection flourishes and cooperation becomes extinct, whereas in a population of observant strategies, cooperative rules with massive retaliatory power are the ones that generally survive. In this study, we employ an evolutionary fitness rule in a round-robin tournament to model strategic dynamics. In each generation, strategies reproduce in proportion to their success in the previous generation. We then observe the asymptotic behavior of the system to determine strategic success and the level of long-term cooperative behavior.

Student
Ashlee Dawson ⭕

Major
Biomedical Sciences

Research Mentor
Dr. Valerie Frerichs

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Title
Implementations in Introductory Chemistry

Abstract
The idea of this research is to introduce real scientific research methods to students at a younger age to allow them to become more familiar with the techniques that they will need later on in their scientific careers. The experiment was designed at Purdue and is now being implemented to many different colleges to increase it’s results. We are not only doing the experiments at the college level but we also introduced it into a high school this year. We teach the students a series of research methods and then towards the end of the semester we allow them to research their own ideas. The hope of this research is to bring about a better understanding of the meaning of research and that students will be better equip for research later on in their scientific careers.

Student
Emily DiBlasi ⭕

Major
Biology/Environmental Studies

Research Mentor
Katharina Dittmar De La Cruz, Ph.D.

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Title
Biodiversity Survey of Mexican Caves

H = University Honors Student
C = CURCA Funded Project

="University Honors Student
C = CURCA Funded Project
**Abstract**

This project deals with an urgent biodiversity survey of two cave systems, Sotano de Venadito and Grutas de Quintero, in the El Abra Formation in Mexico. Due to direct mining and collateral impact by sinking water tables, these caves are predicted to be destroyed or uninhabitable for cave fauna in our immediate future.

We will extensively document the endangered cave fauna before extinction, and preserve and disseminate specimens for biological research.

This effort will a) likely discover new species, b) result in the preservation of key taxonomic species for posterity, and c) deliver much needed ecological baseline data for future research and conservation efforts in the area.

**Students**

Janine Doran, Kaileigh Hollowood, Sara Mix, Lacey Stanton

**Major**

Communication

**Research Mentor**

Mary B. Cassata, Ph.D. & Joseph Loporcaro, Co-Mentor

**Title**

Life Satisfaction Research Project

**Abstract**

Are people satisfied with the choices they have made in their lifetime? This study will attempt to gain a greater understanding of how content people are with the lives they are living. Using face to face interviews, the study will focus on such areas as education, career, relationships with family and friends, and health. Our dominant goal is to expose the factors that are the most influential in terms of evaluating life satisfaction. We believe that research in this area is significant because, although the terms are highly individual, universal discoveries can lead to fewer regrets and a life better lived.

**Student**

Yelena Dyatel

**Major**

Anthropology & Environmental Studies

**Research Mentor**

Stacey Tecot & Sandy Geffner

**Abstract**

Fifty animals belonging to the species Microcebus rufus were observed in Ranomafana National Park, Madagascar during a 10-day period in the month of November 2007. The objective of the study was twofold. First, to examine the endoparasite prevalence between three study sites within the park. Second, to determine how their parasitic diversity varies among individuals in the three sites. Data was collected through the means of trapping and collecting fecal samples from individuals and analysis was done through methods of microscopy. A total of 76 samples were collected from 45 individuals in three separate areas of the park, Talatakely, Campsite and Ambatalahi-demy respectively. Eleven different taxa of intestinal parasites were identified. Through statistical analysis the results deemed inconclusive, however, differences in parasite prevalence and parasite richness could still be argued for. A greater number of individuals from the more disturbed sites were infected with intestinal parasites and parasite richness was also greater in those individuals.

**Student**

Jessica A. Edwards

**Major**

Political Science

**Research Mentor**

Dr. Kristin Campbell

**Title**

Congressional Sex, Lies, Scandalous Behavior and Negative Media Coverage

**Abstract**

The media have often been called the fourth branch of government due to their power in the political process and system of checks and balances when dealing with political issues and politicians. The media have a tremendous ability to shed negative light on politicians involved in scandals. While many studies have examined the effect of scandals on election outcomes, few have analyzed the strategic actions taken by politicians to counteract negative publicity. This research paper will examine congressional scandals over the past 20 years, specifically focusing on how a politician’s response to a scandal can influence media coverage. I hypothesize that those politicians who are passive and let the media criticize their image without responding will receive more negative coverage than those who take an active role in deterring the issue. This paper seeks to understand how much control politicians have over their media coverage after being involved in a scandal.

**Student**

Lori Danielle Glantz

**Major**

Sociology

**Research Mentor**

Dr. Sampson Lee Blair

**Title**

Social Structure and Prejudicial Attitudes: An Examination of Beliefs Concerning African-Americans’ Disadvantaged Status in the United States
Abstract

Previous studies have demonstrated that prejudicial attitudes toward African-Americans are still prevalent in the United States. This study attempts to examine the specific social structural characteristics which may be associated with such attitudes. Using data from the 2006 General Social Survey, a sample of 18,163 participants are included. Respondents were asked a variety of questions pertaining to why they believed African-Americans were at a disadvantage in American society.

In the analyses, women were shown to be significantly more likely to attribute African-Americans’ disadvantages to discrimination, whereas men posited that a lack of will was more responsible. Similar differences were shown in regard to respondents’ political orientations, as more conservative individuals were less likely to attribute African-Americans’ disadvantages to discrimination or a lack of education. Significant differences across religious affiliation and birth cohorts were also found. Overall, substantial variations in prejudicial attitudes were shown to exist across social structural characteristics.

Student
Lauren Green  
Major
Dance
Research Mentor
Melanie Aceto
Title
Vision of Sound Concert Marketing and Management Assistant
Abstract
This project involves all areas of arts administration including, publicity, funding and concert management. The duties I’m assigned by Professor Aceto involve tasks within these domains. Publicity includes advertising, development of press materials, and mailing list management. Funding includes development of funding sources, solicitation, and program advertisements. Concert management includes attending the concerts at all three venues (Rochester, Syracuse, and Clinton, NY). At each concert, venue activities include serving as a liaison between choreographers, composers, dancers, musicians, and theater technicians during the pre-performance technical rehearsal, and serving as house manager during the concert. This gives me the unique experience of working closely with all artistic collaborators involved in the Vision of Sound concert. I am able to take part in the pre-concert development and preparations as well as support the artistic culmination during concert days.

Student
Amy Hardy
Major
French Language & Literature/Linguistics: Honors Cognitive Theory
Research Mentor
Dr. Jeanette Ludwig, Dr. Christian Flbaugh, Dr. Jeri Jaeger
Title
Visual Semantics: _Le Colonel Chabert_ as a Manifestation of Visual Images
Abstract
_Le Colonel Chabert_ is a novel written by Honore de Balzac in the 1832 during the period of French Realism. It is about a soldier from the Ancient Regime who was buried alive, and then crawled back through a mass grave to reclaim his life and identity. For this paper, I analyzed four strong passages from the novel and made visual interpretations of them. They consist of different patterns, images found on-line, paintings. They are in a collage format. I study semantics, which is the domain of meaning in language, and am trying to formulate a thesis about how language can be seen in our mind visually.

Student
Anant Kishore  
Major
History
Research Mentor
Dr. Thomas Burkman, Asian Studies
Title
Conqueror Confronts Defeated: Occupationaire-Citizen Interface in Postwar Japan
Abstract
This oral history project delved into the nature of the interaction between Japanese civilians and the U.S. troops who were stationed in post-WWII Japan. The U.S. occupied Japan from 1945 to 1952. During this period, U.S. Occupation policy shifted from reforming Japan by demilitarizing and democratizing the country to reconstructing its economy and defense forces. This change in focus was due to the perceived Communist threat in Asia. Amidst the shift in policy, and perhaps as a result of it, there was also a marked change in the interaction between Japanese citizens and U.S. Occupationaires (troops) in Japan. The changing nature of the Occupation was exemplified in the experiences of the U.S. troops and their interactions with the Japanese population. With help from the MacArthur Memorial Foundation, the researcher interviewed nine Occupationaires about their interaction with Japanese locals. He also studied memoirs of troops and civilians present in post-war Japan.

Students
Beth Komoroske, Catherine Walsh, Peter Czosek
Major
Communication
Research Mentor
Mary B. Cassata, Ph.D. & Joseph Loporcaro, Co-Mentor
Title
Romantic Relationships: What do we tell our partner and when?

\(\text{\#} = \text{University Honors Student} \quad \text{\&} = \text{CURCA Funded Project}\)
Abstract
The purpose of this research is to determine what people in romantically intimate relationships willingly disclose to one another and how quickly they reveal such information. Studies have shown that early in relationships people disclose more superficial information to their new partner while as the relationship progresses couples become more comfortable with their established partner, individuals choose to disclose more emotionally based ideas and experiences including information that many people choose to conceal due to the possibility of judgment or discomfort.

In carrying out this study, couples will be asked to take surveys simultaneously, each filling out a personal survey about their own likes/dislikes and feelings. Next, they will each receive the same survey to describe their partner’s likes/dislikes and feelings. Couples will be interviewed based on the length of their current relationship in order to test the length of relationship hypothesis.

Student
Peter Lawler
Major
Geology
Research Mentor
Dr. Zhangshaun Hou

Title
Local Archeological Site Characterized by Ground Penetrating Radar
Abstract
In this study, we choose an interesting historic site located at the Hull-Peterson House in the town of Lancaster. Architecturally its arare surviving Federal type stone structure, and is an excellent representative of a broad pattern of our national history. Traditional methods to study archaeological sites are through excavation, which is time-consuming, costly, and only provides information at a single location. Geophysical techniques, especially Ground-Penetrating-Radar (GPR) has received growing recognition in its ability to detect and map buried archaeological sites in a safe, quick, and non-destructive manner. Based on the propagation and reflection of pulsed high frequency electromagnetic (EM) energy, GPR can provide near surface, high resolution (dm to m scale), continuous profiles of a site. We will use a pulseEKKO PRO SmartCart GPR system to image the subsurface of the family cemetery (about 15 by 30 meters) without disturbing the site or the remains. Data will be processed using ReflexW software and 2D/3D image of the possible reflectors of the site will be created.

