

Undergraduate Research & Creative Project Grant Awards: 2009-2010

Awards to Students in Arts & Humanities

Student Name: Taylor McIntosh
Project Title: Theirstory (photography) / Herstory (film)
Faculty Sponsor: Ted White, Film
Project Abstract:

Theirstory/ Herstory will be a film and accompanying photography exhibit that documents the foreign land, people, and life that my four year old adopted Guatemalan sister could have been raised into, a life in Guatemala City, Guatemala. It is being created as a time capsule piece, one that I will present her with when she is old enough to comprehend the intention behind, and content within the project. The film itself is addressed my sister, but I hope that it will attract the attention of many others in that it is a localized study of the global issue of poverty and alienation of adopted children, alienation that they may feel from current living situations or from cultures they were removed from. This exhibition of both 16mm film and 35mm photographs will be open to the public for free viewing on Friday January 1st, 2010, at Two Point Gallery, an art gallery in Portland, Maine; which has asked me to show this work. *Theirstory/ Herstory* is being released as an experiment for an aspiring filmmaker/ photographer in order to understand the affects of photography and documentary films on the viewers. The release of this project will search for the answers to questions such as; can single images or films really make a difference to public audiences who aren't stricken with the same situations as the subjects in the artistic work, and how do different forms of media tend to affect the audience?

Student Name: James Hayward, Matt Garland & Kendra Bonaccorsi
Project Title: *Into the Pit*
Faculty Sponsor: Ted White, Film
Project Abstract:

"Society creates dance, and it is to society that we must turn to understand it." - Paul Spencer, *Society and the Dance*

Slam dancing, or "moshing" refers to the act of audience members at a musical event aggressively and often violently pushing, swinging, and slamming into each other. Our proposed documentary film entitled *Into the Pit* will investigate the evolution and development of what is commonly referred to as "moshing." Our guiding focus will be to investigate whether moshing causes more violence and hostility in our society, or acts as a remedy to help dissipate it. We also hope to uncover whether moshing enhances peer bonding and camaraderie, or whether it promotes the nagging problem of violence and isolation in today's youth culture.

Is moshing is a positive and healthy form of release and entertainment, or is it a dark and vengeful act of violence? *Into the Pit* will go beyond the superficial reasons of why so many people choose to mosh and explore what lies beneath the surface of this large and influential movement.

Into the Pit will not only research the different subcultures associated with moshing, but also look at what the growing popularity of slam-dancing says about human nature, past and present generations of youth,

and our current society. We hope to demonstrate that slam dancing is no meaningless pastime, but rather what social scientist Bradford Scott Simon calls “ an expressive performance which serves to comment on society at large” (Simon, 152).

Student Name: Miles Warner
Project Title: Chad Bentley Productions 2010
Faculty Sponsor: Lynn Richardson, Art
Project Abstract:

“Genius? I don’t know about genius. Maybe I’d go with something along the lines of, smartest man in the world or, smartest man in the universe. I don’t know. I guess, genius works, yeah genius.”

Chad Bentley is a persona I have created to act as a vehicle to deliver my artistic vision. He is the poster child of a new age of marketing, advertising, and consumerism. He is America. He is the 22nd century. Chad is the culmination of many different types of media and celebrity that each of us are bombarded with each and every day of our lives. He embodies the characteristics of a new age and portrays them with his “amazing” inventions. He has brought the world “The Speech Eliminator, The Bread Slicer and his self-proclaimed modern masterpiece The Teleportation Device.” His inventions mark milestones in our culture and he has elevated himself toward the status of world icon.

“I’ve got magic. I’ve got fire. You can look into the eye of the beast and you’ll see me, you’ll see me,” says Chad as he introduces the world to The Speech Eliminator. The Speech Eliminator started a series of products that “change the world.” The sculpture is the product and the message is conveyed through promotional videos and infomercials, shedding light on the life and times of the swanky billionaire Chad Bentley and his amazing world changing inventions. Chad has already done it all but, his thirst for more cannot be quenched.

