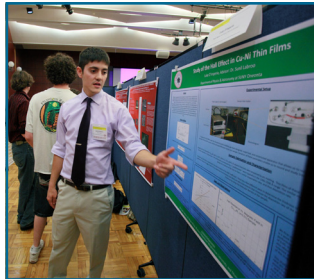
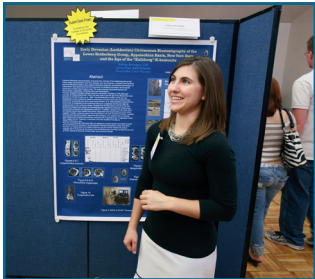




# STUDENT *research* DAY

THURSDAY, APRIL 14  
HUNT UNION BALLROOM



**SUNY  
ONEONTA**



# 2011 Student Research Day

**April 14, 2011**

**9:00 AM – 5:30 PM**

**Hunt College Union Ballroom**

## **Sponsored by:**

College at Oneonta Foundation, Inc.  
Office of the President  
Division of College Advancement  
Grants Development Office



## College Senate Committee on Research

Thomas Beal (History)  
Jacqueline Bennett (Chemistry & Biochemistry)  
Kelly Gallagher (Chemistry & Biochemistry)  
Geoffrey O'Shea, Chair (Psychology)  
Jen-Ting Wang (Mathematics, Computer Science & Statistics)  
Jacob Donnell (student representative, 2010/11)  
Dina Ahmed (student representative, fall 2010 semester)  
Kathy Meeker, *ex officio* (Grants Development Office)



# 2011 Student Research Day

## SCHEDULE

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**9:00 AM – 12:00 PM**

*Viewing of student posters, computer displays  
and other exhibits spotlighting student  
scholarship and creative activity*

**12:00 PM – 1:45 PM**

*Luncheon and guest speakers:*

**Dr. Nancy L. Zimpher**  
**SUNY Chancellor**

**Dr. Mitchell Olman '78**  
**Cleveland Clinic**

*Keynote Address*

**From Horseshoes to Humans:  
Coagulation is Linked to Fibrosis**

**2:00 PM – 4:00 PM**

*Viewing of student exhibits continues*

**4:00 PM – 5:30 PM**

*The Fund for Science and Technology Reception*

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Visit <http://www.oneonta.edu/a/srd/>

## 2011 Student Research Day

### SPEAKERS / ADDITIONAL INFORMATION

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**Nancy L. Zimpher** became the 12th Chancellor of the State University of New York on June 1, 2009. She previously served as president of the University of Cincinnati, chancellor of the University of Wisconsin-Milwaukee, and executive dean of the Professional Colleges and dean of the College of Education at The Ohio State University. A dynamic, nationally recognized leader, Chancellor Zimpher is known as an effective agent of change in education. She started her career as a teacher in a one-room schoolhouse in the Ozarks and has never lost her passion for providing accessible, quality education for every student. Chancellor Zimpher is a vocal advocate for groundbreaking legislative reforms that ensure SUNY can continue to provide broad access to higher education in an environment of declining state support, while maximizing its impact as an engine of economic development. She began her work at SUNY with a statewide tour of its 64 campuses, which became the first phase of a system-wide strategic planning process. This plan, called *The Power of SUNY*, was

launched in April 2010, with the central goal of harnessing SUNY's potential to drive economic revitalization and create a better future for every community across New York. As the plan is put into action, Chancellor Zimpher is leading a diverse set of new initiatives at SUNY in several key areas, including research and innovation, energy, health care, global affairs, and the education pipeline. Visit <http://www.suny.edu/chancellor/>.

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**Mitchell Olman** is a physician/scientist on the Full Staff of the Department of Pathobiology, Lerner Research Institute, Cleveland Clinic Foundation, where he is also a Staff Physician in the Respiratory Institute. Dr. Olman received his B.S. in Chemistry from SUNY Oneonta in 1978, his M.A. in Anatomy from Columbia University in 1980, and his M.D. from New York University School of Medicine in 1983. Prior to joining the Cleveland Clinic, Dr. Olman spent a number of years at the University of Alabama at Birmingham, rising to the rank of Full Professor of Medicine and Pathology, and as Attending Physician at the Birmingham Veterans Administration Medical Center. He is Principal Investigator on a current \$1 million grant from the National Institutes of Health, among other grant awards, and the author of numerous articles in the most prestigious peer-reviewed scientific journals in his field, as well as the recipient of many fellowships, awards and honors. Visit <http://www.oneonta.edu/a/srd/> to view Dr. Olman's curriculum vitae.