Students
Aaron Loo & Shauna Hausle
Major
Communication
Research Mentor
Mary B. Cassata, Ph.D. & Joseph Loporcaro, Co-Mentor

Title
Water Research
Abstract
The selection range of many products can be rather wide – and sometimes for products that are almost identical, prices can vary considerably. To what extent does the price of a product determine consumers’ perceptions and attitudes toward it? The study that we are proposing aims to determine how the retail price of a product affects consumers’ perceptions of its quality. In two separate sessions, one preceding the other, volunteers will be asked to evaluate samples of water. Each sample is to be labeled differently in terms of their prices. A positive correlation is expected between price and perception.

Student
Quratulain Majoka
Major
Anthropology/Pre-Med
Research Mentor
Donald Pollock

Title
Cultural Taboos: Barriers to Reproductive Health of South Asian Women
Abstract
The World Health Organization defines reproductive health as a state of physical, social, and mental well-being in all matters relating to the reproductive system. My paper focuses on cultural barriers to reproductive health stemming from gender inequality; offers ways to improve services in cultural programming. For my research I looked at sexual taboos in South Asian countries using quantitative and qualitative data, and conducted surveys of women of South Asian origin in Western NY. I wanted to see if there was a relationship between the taboos in the countries vs. the Diaspora Population along with my research, I organized a discussion event. The mission was to raise awareness of the taboos and observe how students of South Asian origin view the lack of open sexuality in their culture. To be aware is the first step to breaking these cultural barriers and by doing so we protect our health and freedoms.

Student
Kathleen McClure
Major
English, Asian Studies, Political Science
Research Mentor
Tom Burkman, Dr. Kristin Stapleton, Mitsuaki Shimojo

Title
Gokusen Translation
Abstract
This project is the translation of an original Japanese graphic novel. The project deals with the specific challenges encountered due to the mixed media – textual and graphic – nature of the work and how Japanese language and onomatopoeia are used to convey meaning along with the images. The chosen work, Gokusen, reveals specific features of Japanese culture and the yakuza (Japanese mafia) subculture through the language used.

The project employs a four-step translation from the original Japanese to the Romanized pronunciation, a word-by-word literal translation and then the final English-language translation. This allows Japanese speakers and non-Japanese speakers alike to see and understand the translation process and how meaning as well as words is translated.

The project investigates the complexity of nuclear organization, including its involvement in the regulation of gene expression. It is speculated that some actively expressed genes may co-localize in what is often referred to as transcription factories,
where this process can be regulated in a spatial and temporal manner. To examine co-regulation of gene expression at the chromatin level, we aim to combine labeling techniques—DNA and RNA fluorescence in situ hybridization (FISH)—followed with immuno-fluorescent microscopy to simultaneously visualize both active gene loci and their corresponding transcripts in human cell lines. To detect transcripts, we have successfully established a method for synthesizing single-stranded cDNA probes, and in addition developed an effective protocol for both the DNA and RNA FISH procedure, achieving low levels of background and high levels of specific hybridization. With these techniques, we now have the objective of analyzing the spatial expression of multiple genes.

Student
Jessica Minney
Major
Psychology
Research Mentor
Dr. William Pelham
Title
The Effects of Stress on Parental Tolerance for Their Children’s Misbehavior
Abstract
Since parents continue to be the primary informants when diagnosing attention-deficit hyperactivity disorder in children, identifying potential sources of inaccuracy is critical for the research and treatment of ADHD.

Rather than attempting to establish a “gold standard” of comparison to measure parental accuracy, the present study proposes a conceptual model which views parents’ perceptions of their children’s behavior as a function of parental tolerance. The present study analyzes the impact of different parental, environmental, and child stressors on tolerance, which is how bothered parents are by their children’s behavior; this study hypothesizes that tolerance will decrease as levels of stress increase. The measures used were collected as part of the NIMH-funded Behavior Modification in Young ADHD Children study of 143 families. The parents completed a series of measures which detailed their child’s ADHD symptoms and aspects of their own mental health, which were used to test the research hypothesis.

Student
Jennifer O'Sullivan
Major
Music Theory / Psychology
Research Mentor
Charles Smith
Title
Analysis of Chopin’s E Major Scherzo (Op. 54)
Abstract
The conflict in Chopin’s E Major Scherzo (Op. 54) is between C# minor and B major, the home key’s dominant. Many of the strategies used by C# minor to interrupt B major involve disruption of the piece’s hypermeter, a grouping of four measures acting as one larger measure that is consistent throughout the piece. The hyper-measures can also be grouped together into even broader groupings. These large groupings also dictate the ternary form of the piece, with the phrases of the outer sections grouped in eights, and those of the middle section grouped in tens. This study investigates both these metrical groupings and the overall relationship between C# minor and B major.

Student
J.R. Noble
Major
Geology
Research Mentor
Jason Briner
Title
Reconstructing Detailed Proglacial Lake Sedimentation Using Multiple Cores from Big Round Lake, Northeastern Baffin Island, Arctic Canada
Abstract
Big Round Lake (BRD) is a proglacial lake located on northeastern Baffin Island, Arctic Canada. This 36-meter-deep lake is fed by glacial melt water from an inflow channel to the east and drains from an outflow channel to the west. Cores of the upper 20-40 cm of lake sediment were taken along a transect from the inflow to the deep basin in the lake. Often, one core is taken from a site for paleoclimate research as a representative of sedimentation within an entire lake. Here, three cores taken along the transect have been compared to one another to test this approach. Although each of these three cores has laminations, the core taken in the deepest part of the basin is the only one that contains varves (annual laminations). This suggests that the deepest part of a lake basin is the ideal place to collect sediments for varve studies.

Student
Collin Ranney
Major
Theatre Design & Technology
Research Mentor
Lynne Koscielniak
Title
BEYOND DESIGN a Journey to Presentation
Abstract
Often scenography utilizes contemporary technologies to explore design values embedded in the emotional soul of the play. These technologies are frequently used in scenographic expression. In order to gain knowledge of the most contemporary of technologies, my attendance to the United States Institute for Theatre Technology’s (USITT) 2008
Conference in Houston, Texas was crucial. The conference showcases educational and professional opportunities in the performing arts and entertainment industry, as well as businesses, their products and services. USITT’s 2008 Conference is the place to learn about new products and discuss future projects with fellow artists and collaborators.

In addition, the conference provided me with the opportunity to showcase my work at The Design Expo, a juried exhibit featuring costume, lighting, and scenery designs by USITT members. Having my work on view provided me with opportunities to receive feedback and meet with representatives from dozens of colleges, universities, and theatre groups, all on hand to discuss graduate programs, internships and job opportunities. The conference is an opportunity to go both beyond and behind the theatrical design process.

Student
Monica L. Ridgeway & Elizabeth K. Thomas

Major
Geology

Research Mentor
Jason P. Briner

Title
Using Multiple Surface Cores to Test the Varve Thickness-Summer Temperature Relationship, Northeast Baffin Island, Arctic Canada

Abstract
Understanding past climate change helps to place global warming in a long-term context and to better inform models of future change. Here, we use lake sediments from the Arctic, a region particularly sensitive to climate change, to reconstruct past climate. In 2006, at Big Round Lake on Baffin Island, Arctic Canada, the deep basin was found to have sediments that exhibit annually laminated couplets (varves).

In this study, we further test the varve thickness-summer temperature relationship by examining two additional surface cores adjacent to the 2006 core site. There is an expectation that the varve records should be very similar; however, some inconsistencies were noticed. Varve thickness variability may stem from depositional processes, thin section making process, and human interpretation. This study demonstrates significant core-to-core variability in varve thickness; consequently, average varve thickness from multiple cores is desirable to correlate with summer temperature.

Student
Amalia Rubin

Major
Asian Studies

Research Mentor
Steve Jenkins

Title
The Sun on the Mountain: Propaganda and Politics in Tibetan Popular Music

Abstract
In order to dodge Chinese restrictions on communication and nationalistic expression in Chinese occupied Tibet, Tibetan music has become a vehicle to carry the secret emotions, thoughts and wishes of the Tibetan people, unable to publicly voice their opinions. Also, as a result of Chinese crackdowns on freedom of expression, the center of Tibetan music has moved east, from the operas and gar performances of Lhasa, to the gludbyangs and rdung len of Amdo and Kham. Likewise, the focus and priorities of composers and listeners of Tibetan music, has shifted to lyrical content above melody, and even language.

This project concentrates on eastern Tibetan singers and songs, through translation of lyrics and interpretation of symbolism in music videos, and compares this with their popularity among audiences in Tibet and and singers’ opinions on their own music.

Student
Jeremy Simon

Major
Bioinformatics & Computational Biology

Research Mentor
Dr. Paul Gollnick

Title
A Computational Approach to TRAP: Putative Regulation of non-trp Genes and Altered Binding Specificity in Three Bacterial Species

Abstract
The trp RNA-binding attenuation protein (TRAP) regulates genes involved with tryptophan biosynthesis or transport in several gram-positive bacteria. In the presence of tryptophan, TRAP is activated and binds RNA. The protein is ring-shaped and contains 11 subunits. TRAP typically binds to four sites composed of 9-11 (G/U)AG repeats separated by 2-3 nucleotides. Recently, more bacteria have been identified with genes that encode TRAP. We used a computational approach to characterize these species’ TRAP binding sites. Three of these bacterial genomes were analyzed in depth: Oceanobacillus iheyensis, Geobacillus thermodenitrificans, and Caldicellulosiruptor saccharolyticus. In G. thermodenitrificans and C. saccharolyticus, TRAP binding sites were found adjacent to genes seemingly out of the scope of tryptophan biosynthesis or transport. Currently we are verifying TRAP’s role in regulation. In O. iheyensis, only one of the four typical binding sites are present, and initial binding assays hint toward a possible difference in TRAP’s specificity for RNA.