Student Name: Laura Mann
Project Title: Tangled Stillness
Faculty Sponsor: Joan O’Beirne, Art
Project Abstract:

At Keene State I have consistently turned to photography as my form of artistic expression. In my new work, I plan to focus on the way one feels when missing someone, or something, and the effects of that absence; the feeling of wishing you were somewhere else but being tied to a fixed time or space, mentally and physically. The emotional detachment one feels when stuck in a location can feel like a dream. Using one centralized figure along with other objects to convey a message, the photographs will tell a story of being restricted, bound or constrained.

Elevators will be the location for my photo-shoot. People have a preconceived notion about these spaces; when the doors open you suspect you know what is going to be inside. Using a variety of objects that are in some way related to mobility including, but not limited to: kites, balloons, rope, a treadmill, a raft, roller-skates, and through a combination of constructed and found sculptural objects, I will further

enhance the strangeness of this elevator realm. The incorporated sculptural elements will be to further enhance the emotion and aesthetic of the series as a whole. Multiple objects and bright colors will exaggerate the mundane quality of the elevator. The clutter and chaos of these objects will portray the everyday clutter and chaos of life.

Exploring this new content I will push the boundaries of the imagination using forms created from the objects to emphasize the human body. The principles of design: Balance, Proximity, Rhythm, Variety, Repetition and Emphasis, visually organize and communicate to a wider audience. Using this philosophy I can successfully engage and seduce the public visually.

Student Name: Jessica Yager
Project Title: Gibbous Fountain Sculpture Project
Faculty Sponsor: Lynn Richardson, Art
Project Abstract:

After my mother was diagnosed with Breast Cancer last summer, I decided to dedicate my senior work to exploring and sharing our journey as she pursues aggressive treatment. The size and subject that I am working with in this fountain calls it into a public space. I am excited to display this work in the Student Exhibition at the Thorne-Sagendorph Gallery and look forward to the possibility of installing it at future sites such as a cancer treatment center or hospital where it could touch the lives of others affected by breast cancer.

My design for this fountain began with the image of a woman, post mastectomy, standing bathed in water and light, with a host of faces of those who have walked this path before and those who walk beside in support emerging behind her. She stands with her eyes closed, face turned toward the light and water coming from above; her arms extended in a pose that sits between worship, acceptance, strength and peace. She stands in a basin shaped like a gibbous moon, filled with stones that have been tumbled by the ocean. Underwater lights play across the stones and provide an ethereal feeling to the pool, as if the light is indeed cascading with the water into the basin. From floor to the top of the façade the fountain will stand about nine feet tall; the basin measures 6-6.5' in diameter.

Student Name: Catherine Harris
Project Title: Imperial Hipsters
Faculty Sponsor: Rosemarie Bernardi, Art
Project Abstract:

I am working on a body of artwork that compares historical imperialism to contemporary culture for my senior BFA exhibition. I'm interested in presenting the power struggles and land ownership issues of imperialists that are currently being mimicked by 20 something upper middle class "hipsters," specifically, in New York City. Over the past three semesters I have explored alternative methods of printmaking and I have researched world globalization as it relates to an influential subculture. This semester I am completing a series of prints and mix media work. Receiving this research grant will greatly help to fund my materials and allow me to spend less time earning money and more time completing my artwork.

Awards to Students in Professional & Graduate Studies

Student Name: Brennan Natoli
Project Title: Adaptive Marine Seating Design Project
Faculty Sponsor: Lisa Hix, Technology, Design & Safety
Project Abstract:

The CRAB anachronism stands for Chesapeake Region Accessible Boating, Inc. It is an organization devoted to making sailing accessible to persons with mobility impairments, usually spinal cord injuries, and usually wheel chair users. The Boats and their specialized hardware have been in use for just over 20 years. The parts for maintaining the unique seating systems used to hold the participants in place while sailing are no longer available. The director of the program for over 20 years, himself a paraplegic, has ideas for what the next generation of seating might look like and features the seats may require.

The client has suggested many features the chair and attached mechanisms might possess. He has discussed chairs that are used on yachts with tiller steering controls. This seating on tiller-controlled boats involves tilting the chair primarily toward and away from the body.

The focus of this Independent Study Project is to identify the requirements and the subsequent design of a chair for use in a yacht with a tiller steering system. The research and design focus is primarily on the mechanism that allows the chair to tilt while supporting an often “limp” lower half of the body while subsequently supporting and restraining the person safely while sailing.