The Fund for  
Science and Technology

***Celebrate and get your share of \$5 million!***

**The Fund for Science and Technology** kicked off in fall 2007 as the College's first fundraising effort to focus on a cluster of academic disciplines. The Fund set out to raise \$4 million for student scholarships in the STEM (science, technology, engineering and math) disciplines, to increase funding for research and scholarly activity, and to enhance the scientific literacy of all SUNY Oneonta students. Under the leadership of Campaign Co-chairs Janet Perna (SUNY Oneonta class of 1970) and Dr. William Pietraface (recently retired Professor and Chair, Biology Department), The Fund far exceeded its goal, raising over \$5 million in gifts and grants by the conclusion of the campaign in December of 2010. Join Co-chairs Janet and Bill to celebrate The Fund's success and enjoy hearty hors d'oeuvres and light refreshments. Visit <http://www.oneonta.edu/advancement/donors/v-s/> for more information on The Fund for Science and Technology.

# SUNY College at Oneonta

## 2011 Student Research Show

### STUDENT PARTICIPANTS

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Karen Campbell.....	7	Shannon Gorman.....	13
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Alex Chase.....	11	Araya Henry .....	27
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Cameron Cortese.....	9	August Johnson .....	16
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## 2011 Student Research Day – PRESENTATIONS

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Holly Waterfield (Biological Field Station).....	34
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Fred Zalatan (Biology).....	19,27,31
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## PROJECT SUMMARIES

*Students:* Amie Ashton, Stacy Castillo

*Faculty Mentor:* Charlene Christie (Psychology)

### **Understanding Prejudice**

The purpose of this study is to investigate how the nature of messages regarding the Lesbian, Gay & Bisexual (LGB) community influences attitudes toward this population. The participants were 200 college students who were recruited using a web-based human subject pool management software system (SONA Systems). Participants were randomly assigned to one of eight conditions, each being asked to read two different messages about the LGB community. One of the messages emphasized either the homogeneity or the diversity of LGB community and the other message highlighted either the similarities or the differences between the LGB community and the general heterosexual population. The Attitudes Toward Lesbians and Gay Men and The Modern Homonegativity Scale were then used to measure participants' personal attitudes toward the LGB community, as well as their perception of the attitudes held by the average SUNY Oneonta student. It is hypothesized that participants exposed to a message highlighting the homogeneity of the outgroup and the differences between the ingroup and outgroup will show the highest amount of prejudice toward the LGB community.

*Student:* Christopher Aucoin

*Faculty Mentor:* Leslie Hasbargen (Earth Sciences)

### **Using GPR, GPS and Close-Range Photography to Map and Characterize Dinosaur Tracks in the Connecticut River Valley**

Fossil trackways can provide information about environmental conditions and group behavior, as well as body size and speed, though the connection between track-size-to-body size and stride-to-speed has recently been challenged (Bobo and Rainforth, 2010). Much of this information can be extracted from photographs and maps of trackways. By georeferencing the data within a digital database, we can extract more information and ask new questions about animal behavior and environment. While dinosaur skeletal remains are rare, numerous trackways exist in the eastern United States. We chose a well-exposed set of trackways on sedimentary bedding planes in the Connecticut River valley, previously mapped by Ostrom (1972). We used differential GPS to record the location of each track, and took close range oriented photographs to determine the orientation, size and morphology of individual tracks. We precisely located an oriented scale object in each photograph with a reflectorless total station, and used this data to georeference the photographs in GIS software (Global Mapper). We then measured dinosaur track characteristics within this georeferenced environment. The trackways occur in thinly bedded ripple-marked sandstone, so we suspected that additional tracks existed in the subsurface. We explored the ability of ground penetrating radar (GPR) to identify buried trackways.