Student
Tracy L. Stepien

Major
Mathematics

Research Mentor
Dr. E. Bruce Pitman

Title
Tubuloglomerular Feedback-Mediated Dynamics in Three Coupled Nephrons

Abstract
A model of three coupled nephrons branching from a common cortical radial artery is developed to further understand the effects of equal and unequal coupling on tubuloglomerular feedback. The integral model of Pitman et al. (2002), which describes the fluid flow up the thick ascending limb of a single, short-looped nephron of the mammalian kidney, is extended to a system of three nephrons through a model of coupling proposed by Pitman et al. (2004). Analysis of the system, verified by numerical results, indicates that stable limit-cycle oscillations emerge for sufficiently large feedback gain magnitude and time delay through a Hopf' bifurcation, similar to the single nephron model, yet generally at lower values. Previous work has demonstrated that coupling induces oscillations at lower values of gain, relative to uncoupled nephrons. The current analysis extends this earlier finding by showing that asymmetric coupling among nephrons further increases the likelihood of the model nephron system being in an oscillatory state.
Student
Neil Terry

Major
Geology

Research Mentor
Dr. Tracy K.P. Gregg

Title
Biological Potential of Mawrth Vallis, Mars: Support for MSL landing site

Abstract
Utilizing THEMIS and HiRISE visual data, several light-toned, apparently sedimentary, layers have been identified in the Mawrth Vallis region of Mars, near a proposed landing site for the Mars Science Laboratory (MSL) (24.65°N, 340.1°E). The favored interpretation of these units as Noachian-aged fluvial/marine deposits yielding abundant smectite clays is congruent with terrestrial analogs as an area likely to have provided a habitat for organisms living on Mars. Additionally, the sedimentation and rapid burial occurring within these environments would provide an excellent mechanism for the preservation of organisms. A discontinuous, overlying dark unit suggests that these ancient layers have only recently been exhumed through erosion, revealing fresh, relatively unaltered bedrock. The light-toned outcrops near Mawrth Vallis provide an easily accessible location where perhaps the greatest potential for direct evidence of past life on Mars exists.

C-STEP PROGRAM (COLLEGIATE SCIENCE AND TECHNOLOGY ACHIEVEMENT PROGRAM)

Student
Frank Acheampong

Major
Pharmaceutical Science

Research Mentor
Dr. Qing Ma

Title
Effect of CYP3A5 Polymorphisms on Atazanavir (ATV) and Lopinavir (LPV) Trough Concentrations in HIV-Infected Substance Abusers

Abstract
Protease inhibitors are characterized by their pharmacokinetic variability which results primarily from interindividual variation in activity of cytochrome P450 (CYP) 3A. Using an integrative approach, we investigated the relationship of CYP3A5 polymorphisms and trough concentrations of ATV and LPV in HIV-infected substance abusers.

Student
Dennis J. Bowah

Major
Bioinformatics- Computer Science & Engineering

Research Mentor
Dr. Barry Smith

Title
Gene Ontology

Abstract
The Gene ontology research focuses on biological terms’ relationship. It shows the hierarchical diagram of relationship among biological term and provide basis to create a platform that include simple term such as cell’s growth and death which follows a true path rule. In such, QuickGO browsers—a browse that enables looking up terms in Gene Ontology database—enables the validation of terms. Relationship in Gene Ontology (GO) is divided in two major groups as follows:

_Is_a_ Relations- this shows class—subclass relationship. It tells you that that subclass is derived from a class as in a child—parent relationship. For instance A is a B means A is a subclass Class of B. For example: Nuclear chromosome is a subclass of Chromosome.

_Part_of_ Relationship- this shows the presence of one as to the other.

Example: nucleus is part of cell. That is whenever a nucleus is present is part of cell, but not all cells have a nucleus, so it is not always necessary that a presence of cell indicate a presence of nucleus. Just by observing the term with the use of the relationship link, you would know the root of a given biological term.

Observing terms such as cell’s death and growth in GO has a lot of associated terms describing processes leading to its death or growth, etc. The uniqueness of medical terms is an essential tool in medical coding, drugs formulation, prescription and thus minimizes terms’ ambiguity and redundancy in medical research.

Student
Ernestine I. Brown

Major
Nursing

Research Mentor
Dr. Mattie Rhodes

Title
Nurses Perception of Horizontal Violence in the Workplace

Abstract
Horizontal violence among nurses is a form of aggression including both physical and verbal violent acts. Previous evidence states horizontal violence is a pervasive problem in health care. The purpose of this research is to examine horizontal nurse-on-nurse violence in the workplace that will begin to impact the cycle of abuse. A descriptive design was used to examine nurses’ perception of horizontal violence in the workplace in a tertiary health care setting. A survey, using convenience sampling, was distributed to 500 nurses to collect data.

Student
Marda Hailu

Major
Biological Sciences/Pharmacy

\(^{H} =\) University Honors Student  \(\mathcal{C} =\) CURCA Funded Project
**Research Mentor**
Dr. Israel Zivi and Elaine Sattelberg

**Title**
Changes in Hip Biomechanics Following Total Hip Arthroplasty (THA)

**Abstract**
Component placement critically affects the biomechanics, performance and longevity of THA. A valgus or varus position of the femoral stem by 4-6° may reduce the stresses during walking by 25-30% (Beaule, Lee et al. 2004). Component placement and hip biomechanics can be visualized in three dimensions with AP pelvis x-ray and a perpendicular lateral view, allowing for pre-operative and post-operative analysis of hip biomechanics. The aim of this pilot study was to develop a method for analyzing hip biomechanics using digital x-rays after THA. Clinical outcome was assessed using the Harris Hip Score (HHS) and the Hip disability and Osteoarthritis Outcome Score (HOOS). Biomechanical analysis was performed on digital AP pelvis radiographs taken pre and post-operatively. Digital x-rays were analyzed and biomechanical measurements made using CPRS, Photoshop 6.0, and ImageJ. Our results indicate that minimizing the migration of the femoral head’s center of rotation was positively correlated with the functional outcome.

**Student**
Meirong Kuang

**Major**
Psychology

**Research Mentor**
Dr. Leonard Simms

**Title**
Relationships between Age and Personality Pathology: A Cross-Sectional Study

**Abstract**
In this study, using a cross-sectional research, we are looking at whether age difference contributes to different personality disorders. The data is collected in Iowa City, Minneapolis, and Dallas in the University campuses. The measurement used in the present study is the Schedule for Nonadaptive and Adaptive – 2nd Edition (SNAP-2). The SNAP-2 is a factor analytically derived; self-report instrument designed to assess trait dimensions important in the domain of personality disorders. The study hypothesizes that between ages 18-24, scores will be highest on Borderline, Narcissistic, and Impulsive PD traits. Between ages 25-24, scores will be highest on Histrionic PD traits. PD traits will stabilize between ages 35-54. Finally, between ages 55 and up, scores will be highest on Schizoid PD traits. To test the hypotheses, a one way analysis of variance (ANOVA) will be used.

**Student**
Richard Linares

**Major**
Aerospace Engineering

**Research Mentor**
Dr. David Forliti

**Title**
The Visualization of 2D Flow Regimes Through the Use of Soap Films

**Abstract**
The physics of fluid motion and the transition from laminar to turbulence remanded as one of the unsolved problems in physics, making the investigation of fluidic phenomenon a hot topic. Fluids are exceptionally difficult to study experimentally because of the difficulty in observing the inherent motion of fluids. This issue arises due to the fact that fluids are usually transparent or of uniform color and fluids also have the tendency to develop in three dimensions. Ample effort has gone into the study of fluid flow using of more conventional wind tunnel and water tunnel experiments, but these cases are difficult to model and implement. The elimination of one flow direction (degree of freedom) can simplify the conditions and allow comparison to the simplified numerical computer model. The experimental method that we have adopted has unique physical properties that make running fluidic studies simple, cost efficient, self containing and easily visualized. Soap film brilliant flow visualization ability; coupled with their two dimensionality make soap films a formidable tool for the study of fluids. The prim goal of our experimental work is to construct a counter-flowing shear layer experiment through the use of soap films. Using soap films two dimensionality a temporal developing shear layer can be studied in detail.

**Student**
Iok Seng Wong

**Major**
Biology & Chemistry

**Research Mentor**
Dr. Troy D. Wood

**Title**
Placental Opioid Enhancing Factor (POEF)

**Abstract**
During the quest to understand the behavior of placentaphagia, in which mammals consume the placenta after giving birth, Kristal et al. discovered that a substance present in placenta induces pain relief within minutes, and called it Placental Opioid Enhancing Factor (POEF). POEF is believed to be a peptide less than 8 kDa which interacts with a receptor in the stomach to induce pain relief to the central nervous system (CNS), causing a markedly increased tolerance to pain. The goal of this project is to isolate and identify the POEF in rat amniotic fluid using the combination of liquid chromatography and mass spectrometry. This project strives to assist finding of a compatible theory in understanding to mammalian behavior—placentaphagia—as well as identifying the molecular structure of POEF, which holds potential application in medical rescue and treatments.
**School of Engineering & Applied Sciences**

**Students**
Kelly Miller & Daniel Loscalzo

**Title**
Determining Appropriate *Moringa oleifera* Dosages for Home Drinking Water Treatment

**Abstract**
Centralized drinking water treatment plants are not common in many rural and peri-urban areas of developing countries. Therefore, it is important for people to have other sustainable drinking water treatment options. *Moringa oleifera* has been proven in the literature to act as a cationic polyelectrolyte in the process of coagulating particles in untreated water. *Moringa* is a tree native to India, but cultivated in many regions in Africa and South America.

Previous studies performed on *Moringa oleifera* concentrated on water samples much more turbid than would be anticipated in typical conditions; others extracted the active coagulant using saline solutions too salty to drink. Jar tests are being conducted to determine practical dosage guidelines for *Moringa oleifera* extract for water at low turbidities, and to recommend appropriate salinity for salt extraction of the active coagulant.