Awards to Students in Sciences & Social Sciences

Student Name: Katrina Weiss
Project Title: Assessing the Effects of Diversity on Macro-Social Outcomes
Faculty Sponsor: Brian Green, Sociology
Project Abstract:

The concept of diversity has become a very common theme in many discussions among educators, politicians, and organizers at many levels. Although many institutions pursue diversity as a goal, the specific positive benefits associated with diversity are more often assumed rather than known. The general assumption made by many decision-makers is that by achieving a diverse community, a number of positive outcomes will result. This study examines diversity at the national level using the ‘Ethno-Linguistic Fractionalization’ (ELF) index in 1961 and 1985 to indicate the level of diversity in each country. I will use this data to assess diversity’s effects on key macro-social indicators, namely GDP per capita, life expectancy, crime rates and educational attainment. I also will examine diversity in the United States at the county level and its effects on such social progress factors such as rent expenditure levels, crime rates, income levels, health, and educational attainment. For this research, I hypothesize that diversity has a positive impact on various macro-social indicators. To test this hypothesis I will use SPSS

to conduct regression analyses for these factors to measure the impacts of diversity on the global and national level. The results of this study will be useful for policy planners because it will provide concrete information on the specific benefits and outcomes of diversity at the national and international levels.

Student Name: Brandon Knight & Anna McLean
Project Title: Evolution of the Small-Flowered Passionflowers
Faculty Sponsor: Kristen Porter-Utley, Biology
Project Abstract:

Passionflowers (genus *Passiflora*) are beautiful flowering plants that vary widely in their native habitats, flower structure, nectar form, and leaf form. There are approximately 500 different species of passionflowers. These plants, once mainly of only horticultural interest, produce delicious fruits that are now economically important; in many areas of the world they are also used as herbal medicines. The largest subgroup of passionflowers, subgenus *Decaloba*, is going to be the main focus of this study. All plants contain a non-coding spacer region on their chloroplast genomes, trnL-F, which has been useful in resolving the evolutionary relationships of many photosynthetic organisms. We plan to generate gene sequences for trnL-F and use them to help us understand the evolution of the species in subgenus *Decaloba*. Protocols are in place for amplifying and sequencing extracted DNA from dried plant samples. We are requesting funds to support our molecular wet lab work and to purchase a new bioinformatics software program, Geneious. The importance of this research will continue to lead to a better understanding of passionflower biology, the discovery of new species, and the conservation of endangered and threatened species.

Student Name: Michael Barry & Alisha Stevens
Project Title: The Effects of Using Algebra Tiles on the Understanding of Polynomial Multiplication
Faculty Sponsor: Beverly Ferrucci, Mathematics
Project Abstract:

This study will investigate the use of Algebra Tiles as a manipulative to enhance student understanding of polynomial multiplication. Two Math 172 classes will be used as the comparison groups and both will be taught polynomial multiplication. One class will be given a traditional approach to the topic, and the other will be the treatment class, taught using Algebra Tiles. A pretest and posttest will be given to determine if the use of the manipulative increased the students' understanding of the topic.

Student Name: Carissa Mierzejewski
Project Title: The Effects of Mood on Learning
Faculty Sponsor: Donna Viveiros, Psychology
Project Abstract:

The study examines the influence of mood on learning. Participants are to be separated into three groups; those with positive mood inductions, those with negative mood inductions, and those who are neutral. Their moods will be manipulated based on a self-referencing mood induction. Participants will then be asked to read a short essay and take a fifteen question true/false test. It is hypothesized that there will be a significant effect of emotions on their test. Individuals given the positive mood induction will score significantly higher than those who received the negative and neutral mood inductions. This study implies that positive emotions should be considered as important aspects in education and instructional methods. The result of the experiment is to be determined.