*Students:* Leandra Baker, Fiona Lowry, Molly Reed

*Faculty Mentors:* Leslie Hasbargen, Devin Castendyk (Earth Sciences)

### **Pre-Gas Development, Baseline Water Quality Monitoring in the Susquehanna River Headwaters, Otsego County, New York: Part 1 Groundwater**

Groundwater, and specifically drinking water wells, in the Butternut Valley of Otsego County, NY are susceptible to changes in water chemistry due to the proposed natural gas drilling of the Marcellus and Utica formations. This study focuses on obtaining a baseline of groundwater chemistry to determine if future natural gas drilling can have an effect on well water. Eight sample locations were tested during the summer, fall, and winter of 2010. Water samples were analyzed for major and trace elements on a campus-owned spectrophotometer and an Inductively Coupled Plasma (ICP-AES) spectrometer. We also sent aliquots to a professional laboratory to test our results from the university machine. We tested for temperature, pH, conductivity, and alkalinity on site. Concentrations for nitrate ranged from 0.200mg/L to 14.1mg/L, for sulfate 1.00mg/L to 58.0 mg/L, and for chloride



0.100mg/L to 32.3mg/L. The most commonly occurring cations included calcium, silicon, sodium, magnesium, potassium, and copper. Element concentrations at each residential location were put into a mapping program to determine the existence of spatial patterns, which might result from bedrock geology or fluid flow along fractures. Element concentrations in this study fall within acceptable ranges based on the U.S. Environmental Protection Agency's drinking water standards.

*Student:* Alexia Baker

*Faculty Mentor:* Donna Vogler (Biology)

#### **Demonstration Rain Garden for State University College at Oneonta**

A rain garden, also known as a bioretention, is an area composed of native, non-invasive flora intermixed with rocks and gravel. The plants, rocks, and gravel within a garden reinforce the soil and prevent erosion. Rain garden plants tolerate varying conditions such as soil wetness or dryness, excessive nutrient (nitrogen and phosphorus) exposure and concentration (Yang et al., 2010). Rain gardens resupply ground water aquifers by retaining water and allowing natural infiltration into the soil (Dietz & Clausen, 2005). Water runoff occurs due to rain or snow melt flowing over impervious surfaces (roads, parking lots, etc.).

*Students:* Abhilash Bangera, Samantha Moak, Justin Murphy

*Faculty Mentor:* Qun Wu (Economics, Finance & Accounting)

#### **Mutual Fund Performance Analysis – Consulting for the College Foundation at SUNY Oneonta**

The State University College at Oneonta Foundation manages endowments from alumni, friends of the College and corporations, among other donors. The Foundation aims to fund scholarships and bridge the gap between the state budget and actual student needs. In this research project, we have selected a well-diversified mutual fund from the Foundation's portfolio as our target fund, which has taken a strategy of long-term capital appreciation and income. We have also found five other mutual funds with similar investment plans to perform a comparative analysis. Using the CRSP Mutual Fund database, we have conducted a series of analyses on fund performance, including ratio analysis and abnormal returns based on well-accepted finance models. After all of the analyses, this study makes a formal recommendation.

*Student:* Kristin Barila

*Faculty Mentor:* Yun-Jung Choi (Human Ecology)

#### **Psychedelic Frenzy**

The purpose of my project was to produce a line of stylish, trendy handbags and display them in a window display I created myself. I was inspired by the gothic period in history and the seventies, one of the spring 2011 trends. The clothing during the early gothic time period was more sophisticated, elegant and simple; in addition, the trim was not very heavy, but effortless. The overall shape of the gothic time period was square, so I also felt motivated to use this aspect in creating my line of handbags. The seventies trend of this season tied into creating my line, as well, because the bright colors, styles, and shapes of that time are similar to the gothic era. The inspiration for my window display came from the seventies decade, which is popular this season; I used bold colors to emphasize my handbags in order to incorporate both the gothic era and seventies. My study, in general, was intended to produce a line of handbags and create a unique, imaginative window display, combining and applying the principles of entrepreneurship and visual merchandising.

*Students:* Olivia Belzer, Margaret Betette

*Faculty Mentor:* Shih-Ming Hu (Human Ecology)

#### **Substitution of Rice and Brown Rice Flour in Gluten-Free Brownies**

Producing gluten-free products can often result in difficulties for manufacturers or bakers, as gluten-free products tend to have a dry and unpleasant texture and flavor for the consumer. This is a problem as the number of people with Celiac Disease continues to rise. The purpose of this research was to evaluate the acceptability of rice and brown rice flour, which are alternate flour choices for people

with gluten intolerance, in brownies. The different samples used in the research were 100 percent rice flour (Sample A), 100 percent brown rice flour (Sample B), 100 percent all-purpose flour (control-Sample C), and 50 percent rice flour / 50 percent brown rice flour (Sample D). The brownies were all baked in the same oven at the same temperature and for the same amount of time. We surveyed 38 individuals to ask them which brownies they preferred based upon taste, flavor, appearance, texture and overall quality. Our survey concluded that the participants preferred the control for some categories, but overall preferred sample D, the 50-50 ratio. In conclusion, sample D was chosen as the highest quality as the mix of rice and brown rice flour created a good texture and flavor.