**Student**
Jonathan Missel

**Major**
Mechanical & Aerospace Engineering

**Research Mentor**
Dr. Puneet Singla

**Title**
VERTIGO: Autonomous Balancing Omni-Directional Robot

**Abstract**
By conforming to the paradigm associated with traditional mobile machines, designers of robots have imposed significant limitations on their own creations. The most severe of these constraints bound the devices maximum acceleration-deceleration, ability to withstand unexpected loading, and directional control. In the past these obstacles have been individually overcome with robots that balance on two wheels but only have two degrees of freedom, or have omni-directionality but are prone to become dynamically unstable. Current attempts to completely liberate machines from such inabilities have led to the expensive and often unnecessary complications of bipedal walkers. We are proponents of a solution that promises relatively inexpensive dynamically stable omni-directional motion by developing a robot known as VERTIGO that balances and navigates on a single spherical wheel. This unique take on locomotion also permits experimentation with such concepts as under-actuated systems, and human and machine cognition in ways previously unimagined.

**Student**
Shea Lerk Ng & Jun Gene Cheng

**Major**
Chemical Engineering

**Research Mentor**
Dr. Gersh Berim

**Title**
Fluid Density Distributions in Open and Closed Circular Nanoslits

**Abstract**
The fluid density distributions (FDDs) in closed circular nanoslits as well as in open one which is in contact with the external reservoir of fluid molecules are determined theoretically. The substances used were solid carbon dioxide for the walls of the slit and argon for the fluid. The fluid-fluid and fluid-solid interactions were described by the Lennard-Jones potential. The FDDs corresponding to the stable state of the system were found from the numerical solution of the standard Euler-Lagrange equation. For open slit, FDD and the amount of adsorbed fluid were determined as function of chemical potential $\mu$ of a reservoir and temperature. The rapid increase of adsorption was found at some critical value $\mu_c$ of chemical potential. In closed slit, FDD was analyzed as function of the average density of the fluid in the slit. At some critical density, symmetrical FDD changes to asymmetrical one; therefore, the fluid wet the walls in a different way.

**Student**
Ryan Norris

**Major**
Mechanical & Aerospace Engineering

**Research Mentor**
Deborah D.L. Chung

**Title**
Cement-based Material Technology for Pavement Deicing and Anti-icing

**Abstract**
Deicing and anti-icing are needed for increasing traffic safety in snowy regions. Salt and chemicals used for these purposes lead to environmental pollution and steel corrosion. Deicing with salt takes time, because salt works its way to the pavement surface from the outer surface of the ice. This project is aimed at providing an intelligent transportation system for automatic pavement deicing and anti-icing. The system mainly involves an electrically conductive cement-based material that serves as a pavement overcoat material and a heating element. The material contains short conductive microfibers as an admixture. The project has provided the technology associated with the conductive cement-based material and the electrical contacts for passing electric current. The effectiveness of the technology has been demonstrated. Compared to prior related work, cost reduction has been achieved by reducing the volume and contact electrical resistivities.

$\mathcal{H}$ = University Honors Student

$\mathcal{C}$ = CURCA Funded Project
UNIVERSITY HONORS PROGRAM

Student
Marc Badura
Major
Psychology
Research Mentor
Scott Wersinger
Title
Vasopressin 1b Receptor Knockout Mice and Deficits in Social Behavior
Abstract
Vasopressin is a neuropeptide hormone. In the brain it appears to play a role in a diverse range of functions, from social and sexual behavior to learning and memory. Vasopressin exerts these effects by acting on three receptors, the vasopressin 1a, 1b and 2 receptors. Mice lacking functional vasopressin 1b receptors display deficits in social behavior. Specifically these mice show reduced levels of male aggression and social investigation. In a series of experiments I examined the amount of time they spend investigating both social and non-social stimuli. Analysis of these experiments and further research is ongoing.

Student
Bradley W. Cheetham
Major
Mechanical & Aerospace Engineering
Research Mentor
Paul E. DesJardin
Title
Speed of Vertical Premixed Laminar Flame Propagation in Varying Propane-Air Mixtures
Abstract
Characteristic flame speed based on fuel composition is a basic but important value needed for many calculations and models. This research studied the variation of flame speed, acceleration, and structure with respect to changing the fuel-air ratio. As the fuel-air ratio is increased from zero, it is expected that the flame front will increase to an optimized speed and then decrease beyond this point. Thus there is an optimal ratio that will result in the highest flame speed. This sophomore project provided an opportunity to construct an experimental set-up and troubleshoot problems. Speed results were recorded in a graph showing the relationship between fuel-air ratio and speed while flame structure was studied by utilizing a video capture device for data acquisition. These various flame structures proved to be a very interesting product of the experiment.

Student
Sanjay Connare
Major
Computer Science & Economics
Research Mentors
Dr. William Duax & Robert Huether
Title
Tracing the Evolution of the Genetic Code
Abstract
In principal, any strand DNA can be read in six different ways to produce six proteins having completely different sequences, folds, and functions. It has been assumed that only one of the six possible sequences is able to produce a viable protein. We have discovered that 18% of all the genes in the gene bank have retained the potential to produce more than one protein by reading alternate frames of the gene and that these proteins that have a GC codon bias also have an amino acid bias. This suggests that the most ancient proteins were not only encoded by a subset of the genetic code,
but they were also composed of a subset of the 20 amino acids which leads back to a possible primordial two-letter code.

This is important because if we can trace the evolution of bacteria and viruses we can potentially see how these mutations affect the virus or bacteria's ability to no longer be susceptible to drugs. This will allow drug companies to analyze resistant strains to develop better drugs.

Student
Catherine Dunning

Major
English, French

Title
The Role of the Shakespearean Fool; and Iago, the Sick Fool of Othello

Abstract
"I am indeed not her Fool/ but her corruptor of words" (Twelfth Night 3.1.37-38). The Shakespearean Fool is a literary figure so carefully crafted that it is arguably one of the most notable figures in Shakespearian drama. This research seeks to define the role of the Fool in both the comic and tragic spheres, and then to read Iago, the villain from Shakespeare's "Othello," as a perversion of that role. Through the examination of Feste, the Fool in "Twelfth Night," and King Lear's Fool from "King Lear," I define the traits of the true Fool and then proceed to show how Iago manipulates these traits towards his own purpose. Finally, I explain why Iago's efforts inevitably fail, reducing him from Fool to villain.

Student
Morgan Gottfried

Major
Psychology

Research Mentor
Dr. Read & Dr. Sechrist

Title
Unwinding the Helix

Abstract
In the experiments done in the laboratory, DNA unwinded by exposing it to various different proteins. Escherichia Coli DNA has the unique property that allows it to have forward, backward, and pausing motion. I took videos of this motion under various conditions and determined the rate at which the DNA duplex unwinded.

Student
Eleni Leto Petrou

Major
Biological Sciences

Research Mentor
Dr. Mary Alice Coffroth

Title
Heat Stress and Corals: The Acquisition of Exogenous Symbionts by a Scleractinian After Bleaching
**Abstract**

Although there has been skepticism An environmentally-friendly alternative methods are often unsustainable and have of energy production. However, such has been made readily available, use on any given day? Since electricity Abstract

**Wind Power on Campus**

*Abstract*

How much electricity do you think you use on any given day? Since electricity has been made readily available, its consumption has increased at an exponential rate. There are many forms of energy production. However, such methods are often unsustainable and have a negative impact on the environment. An environmentally-friendly alternative form of energy production is the wind. Although there has been skepticism regarding this method, there are many opportunities for ingenuity and creativity for its successful implementation.

*Student*

**Sarah Tanbakuchi**

*Major*

Political Science

*Research Mentor*

Dr. Kristin Campbell

**Title**

Al Jazeera English’s News Coverage of the Developing World: A Comparison to the BBC

*Abstract*

Al Jazeera English is the only 24-hour, English-language news station headquartered in the Middle East. The network claims to offer a new perspective on the news, focused more on developing countries. This project will examine the extent to which Al Jazeera English’s news coverage differs from the online news coverage of the BBC News. We hypothesize that Al Jazeera English’s news coverage will focus more on developing countries, based on content analysis of news headlines over a period of two weeks (coding for the specific country, regions and topics covered). We find that although Al Jazeera English’s coverage did focus more in developing countries, the results were not statistically different from the BBC. Instead there was a strong, positive correlation (p < .01) between the BBC and Al Jazeera English’s topical and regional coverage, suggesting journalistic concepts of “what is news” extends across cultures.

*Student*

**Nam Le**

*Major*

Economics

*Research Mentor*

Dr. Debabrata Talukdar

**Title**

Consumers’ Use of the Internet in the USA: Role of Political Predisposition

*Abstract*

A natural and important question that continues to be addressed by researchers is what are the “drivers” or determinants that explain the so called “digital divide” observed differences in the Internet usage across people. Their primary finding is that the digital divide can be mostly explained by socio-economic factors like income, gender, race, age, etc. However, none of these existing studies has investigated what role does political predisposition (conservative, moderate, liberal) play in explaining the Internet use. In this study, we systematically analyze the role of people’s political predisposition in explaining their Internet use. In other words, our study addresses the question: Does “political divide” play a role in explaining the “digital divide” in the USA? We use aggregate data at the US state level (collected through the US Census Bureau), as well as disaggregate data at individual level (a random sample of US adult population collected through the Pew Research Center).

*SCHOOL OF MANAGEMENT*

**Student**

**John B. Coles**

*Major*

Industrial & Systems Engineering

*Research Mentor*

Philip Hancock

**Title**

Effective Emergency Response in University Residence Halls

*Abstract*

Given the popular break-up of residence buildings into individual halls or complexes, the cohesion between the various individuals that must respond to a given situation as an organizational unit is critical [4]. This study uses the specific case of the Governors residence hall at the University at Buffalo as a typical residential organization. In order to communicate an accurate picture of the network, a survey was taken of the entire Governors RA staff, and UCInet was utilized to graphically depict the social network. The survey results yielded that there is a significant bias towards a dependency on second-year RAs with 71% of the un-weighted interaction and 73.1% of the weighted interaction directly involving them. Additionally, a critical threshold percentage of 50-60%, weighted and un-weighted, intra-hall RA communication in emergencies is critical to the effective response of each hall as an individual unit as well as a team.