Student Name: Michael Fedele
Project Title: The Hope-Health Connection: A Correlational Study of Trait-Hope and Physical Health Outcomes in College Students
Faculty Sponsor: Anthony Scioli, Psychology
Project Abstract:

The primary aim of the present study is to compare the relationship between hope and health, using two different measures of hope (Scioli, 2007; Snyder et al. 1991). Both self-report and behavioral measures of health will be used. The subjects will be asked to complete a packet of questionnaires, including two measures of hope, and a detailed health questionnaire. Participants will also be asked if they are willing to be contacted one time in the evening via a cell phone call. During the call they will be interviewed and asked about their diet and physical activities in the past twenty-four hours. The health measure to be used is an adapted form of the American College Health Associations Nation College Health Assessment. This measure covers five major topics: alcohol and other drug use, sexual health, weight, nutrition and exercise. One hundred subjects will be recruited from introductory level psychology classes as well students in health science courses. Efforts will be made to recruit equal numbers of men and women. The primary statistical analyses will involve bivariate correlations and multiple regression equations, results to be discussed.

Student Name: Marina Bagalio
Project Title: Self-Esteem in Partner and Non-Partner Dating Violence Amongst College Students
Faculty Sponsor: Donna Viveiros, Psychology
Project Abstract:

The effects of self-esteem in violent partner and non-partner relationships among young adults, as well as incidence rates of dating violence on campus, will be examined. Student participants will be given a self-esteem inventory as well as a questionnaire asking for information regarding their experiences with dating violence.

Student Name: Aaron Mercado-Reza
Project Title: Psychological resilience among Latino Immigrant Young Adult Males in Urban settings and White American Male College

Students: A Comparative Study Determining Protective and Risk factors in relation to Ethnicity, Acculturation, and Health Care Opportunities

Faculty Sponsor: Karen Jennings, Psychology

Project Abstract:

This study was designed to examine the role that various factors such as socio-economic status, ethnicity, and availability of health care have on psychological resilience, or a person's ability to withstand adversity and overcome stressful situations. Two different groups were chosen to be in the study, one being Latino immigrants and the other being white American college students. The discrepancy between the two groups provides an opportunity for a deeper understanding across numerous variables. The proposed experimental design includes two questionnaires that each subject completes, one asking for demographic information to be used in conjunction with the Resilience Scale, a 7-point scale that tests the construct of resilience. Also included in this study is a selective pilot questionnaire. An interview-based questionnaire that only select subjects will participate in will be conducted to further understanding of the role that risk and protection on a person's level of resilience. This study predicts that people who have faced higher levels of risk and have adequate protective resources available will score higher on the Resilience Scale than those with lower risk levels who were over-protected. The questionnaires are tested and valid, with questions originating from the 2000 Census, International Resilience Project, and Dr. Wagnild's Resilience Scale.

Student Name: Jeffrey Trethewey

Project Title: Evaluating polyaromatic hydrocarbon degrading microbial communities in *Spartina* marshes of the Great Bay Estuary, NH

Faculty Sponsor: Loren Launen, Biology

Project Abstract:

Degradation of polyaromatic hydrocarbons (PAHs) by microbial communities is an important area of microbiology which is far from being fully understood. PAHs are a class of highly toxic pollutants formed by the incomplete combustion of organic materials. Due to their chemical stability and poor water solubility, PAHs accumulate in the sediments of salt marsh ecosystems. Salt marshes are an easily disrupted ecosystem, so removal of PAHs cannot be carried out by intrusive means (i.e. burning, tilling) and must rely on natural degradation by local microbial communities. While aerobic degradation of PAHs has been explored in studies past, the anaerobic processes involved in degradation are still much unknown. This study will look at both aerobic and anaerobic PAH degradation in conjunction with the influence of vegetation on the degradation process. This data will be gathered through the use of microcosm studies conducted in the laboratory after sediment samples have been collected from the salt marshes of the Cocheco River in Dover, NH.

Student Name: Jill Gormley & Jacob Neal

Project Title: Effects of Pyrene Exposure on Cyp1 A Expression in Adult *Xenopus laevis*

Faculty Sponsor: Susan Whittemore, Biology

Project Abstract:

Polycyclic aromatic hydrocarbons (PAHs) are persistent chemicals produced by the incomplete combustion of organic matter. PAHs, in general, have been shown to have multiple detrimental effects on vertebrates. By binding to the aryl hydrocarbon receptor (AhR), PAHs have been shown to cause increased expression of the CYP1A gene in fish. The CYP1A gene codes for a protein which oxidizes toxins to facilitate elimination from the body. *Xenopus laevis* have sensitivity to PAHs similar to that of humans, and therefore, can serve as a good model system for investigating the toxicity of these compounds. *Xenopus laevis* adult males, which are aquatic, will be exposed to 10 ppb pyrene, a specific PAH on the EPA's priority pollutant list. After exposure, the liver, kidney, testes, and brains will be removed and messenger RNA isolated in order to semi-quantify CYP1A gene expression. An increase in CYP1A gene expression is expected in the kidney and liver tissues of exposed frogs when compared to the brain and gonads. The kidneys and liver are important organs for detoxification. Understanding the effects of pyrene on *Xenopus laevis* is an important step to understanding the danger of PAH contamination to humans. In addition, CYP1A expression could serve as a valuable indication of pyrene exposure.

Student Name: Spencer Vanderhoof
Project Title: Molecular Gut-content Analysis of the Invasive Lionfish Species,
Pterois volitans
Faculty Sponsor: Scott Strong, Biology
Project Abstract:

Lionfish (*Pterois volitans*) are invasive predatory fishes whose introduction into the western Atlantic Ocean, has become a growing ecological concern as this invasive species has spread rapidly and decimated endemic reef fish species. Assessment of the environmental impact of the lionfish invasion necessitates analysis of its prey species. To date identification of gut content has been limited to visual analysis of prey species, which provides incomplete data as some food items are digested beyond recognition. The use of molecular gut content analysis circumvents this limitation and has been used to identify prey species for a variety of organisms. We seek to isolate and characterize DNA at the species level from the gut contents of several of lionfish specimens obtained from reefs off the Turks and Caicos Islands (TCI), British West Indies (BWI). Specifically, we will analyze the DNA, amplifying the cytochrome *c* oxidase 1 region, and use the available FISH-BOL database to identify the partially-digested fish species consumed by the sample lionfish. We hope to contribute preliminary evidence that will help estimate which native species will be most effected by the lionfish invasion and where to look for initial signs of ecological damage.

Student Name: Jacob Meier & Andrew Abeleira
Project Title: Lichen as a biomonitor for air pollution: quantitative analysis of polycyclic aromatic hydrocarbons using capillary electrophoresis separation
Faculty Sponsor: Jim Kraly, Chemistry
Project Abstract:

The goal of the proposed project is to create a method that uses lichen as a biomonitor of air pollution in which polycyclic aromatic hydrocarbons (PAHs) are quantitatively analyzed by utilizing Capillary

Electrophoresis (CE) as a separation technique. PAHs are fused cyclic structures that are a byproduct of the incomplete combustion of various organic matters such as fossil fuels. A variety of PAHs have been determined to be carcinogenic compounds and elevated environmental concentrations of PAHs can be detrimental to human, animal, and plant life. Lichen are a commonly used biomonitor of air pollution which are known to accumulate PAH compounds; however the application of CE as a separation technique for lichen analysis has not yet been fully explored. The project proposes to develop a method for high resolution separation of PAH standards using CE to generate a calibration curve which will allow for the quantification of PAH in lichen samples. A sampling method for lichen species and an extraction method for accumulated PAHs will be developed. The sampling, extraction, separation and quantification methods will be applied to monitor PAH concentrations in a variety of lichen from high exposure and lower exposure areas. This project will be initiated during an eight week research program during the summer of 2010. Successful completion of this project will contribute to our understanding of the interactions between lichen and air pollutants, and also to the use of CE methods for PAH analysis.

Student Name: Charlotte McCleery
Project Title: Coral Reef Monitoring Project on Providenciales, Turks & Caicos
Faculty Sponsor: Karen Cangialosi, Biology
Scott Strong, Biology

Project Abstract:

I am proposing to continue my participation in a coral reef monitoring program, which is established on the islands of Providenciales in the Turks and Caicos Islands. The main goals of my project will be to 1) collect scientific data on size and abundance of indicator species, 2) work with local high school student (sic) to help improve their understanding of the reef's biology, conservation and cultural importance. My project will contribute to a multi year project "Coral Reef Monitoring Project on Providenciales Turks and Caicos Islands", run by Dr. Cangialosi and Dr. Strong, aimed at developing public awareness and community appreciation of the importance of conserving the reefs.