*Student*

**Nam Le**

*Major*

Economics

*Research Mentor*

Dr. Debabrata Talukdar

**Title**

Consumers’ Use of the Internet in the USA: Role of Political Predisposition

*Abstract*

A natural and important question that continues to be addressed by researchers is what are the “drivers” or determinants that explain the so called “digital divide” observed differences in the Internet usage across people. Their primary finding is that the digital divide can be mostly explained by socio-economic factors like income, gender, race, age, etc. However, none of these existing studies has investigated what role does political predisposition (conservative, moderate, liberal) play in explaining the Internet use. In this study, we systematically analyze the role of people’s political predisposition in explaining their Internet use. In other words, our study addresses the question: Does “political divide” play a role in explaining the “digital divide” in the USA? We use aggregate data at the US state level (collected through the US Census Bureau), as well as disaggregate data at individual level (a random sample of US adult population collected through the Pew Research Center).
RONALD E. MCNAIR
SCHOLARS PROGRAM

Student
Ginelle Knerr

Major
Psychology

Research Mentor
Dr. Gregory Fabiano

Title
Enhancing Individualized Education Plans for Children with ADHD

Abstract
Approximately 40% of the children within the special education program are diagnosed with ADHD. Therefore, it is imperative that these children receive treatment that will help benefit their overall success. To investigate whether special education includes efficient and cost effective treatment, this research will study students within Western New York who are diagnosed with ADHD and who have an Individualized Education Plan. We coded the children’s IEPs in search of the services and interventions that these students receive. We then determined the most beneficial and cost effective services for the students as well as the schools.

SCHOOL OF MEDICINE & BIOMEDICAL SCIENCES

Student
Elizabeth Brennan

Major
Biotechnology

Research Mentor
Shayne Boucher, Ph.D.

Title
Optimization of Mesenchymal Stem Cell RT-PCR and qRT-PCR Assays

Abstract
To detect commitment of multipotent mesenchymal stem cells to differentiated lineages, a PCR assay is used as a fast and sensitive method for detecting early expression of differentiation-related genes of interest (GOI). The purpose of this study was to optimize the variables in the PCR assay, such as the primers used and number of amplification cycles required to unambiguously identify expression of a GOI. To select the best primer set for the PCR assay, first qRT-PCR was performed testing several sets on control and test samples. Also, the melting curve and cycle threshold difference was analyzed for each set, and the best was chosen. Secondly, RT-PCR was performed with the primer using the cycle number determined in the qPCR study and products were analyzed by electrophoresis. This study demonstrated that optimizing such variables as primers and cycle numbers allows for a RT-PCR assay to display the best results with positive expression of GOI in samples.

Student
John C. Hu

Major
Biomedical Sciences

Research Mentor
Terry D. Connell, Ph.D.

Title
Identification and cloning of LT-IIc, a new Type II heat-labile enterotoxin of Escherichia coli.

Abstract
Mucosal surfaces are the primary sites for entry of most pathogens. To evoke protective immune responses on mucosal surfaces, vaccine antigens must be co-administered with adjuvants. LT-IIa and LT-IIb, members of the Type II class of heat-labile enterotoxins of Escherichia coli, exhibit protective potential, yet distinctive mucosal adjuvant properties. Recently, we cloned and sequenced genes encoding LT-IIc, a new Type II enterotoxin. The adjuvant properties of the oligomeric LT-IIa and LT-IIb enterotoxins are mediated by their receptor-binding activities which are determined by their B subunits. In silico analysis revealed, however, that the B subunits of LT-IIc exhibit only ~55% homology to the B subunits of either LT-IIa or LT-IIb. We hypothesize LT-IIc is distinguishable from LT-IIa and LT-IIb in receptor-binding, toxicity, and adjuvant properties. Our hypothesis will be verified by use of receptor-dependent ELISAs, cell toxicity assays, antigen uptake assays, and immunization using a mouse mucosal immunization model.

Students
Lauren Kneussle, Kate Barrett, Lisa Klispie, Kevin Bryant, Suneja Nishant

Major
Biomedical Sciences

Research Mentor
Dr. Wesley T. Carter

Title
A Survey of Racial Attitudes Between Two Groups of Black and White Students of the University

Abstract
The purpose of this survey is to identify contemporary attitudes regarding race and race relations in the perceptions and lives of two diverse groups of university students: one black and one white. It is designed to run for a period of three years and will be broadened to include the attitudes of students of Asian and Latino descent. To what extent, the investigators will want to know, are students knowledgeable about race and race relations, and how those attitudes have been altered or improved and the circumstances under which such improvements have been brought about. Investigator interest will encourage an examination of this likely occurrence as well. Prominent among the reasons for this survey will be to improve instructions and learning in such topics.
Abstract

Previous studies suggest that unfavorable aortic arch anatomy places patients at an increased risk for neurologic and non-neurologic complications due to neuro-endovascular procedures. Recent evidence also suggests that there exists a type of aortic arch (Type III) that is believed to be an age related process. However, a precise definition for this Type III arch does not exist. In order to establish normative data and prove this hypothesis on age-related changes of the aortic arch, a retrospective study is needed to compare the carotid-aortic angle and the aortic arch length in a large number of patients across the lifespan who received Magnetic Resonance Angiography (MRA) of the neck. MRA studies representing patients of all ages, who have received an MRA of the neck need to be analyzed.

Student

Alexander Morrison-Nozik

Major

Biomedical Sciences

Research Mentor

Rodney M. Samuelson, MD
L. Nelson Hopkins, MD

Title

Age Related Changes in the Aortic Arch Anatomy

Abstract

Some cell stresses have been shown to produce a decrease in Dicer expression without a change in Dicer mRNA. The hypothesis is that miRNAs mediate this post-transcriptional regulation, and that anoxia would show a similar mRNA regulated decrease in Dicer expression.
Hydrogel sterilization was performed using Phosphate Buffer Saline with antibiotics (PBS), ethanol (EtOH), and ultraviolet (UV) radiation. No contamination was found on any of the three sterilization methods. Live/dead staining of seeded HaCaT cells showed minimal hydrogel cytotoxicity. Our data show that KGF-imbibed hydrogels provide a useful system for wound healing studies.

SCHOOL OF NURSING

Student
Karen Osei-Tutu & Ji-Yeon Kim

Major
Nursing

Research Mentor
Juh Hyun Shin, Ph.D. RN.

Title
Relationship between Nursing Staffing and Quality of Life of Residents in Western NY Nursing Homes

Abstract
Although about 17,000 nursing homes (NHs) care for 1.6 million elders and play a critical role, there continue to be concerns about the quality of NH care both in the public and private sectors with a nursing shortage and high staff turnover rate.

This study will address several knowledge gaps by (a) focusing on the contribution of RNs and (b) investigating of quality of life (QOL) of residents, rather than quality of care (QOC). RNs and other nursing staff have been categorized as one group although they cannot replace one another in preparation or in legal authority to provide care. Additionally, previous research measured only quality of care by using quality indicators of MDS version 2.0 which lacks measurement of QOL.

This study is a descriptive, correlational study examining the relationships among the variables. The independent variables will be nursing staffing hours per resident day (HPRD), skill mix HPRD, and turnover rate of nursing staff. The data for the dependent variables will be collected using the QOL section of MDS version 3.0.

The setting will be the 15 NHs that are certified for Medicare and Medicaid within a 100 miles radius of Buffalo, NY. The sample will be 10% of the residents in the 15 NHs (N= 150 to 250).

Hierarchical linear modeling will be used to analyze the data.

SCHOOL OF PHARMACY & PHARMACEUTICAL SCIENCES

Student
Amy A. Brilliant

Major
Pharmacy

Research Mentor
Francis Gengo, Pharm.D.

Title
The Effects of Naproxen on the Duration of Aspirin Induced Inhibition of Platelet Aggregation

Abstract
Previous work has established the common over-the-counter NSAID ibuprofen can completely negate the cardio-protective antiplatelet effects of aspirin by competing for binding to the platelet COX-1 enzyme. Naproxen, another commonly used NSAID, has a different pharmacokinetic profile and different affinity for the COX-1 enzyme. This study was to determine whether naproxen would also negate the antiplatelet effects of aspirin. We measured the magnitude and duration of the inhibition of platelet aggregation following doses of aspirin 325 mg, naproxen 200 mg, and naproxen 200 mg followed by aspirin 325 mg in twelve volunteers using a 3-way complete crossover design. Blood samples were collected at baseline and serially until platelet aggregation returned to baseline. Samples were analyzed by whole blood impedance aggregometry in response to collagen and arachidonic acid. Preliminary analysis indicates that naproxen, like ibuprofen at least partially negates the antiplatelet effects of aspirin.

Student
Vaishali L. Chudasama

Major
Pharmaceutical Science

Research Mentor
Donald Mager, Pharm.D., Ph.D.

Title
Integrated Physiologically-Based Pharmacokinetics (PBPK): In vitro-In vivo Relationships for Corticosteroids

Abstract
Purpose: To construct a quantitative structure-property relationship (QSPR) model of the intrinsic clearance of corticosteroids, and to integrate this relationship into a physiologically-based pharmacokinetic (PBPK) and pharmacodynamic (PD) model for the a priori prediction of corticosteroid PK/PD properties.

Methods: In vitro intrinsic clearance values of 9 corticosteroids were measured in rat liver microsomes, scaled to in vivo values, and included in a PBPK model. Tyrosine aminotransferase (TAT) activity, a common biomarker of steroid effects, was predicted based on a previously established exposure-response relationship.

Results: A parabolic relationship was observed between intrinsic clearance and lipophilicity, and the final model yielded good fitting results (R2=0.83) and reasonable predictive performance (Q2=0.76). Simulated PK and TAT dynamics of several corticosteroids were in good agreement with literature reported values.

Conclusion: Integrated QSPR-PBPK-PD modeling may facilitate the a priori prediction of the pharmacology of chemically related compounds as demonstrated in this proof of concept study.

University Honors Student
CURCA Funded Project
Acknowledgments: Chao Xu is a recipient of a Pre-Doctoral Fellowship from Eli Lilly & Company

**Student**
Lisa C. Garrity  
**Major**
Pharmacy  
**Research Mentor**
Alan Forrest, Pharm.D.

**Title**
A Pharmacokinetic Study of Adjuvant Chemotherapy in Overweight and Obese Women

**Abstract**
Introduction: No clear guidelines exist for dosing adjuvant chemotherapy in overweight and obese women with breast cancer. The aim of this study was to correlate variability of pharmacokinetic parameters for cyclophosphamide, doxorubicin and doxorubicinol with body composition.

Methods: Pharmacokinetic models were fit to plasma concentrations from 29 women receiving cyclophosphamide and doxorubicin. Following an initial screen of covariates, stepwise regression determined which measures of body composition best described pharmacokinetic parameter variability.

Results: Lean mass best predicted variability in apparent volume of distribution of cyclophosphamide ($R^2 = 0.498$, $p < 0.001$) and clearance of doxorubicin ($R^2 = 0.347$, $p = 0.001$). BSA was most correlated to variability in clearance of cyclophosphamide ($R^2 = 0.193$, $p = 0.019$). Variability in the conversion of doxorubicin to doxorubicinol was best predicted by percent fat ($R^2 = 0.491$, $p < 0.001$).

Conclusions: Body composition only partially explains variability in pharmacokinetic parameters for adjuvant chemotherapy.

**Student**
Debbie Liana  
**Major**
Pharmacy  
**Research Mentor**
Joseph Balthasar, Ph.D.

**Title**
Development of Antibodies against Human FcRn Heavy-Chain Peptide

**Abstract**
The neonatal Fc receptor (FcRn) rescues IgG—the mediator of a majority of humoral immunity in humans—from degradation in the lysosome in a pH-dependent manner. In autoimmune diseases in which pathogenic or excess IgG antibodies are etiological agents, interference with FcRn function can increase the clearance of such antibodies. It is hypothesized that an antibody developed specifically against the heavy-chain subunit of FcRn can non-competitively inhibit binding of pathogenic IgG to FcRn. Hybridomas were produced by fusing spleen cells from a mouse screened for anti-FcRn activity (after repeated injections with human heavy-chain FcRn peptide) with myeloma cells. Screening of hybridomas was performed with a Biacore T100, which uses surface plasmon resonance technology to detect binding of anti-FcRn antibodies to FcRn heavy-chain peptide immobilized to the sensor surface. Expansion and purification of one promising hybridoma line (m1d5) has yielded initial estimates of affinity for FcRn in the nanomolar range, a half-time of dissociation on the order of minutes, and consistent binding stability over the pH range 5–8.

**Student**
Neang S. Ly  
**Major**
Pharmaceutical Science  
**Research Mentor**
William Jusko, Ph.D.

**Title**
Tolerance of Pseudomonas Aeruginosa to Antibiotics at High Inocula

**Abstract**
Purpose: To study the effect of initial inoculum size on the rate of bacterial killing. 2) To optimize antibiotic dosage regimens for treatment of infections with high initial inocula.

Methods: Time-kill experiments with P. aeruginosa PA01 and initial inocula (CFUo) between 106 and 109 CFU/mL (CFU: colony forming units) were performed with concentrations between 0 and 64 times the minimal inhibitory concentration for four antibiotics.

Results: High ceftazidime concentrations achieved 3 log10 of killing for log CFU0 of 6, but limited or no net killing at higher inocula. About 2– to 8-fold higher tobramycin concentrations were required to achieve the same initial killing rate constant at log CFU0 of 9 vs. 6. Ciprofloxacin displayed an inverse inoculum effect and imipenem showed no inoculum effect.

Conclusions: Our data suggested that infections with a high bacterial burden may require much high doses of tobramycin and ceftazidime.

**Student**
Pui Yi Tam  
**Major**
Pharmacy  
**Research Mentor**
Patty F. Hvard, Pharm.D.

**Title**
Gene Expression of p-Glycoproteins in Peripheral Blood Mononuclear Cells between Fetal and Maternal Compartments

**Abstract**
Antepartum use of protease inhibitor-containing antiretroviral regimen is now standard of care in HIV-1-infected pregnant women to prevent perinatal HIV-1 transmission. To prevent the transmission, it is critical to have adequate intracellular levels of antiretrovirals in fetal peripheral blood mononuclear cells (PBMCs). The intracellular availability of protease inhibitors can potentially be affected by p-glycoprotein efflux transporters, which is encoded by the ABCB1 gene, on the membranes of PBMCs. This study examines the mRNA expression of p-glycoprotein in fetal PBMCs and its relationship to the level of expression in maternal PBMCs. Forty-seven maternal-fetal pairs were enrolled, and paired maternal versus cord blood samples were collected for PBMC extraction. Genotyping for polymorphisms in exons 21 (G2677T) and 26 (C3435T) of ABCB1 were done, and we are now in the process of determining the levels of mRNA expression of p-glycoprotein using quantitative real-time polymerase chain reaction (QRT-PCR).

**Student**
Brian Tsuji, Pharm.D.
Our research group has examined the effects of exhaustive exercise on working memory exercise, and other cognitive variables within and across three groups (Group 1: trained (fit) subjects, Group 2: untrained (sedentary) subjects, and Group 3: non-exercising controls) before, during, and following exercise. Cognitive test scores of group 1 and group 2 were adjusted based on the non-exercising controls (group 3). We found a decrease in cognitive performance during and directly following exercise, followed by an increase in performance after a recovery period. The purpose of the current study is to investigate potential mechanisms responsible for these effects on cognitive performance by relating them to changes in 1) frontal brain lobe oxygenation and 2) hormonal and energy metabolites in blood and saliva.

Student
Tina Cheung & Jessie Shiah

Major
Exercise Science

Research Mentor
Peter Horvath Ph.D.

Title
Potential Mechanisms for Changes in Cognitive Function with Short–Term Maximal Exercise

Abstract
Numerous studies have examined the physiological changes during and following exercise, yet little is known about the effects of exercise on cognition. Findings of past studies are inconsistent. Our research group has examined the effects of exhaustive exercise on working memory exercise, and other cognitive variables within and across three groups (Group 1: trained (fit) subjects, Group 2: untrained (sedentary) subjects, and Group 3: non-exercising controls) before, during, and following exercise. Cognitive test scores of group 1 and group 2 were adjusted based on the non-exercising controls (group 3). We found a decrease in cognitive performance during and directly following exercise, followed by an increase in performance after a recovery period. The purpose of the current study is to investigate potential mechanisms responsible for these effects on cognitive performance by relating them to changes in 1) frontal brain lobe oxygenation and 2) hormonal and energy metabolites in blood and saliva.

Student
Tina Cheung & Jessie Shiah

Major
Exercise Science

Research Mentor
Peter Horvath Ph.D.

Title

Abstract
Carbohydrate and amino acid supplementation enhances skeletal muscle synthesis in combination with resistance exercise. Pre-exercise consumption has been shown to have a greater response than post-exercise. Supplementation during exercise has demonstrated a suppression of catabolic hormone response and stimulation of the anabolic response. The intention of this study is to demonstrate a more positive (anabolic/catabolic) hormone response with pre-exercise consumption versus post-exercise consumption; changes in protein synthesis are believed to be hormone dependant. Each participant will undergo four supplementation timings along with resistive training. Cortisol, insulin, testosterone, and alpha-amylase will be evaluated from interval salivary collection during exercise and 1 hour recovery to determine the overall anabolic to catabolic effect.

Student
Daniel Heusinger, Ryan McCarthy & Jeffrey Romans

Research Mentor
Peter Horvath Ph.D.

Title
Performance Drink, a Glucose Polymer Drink, for Prolonging Exercise

Abstract
Glucose availability is a major limiting factor of prolonged exercise performance. Because muscle glycogen is an important source of glucose during long-term exercise, strategies to enhance performance such as reducing the rate of glycogen utilization through increased use of either lipids or blood glucose. We propose the unique formulation of Performance Drink® drink provides a ready supply of glucose, but does not trigger the insulin surge commonly observed with ingestion of carbohydrate drinks. Testing will involved four sessions. Subjects are well trained cyclists who are capable of cycling for 2 hours at an intensity of 70% of their maximum aerobic capacity. At session one, a VO2 peak test will be performed. During sessions two through four the subject will consume either, a) water  b) Performance Drink, or c) a caloric equivalent drink of Performance Drink® drink provides a ready supply of glucose, but does not trigger the insulin surge commonly observed with ingestion of carbohydrate drinks. Testing will involved four sessions. Subjects are well trained cyclists who are capable of cycling for 2 hours at an intensity of 70% of their maximum aerobic capacity. At session one, a VO2 peak test will be performed. During sessions two through four the subject will consume either, a) water  b) Performance Drink, or c) a caloric equivalent drink of the Performance Drink base 30 minutes before exercise. The subject will take a cognitive function test then cycle for 2 hours at 70% of their VO2 peak.

Student
Timothy Lehman & Ravinder

Research Mentor
Peter Horvath Ph.D.

Title
Impact of Small Colony Variants on Antimicrobial Pharmacodynamics against Staphylococcus epidermidis

Abstract
Small colony variants (SCVs) often exhibit reduced antibiotic susceptibility. The activity of vancomycin and daptomycin against S. epidermidis SCV versus its wildtype was examined. The SCV and wildtype strains were run through time kill experiments, exposing them to increasing concentrations of drug for 24 h. Samples were collected at various time points to perform colony counts. Vancomycin was able to produce bactericidal activity (≥3-log reduction of CFU/ml) against the wildtype at >4 µg/ml by 24 h, but not the SCV. Daptomycin also achieved a greater than 99.9% kill rate versus wildtype at >2 µg/ml by 8 h (6 h for >4 µg/ml), as well as against the SCV at >4 µg/ml by 8 h. Vancomycin failed to achieve bactericidal activity against the SCV after 24 h at any concentration (0-128 µg/ml) while daptomycin was able to retain much of its killing activity.

Student
Alessandra Bykowska & Shuk Yee Lau

Major
Exercise Science

Research Mentor
Peter Horvath Ph.D.

Title
Potential Mechanisms for Changes in Cognitive Function with Short–Term Maximal Exercise

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Student
Tina Cheung & Jessie Shiah

Major
Exercise Science

Research Mentor
Peter Horvath Ph.D.

Title

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Peter Horvath Ph.D.

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Student
Timothy Lehman & Ravinder

Research Mentor
Peter Horvath Ph.D.

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Small colony variants (SCVs) often exhibit reduced antibiotic susceptibility. The activity of vancomycin and daptomycin against S. epidermidis SCV versus its wildtype was examined. The SCV and wildtype strains were run through time kill experiments, exposing them to increasing concentrations of drug for 24 h. Samples were collected at various time points to perform colony counts. Vancomycin was able to produce bactericidal activity (≥3-log reduction of CFU/ml) against the wildtype at >4 µg/ml by 24 h, but not the SCV. Daptomycin also achieved a greater than 99.9% kill rate versus wildtype at >2 µg/ml by 8 h (6 h for >4 µg/ml), as well as against the SCV at >4 µg/ml by 8 h. Vancomycin failed to achieve bactericidal activity against the SCV after 24 h at any concentration (0-128 µg/ml) while daptomycin was able to retain much of its killing activity.

Student
Alessandra Bykowska & Shuk Yee Lau

Major
Exercise Science

Research Mentor
Peter Horvath Ph.D.
“Postprandial Lipemia & Endothelial Function in Active & Sedentary Males”

Abstract

Postprandial lipemia’s effect on endothelial function in active and sedentary men without the influence of a recent bout of exercise has not been studied.

Nine active and 8 sedentary males (18-38 yrs old with VO2 peaks 64.1 and 39.4 mL/kg/min) drank a high fat dairy shake after a 12 h fast and 36 h of inactivity. Blood was collected and flow mediated dilation (FMD) by brachial ultrasound was determined at 0, 3 and 6 h.

Serum glucose remained stable but, non-esterified fatty acids increased in both groups over time. Total cholesterol (TC) and triglycerides (TG) were highest at 3 h, TG did not return to fasting levels after 6 h, both groups were similar (TG: 67.7±6.5, 107.9±9.5, 83.5±8.9 mg/dL and TC: 158.2±7.2, 164.4±7.0, 162.7±7.0 mg/dL at 0, 3 and 6 h respectively). Mean arterial pressure between the groups was similar, but baseline diameter at 0h was larger in the active group (4.9mm ± 0.1 Active, 4.1mm ± 0.1 mm Sedentary.). Age adjusted %FMD measured no difference except at 6h with sedentary being greater. The %FMD peaked at 3h for active and 6 h in the sedentary group (Active: 4.4±0.5, 4.9±1.0, 4.0±1.0, Sedentary: 7.1±1.2, 7.7±1.6, 8.8±2.0 at 0, 3, 6 h). Studies on postprandial lipemia need to control for recent exercise as fitness level did not alter postprandial lipemia with 36h of inactivity. Postprandial lipemia did not alter endothelial function differently but active males had a larger vessel at rest.

Title
Iris C. Levine

Major
Exercise Science

Research Mentor
Scott C. White, Ph.D.

Title
Objective determination of Filter Cut-offs for Impact-Like Human Movements.

Abstract

Recent evidence suggests the calculation of moments using inverse dynamics when input data is processed differently results in artifacts for impact-like human movements. It has been recommended that segment position and ground reaction forces be treated with the same 20 Hz data filtering cut-off frequency to reduce the artifact (Bisseling & Hof. J. Biomech. 39:2438, 2006). Determining an appropriate cut-off frequency is an important consideration. Ten subjects performed five impact-like movements reported in the literature. A Fast Fourier Transform was used to determine the cumulative 98th percentile frequency from the force data (2400 Hz sample). Forces were windowed with an Extended Cosine Bell and padded with zero endpoints. The 98th percentile frequency was highly variable within repeated trials, between subjects and movements. The recommended 20 Hz cut-off would not be suitable for all impact-like movements; they should be determined on an individual basis using objective criteria such as frequency analyses.

Student
Marcie Zaiter

Major
Exercise Science

Research Mentor
Marc Kiviniemi, Ph.D.

Title
The Road to Dieting Is Paved With Good Intentions: Intentions to Change Behavior When Planning Diets Do Not Translate to Actual Behavior Change

Abstract

Population rates of overweight and obesity are rising sharply. A large majority of Americans report attempts to diet to lose weight. However, given the prevalence of obesity, it seems clear that most of these attempts are unsuccessful. This paper explores a possible reason for this lack of success. The relation of plans to diet to plans to change diet and exercise behavior is examined, as is the relation of actual dieting to actual behavior. Participants (N=346) reported current dieting, plans to diet in the next six months, current fruit/vegetable consumption, current physical activity, and intentions to increase fruit/vegetable consumption and physical activity in the next six months. Compared to those who had no plans to diet, those who planned to diet in the next six months reported significantly higher intentions to change behavior. However, those currently dieting did not differ from those who were not dieting nor planning to diet on either current fruit/vegetable consumption or current exercise. This suggests that while individuals may make appropriate plans to change behaviors in the service of weight loss, those behavioral plans do not translate effectively into actual behavior change.

Student
Melissa Federice

Title
Is facial plastic surgery in Buffalo cosmetic or reconstructive?

Abstract

My research is to find out how many people ages 18 – 40 from three clinics in Buffalo, NY, have facial plastic surgery for cosmetic reasons vs. those that have it for reconstructive reasons. I will look at the affect of age and gender on these results. I plan to go to the doctors’ offices and get my data from them. This research is beneficial to my future because I am planning to enter the field of plastic surgery. I will be able to see which type of surgery is more prevalent (cosmetic or reconstructive), which will impact what type of surgery I may go into some day.
Student
Matthew Gibb

Title
What has caused people to move to Flagstaff, AZ, in the past 25 years?

Abstract
I will conduct my research by sending surveys to 250 male and 250 female residents of Flagstaff. My survey will ask questions about age, year of relocation to Flagstaff, race, and causes of relocation. I hope during my analysis of the survey results to find a correlation between some of their answers. If I receive a sufficiently large set of results, I would like to compute statistical tests such as Analysis of Variance and correlation tests between certain answers.

Student
Marissa Green

Title
What is the relationship between hours spent on schoolwork and GPA?

Abstract
My research project is studying the relationship between hours spent on schoolwork outside of class and GPA. I will study this relationship by randomly sending surveys to UB students living on campus. The survey provides a false purpose to make sure that students are not simply answering the survey to make my hypothesis correct or incorrect. After the students complete the survey, they will return it to the Undergraduate Academies Office to receive free candy and a debriefing form. This study will benefit many students, including myself, who wish to attend medical school one day.

Student
Rochelle Lopez

Title
How do extracurricular activities affect a student’s chance to get into UB’s medical school?

Abstract
This research study is to discover how extracurricular activities, such as clubs, sports, research, showing/internship in a medical field, and volunteer work through high school and undergraduate school affect a student’s chance to get into UB’s Medical School. This study will include surveys to students who attend UB’s Medical School that will be passed out by their professors before one of their classes. They will be questioned on what they were involved in during high school and undergraduate school. I will also call the admissions office and ask what the specifically look for in an applicant, and see how it compares with the data I gathered from students. Hopefully the outcome will help many students, including myself, who wish to attend medical school one day.

Student
Jing Ma

Title
Why do UB students volunteer?

Abstract
My research project on the motivation behind why students volunteer at UB will give us an idea what the majority of the students at UB volunteer for and this will us a since of why we what we should advocate to increase the amount of students who volunteer. I will conduct a online survey and research out to as much departments and student organization which participate in volunteering .Since my survey is online, I am hoping people will be able to take the time to fill out the surveys when they are convenient and the results will be more accurate. Hopefully this research will continue throughout the years so we can have a record of volunteer patterns in UB students throughout the years.

Student
Alex Matthews

Title
Which water sources are best for keeping fish alive?

Abstract
My project is an experiment to test which water sources are the best for keeping fish alive. Many water sources once perfect for fishing are unable to support life any more. My experiment will compare the longevity of fish placed n four different natural water samples (collected locally) vs. fish placed in distilled tap water. The future implications of my study could affect water management decisions, as well as fish and wildlife conservation.

Student
Jennifer Mounessa

Title
What is the relationship between warming up, cooling down, stretching, and mileage intake on overuse injuries of UB track athletes?

Abstract
Due to an increase in athletic competition over the years, many track athletes have pushed themselves beyond their limits. Unfortunately, many runners fail to realize the potential physical costs, and will run until their bodies give out. Specifically, this research project is designed to understand the relationship between warming up, cooling down, stretching, and running mileage on overuse injuries among UB track athletes. After survey questions are asked of their running routines and preparations, results will be compared to the most elite runners in the world who have never experienced and overuse injury. As a result, proper ways to deal with running may be gathered to help future UB runners avoid overuse injuries.
Abstract
For my research project I plan to find out if there is a correlation between the geographical location of a person’s home in the city of Buffalo and their likelihood of contracting a cancerous disease between the years of 1980-2007. I plan to do so by first collecting the street names and cancerous diseases of the people in the Buffalo city area. Then I plan to locate toxic waste dumps in the area and plot both points on a map of the City of Buffalo. By doing so, I hope to see if there is a correlation between the location of a person’s home and cancer rates.

SIGMA XI

Name
Anson Abraham
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Pharmaceutical Sciences
Title
Mechanism Based PKPD Model of Parathyroid Hormone and Calcium Homeostasis in Rats and Humans

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Tariq Abuhaimad
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Mechanical and Aerospace Engineering
Title
3D Imaging Reconstruction of Root Canal Systems Using Two Biplanar Radiographs

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Nesreen Alqaissi
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Nursing

Title
Common meanings and practices of seeking support early in diagnosis of breast cancer.

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Oral Biology
Title
Novel iron regulated sRNAs involved in biofilm formation of Aggregatibacter actinomycetemcomitans

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Pharmaceutical Sciences
Title
Inhibition of the efflux transporter mediated transport of mitoxantrone by BiochaninA and Kaempferi

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Title
Preliminary Study: Is There Association Between Oral Microorganisms and Oral Squamous Cell Carcinoma

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Title
Multi Physics Modeling of a Harmonic Drive

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Title
The State of the Science of Emotional Intelligence in Nursing Research
Name
Jurgen Bulitta
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Department
Pharmaceutical Sciences
Title
In Vivo Release and Population Pharmacokinetics of Total and Unbound Paclitaxel in Cancer Patients

Name
Diana Chaddock
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Nursing
Title
Inter-rater agreement in the identification of FQRS and pathological Q wave on a standard ECG

Name
Christopher DeSimone
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Department
Physiology and Biophysics
Title
HpTnX2 binding and gating modification of Kv4.3 channels are dependent on distinct amino acids in S3b

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Chemistry
Title
Synthesis of drug and antibody conjugated QDs as theranostic probe for cancer detection & therapy

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Department
Medicine and Biomedical Sciences
Title
Caffeine: Effect On Glycine Receptors And Synaptic Transmission In Retina

Name
David Feliciano
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Pharmacology and Toxicology
Title
CaMKIV Regulates Proliferation/Survival of Neuroblastoma Cells

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Daniel Fisher
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Immunology – RP
Title
Targeting the Lymphocyte Endothelial Axis to Overcome Limited T Cell Trafficking into Tumors

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Adam Flaxman
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Geology
Title
Imaging Subsurface of a Local Archaeological Site Using Integrated Information from Shallow Subsurface Seismic and Multi-frequency ground Penetrating Radar Data

Name
Zachary Fowler
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Graduate student
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Chemical and Biological Engineering
Title
Redirecting Carbon Utilization in Escherichia coli by Metabolic Network Tuning

Name
Jemin George
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Mechanical and Aerospace Engineering
Title
Adaptive Disturbance Accommodating Control Using a Kalman Estimator

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Robyn Goacher
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Graduate student
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Chemistry
Formation of High Mass Cluster Ions from Compound Semiconductors Using Cluster TOFSIMS

Name: Matthew Gruwell
Status: Postdoctoral student
Department: Biological Sciences
Title: Phylogenetic congruence of armored scale insects (Hemiptera:Diaspididae) and their endosymbionts

Name: Hidab Hamwi
Status: Graduate student
Department: Electrical Engineering
Title: of new methods for determination and correction of distortion, rotation, and translation in tiled arrays of EMCCD detectors

Name: Seungjin Han
Status: Graduate student
Department: Mechanical and Aerospace Engineering
Title: Enhancing the through thickness thermal conductivity of CFPMCs by nanostructuring

Name: Chiun yu Hsu
Status: Graduate student
Department: Biological Sciences
Title: Delayed Release in Mouse Anteroventral Cochlear Nucleus

Name: Rui Hu
Status: Graduate student
Department: Chemistry
Title: Functionalized gold nanorods for dark field imaging of cancer cells

Name: Etienne Hugues
Status: Postdoctoral student
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Title: A unifying neural network model for spatial attention in brain visual area V4

Name: Donghui Jing
Status: Graduate student
Department: Chemical and Biological Engineering
Title: Maintenance of Embryonic Stem Cell Self Renewal via Adenoviral Transfer of the LIF

Name: Carolynne Jones
Status: Graduate student
Department: Communicative Disorders & Sciences
Title: Trends of Acceptance in Deaf Culture: Opinions about Hearing Status and Cochlear Implants

Name: Aaron Kahn
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Title: Secondhand Smoke Exposure Among Multiunit Housing Residents in New York State

Name: Srikanth Kannan
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Department: Mechanical and Aerospace Engineering
Title: Modeling, Simulation and Control of a Vertebrate Mastication Analyzer

Name: Christos Keleshis
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Title: LabVIEW GUI for a New High Sensitivity High Resolution Micro Angio Fluoroscopic and ROI CBCT System

Name: Fadi Khraim
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Title: Predictors of Prehospital Delay among Patients with Acute Myocardial Infarction

Name: Brian King
Status: Graduate student
Department: Social and Preventive Medicine
Title: Secondhand Smoke Exposure Among Multiunit Housing Residents in New York State
<table>
<thead>
<tr>
<th>Name</th>
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<th>Department</th>
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</thead>
<tbody>
<tr>
<td>Sonya Kokil</td>
<td>Graduate student</td>
<td>Pharmacy Practice</td>
<td>Aqueous Synthesis of Highly Luminescence Cysteine Capped CdTe/ZnTe QDs for in vitro/vivo Bioimaging</td>
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<td>Amrish Kumar</td>
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<td>Mechanical and Aerospace Engineering</td>
<td>Experimental Study of RoSS Simulator for the da Vinci Surgical System</td>
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<td>Pharmaceutical Sciences</td>
<td>Modeling Vildagliptin Pharmacokinetics and Dipeptidylpeptidase IV Inhibition</td>
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<tr>
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<td>Shannon Lupien</td>
<td>Graduate student</td>
<td>Psychology</td>
<td>Towards a system for large scale differentiation of embryonic stem cells into insulin producing cell</td>
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<td>Monty Littlejohn</td>
<td>Graduate student</td>
<td>Medicine and Biomedical Sciences</td>
<td>Characterization of proteins involved in Neurospora cell wall biosynthesis</td>
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<tr>
<td>Abhiram Maddi</td>
<td>Graduate student</td>
<td>Biological Sciences</td>
<td>Characterization of proteins involved in Neurospora cell wall biosynthesis</td>
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Lisa Milford

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Lisa Milford

Status
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Psychology

Title
Contingencies of Self Worth and Attributions to Discrimination

Jason Muhitch

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Jason Muhitch

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Immunology – RP

Title
The feasibility of immunodepletion as an adjunct to systemic thermal therapy and immunotherapy

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Pradeep Nagaraja

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Chemical and Biological Engineering

Title
A computational framework for pancreatic β-cell function

Namrata Nayyar

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Namrata Nayyar

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Oral Biology

Title
Ssa1 proteins play an important role in cell adhesion and virulence of Candida albicans

Anil Neelakantan

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Pharmacological Sciences

Title
Do changes in Amount Smoked Daily and Time to First Cigarette of the Day Predict Smoking Cessation?
Name  Govindarajan Srimathveeravalli
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Title  Experiments in Human Motor Control

Name  Heather Stewart
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Department  Geology
Title  Surface velocity and ice flux changes of the dynamic calving front of Jakobshavn Isbrae, Greenland

Name  Patcharaporn Sudchada
Status  Postdoctoral student
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Title  Quantitative Real Time Polymerase Chain Reaction Analysis of MRP2 Expression in PBMCs

Name  Elizabeth Swigar
Status  Graduate student
Department  Counseling, School and Educational Psychology
Title  Patient Safety and Well Being Protections in Online Cancer Peer Support Forums

Title  Effect of Phenethyl Isothiocyanate (PEITC) on Tumor Growth in an Animal Model of Breast Cancer

Name  Yuko Takagi
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Title  Archaeal RNA Ligase is a Homodimeric Protein that Catalyzes Ligation of RNA and DNA

Name  Tai Boon Tan
Status  Graduate student
Department  Chemical and Biological Engineering
Title  Consideration of the entropy in the prediction of stable crystalline polymorphs

Name  Chinpei Tang
Status  Graduate student
Department  Mechanical and Aerospace Engineering
Title  Differential Flatness Approach to Control of a Nonholonomic Wheeled Mobile Manipulator

Name  Urvi Telang
Status  Graduate student
Department  Pharmaceutical Sciences
Title  Integrated Cellular Bone Homeostasis Model for Denosumab Pharmacodynamics in Myeloma Patients

Name  Trupti Vardam
Status  Graduate student
Department  Immunology – RP
Title  Role of IL Six Activated STATs in Thermal Regulation of ICAM One Dependent Lymphocyte Trafficking

Name  Philip Veliz
Status  Graduate student
Department  Sociology
Title  Shared and Contested Norms: an examination of drinking norms on college campuses

Name  Anshu Verma
Status  Postdoctoral student
Department  Pharmaceutical Sciences
Title  Integrated Cellular Bone Homeostasis Model for Denosumab Pharmacodynamics in Myeloma Patients
Name: Ya Jung Wang  
Status: Graduate student  
Department: Nursing  
Title: The appropriateness of utilizing instruments to measure exercise, fatigue, and quality of life (QOL)

Name: Daojun Wang  
Status: Graduate student  
Department: Mechanical and Aerospace Engineering  
Title: Ssa1 proteins play an important role Carbon Fiber Polymer Matrix Structural Composites for Sensing

Name: Brent Williams  
Status: Graduate student  
Department: Social and Preventive Medicine  
Title: Vitality and Risk of Recurrent Cardiac Events in Acute Myocardial Infarction Survivors

Name: Thomas Welch  
Status: Graduate student  
Department: Psychology  
Title: Speech perception by humans and birds: Effects of syllable duration

Name: Chao Xu  
Status: Graduate student  
Department: Pharmaceutical Sciences  
Title: Quantitative Structure Property Relationships of Camptothecins in Humans

Name: Gaixia Xu  
Status: Postdoctoral student  
Department: Chemistry  
Title: Bioconjugated nanoparticles for molecular transmigration and drug delivery across an in vitro BBB

Name: Roman Yampolskiy  
Status: Graduate student  
Department: Computer Science and Engineering  
Title: Improving Accuracy of a Behavior Based Network Intrusion Detection System

Name: Hui You  
Status: Graduate student  
Department: Pharmacology and Toxicology  
Title: Atrial Natriuretic Peptide Beta Cell Growth and Insulin Secretion

Name: Ariana Young  
Status: Graduate student  
Department: Psychology  
Title: The Influence of Consensus Information on Intergroup Attitudes: The Effect of Ingroup Identification

Name: Eunice Yuen  
Status: Postdoctoral student  
Department: Physiology and Biophysics  
Title: Acute Stress Induces Synaptic and Structural Potentiation in Prefrontal Cortex.
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 and creative works.