**Student:** Michael Bergman

**Faculty Mentors:** Florian Reyda (Biology/Biological Field Station), Jeffrey Heilveil (Biology)

#### **Host Use and Morphological Variation of *Leptorhynchoides thecatus* from Otsego Lake, NY**

A survey of the helminth parasites of the fishes of Otsego Lake and nearby water bodies in Otsego County, New York was undertaken from September 2008 to the present. Fish were collected by hook and line, seine, or gill net. Over three hundred individual fish representing 22 species were examined for intestinal helminths. Nine of 22 fish species examined were infected with adult specimens of the acanthocephalan *Leptorhynchoides thecatus*; however, gravid female *L. thecatus* were only found in the Largemouth bass, *Micropterus salmoides*, the Smallmouth bass, *Micropterus dolomieu*, Rock bass, *Ambloplites rupestris*, and the Redbreast sunfish, *Lepomis auritus*. In each of the nine fish species infected with *L. thecatus*, worms were more frequently located in the intestine rather than in the pyloric caeca. Observations of proboscis hook morphology suggest that our specimens correspond to what other authors have called the "Large Form" of *L. thecatus*. Observations of host use, however, raise the possibility that there may be two species of *Leptorhynchoides* in Otsego Lake. Molecular data are currently being obtained to explore this possibility.

**Students:** Benjamin Birkett, Patrick Joy

**Faculty Mentor:** Qun Wu (Economics, Finance & Accounting)

#### **Performance Evaluation of Real Estate Sector Funds**

The goal of this project is to analyze a set of similar mutual funds and provide a recommendation to the State University College at Oneonta Foundation. In pursuit of this, we choose a real estate sector fund from the Foundation investment portfolio and use the CRSP mutual fund database to find five funds with similar attributes. Following previous studies on asset pricing and sector fund performance evaluation, we examine the various measures of sector fund performance against those of the real estate sector index and against each other. Based on the analyses, we make a recommendation for the College Foundation's future investment in the real estate sector.

**Students:** Melanie Boehmer, Stephanie Smith, Jonathan Dorin

**Faculty Mentor:** Shih-Ming Hu (Human Ecology)

#### **Development of Vegan Pumpkin Rice Pudding**

The average American consumes an excessive amount of dietary fat and cholesterol, and not enough of many essential nutrients needed by the body. However, customers are now starting to think more about what they eat and are trying to make healthier choices. Over the past few years, veganism has become a popular option for people who want to lead healthier lives. Since a vegan diet consists of no animal foods, the options offered are limited. This is especially true when it comes to desserts, which tend to incorporate high amounts of animal products such as milk, butter, and eggs. To contribute a possible solution, this study investigated the ability of using flaxseed as an egg replacer in pumpkin rice pudding, to create a healthy, vegan dessert. Flaxseed was substituted for 50 percent, 75 percent, and 100 percent of the egg in the control recipe. The taste, texture, color, flavor, and overall quality of each sample were rated by 23 volunteer participants; the results show that the most popular rice pudding was the sample with 75 percent of the egg replaced with flaxseed. The applications of this new technique will help to promote the use of a low fat, low cholesterol diet that is also high in fiber and other essential nutrients like essential omega-3 fatty acids.

**Student:** Matthew Brandi

**Faculty Mentor:** Gregory Fulkerson (Sociology)

### **Social Capital in Online Networks**

Social capital, defined here as the value of connections between individuals, is a vital resource to communities and individuals. Advances in technology such as online social networks (OSNs) have greatly impacted its distribution and formation. Current literature supports the notion that online interactions can facilitate the formation of social capital; however, these studies have only measured the impact of OSNs on social capital within physical communities. A modified version of a Michigan State University study was used to measure the existence of social capital within the virtual environment itself. The existence of social capital in virtual space would be significant because it would add a new dimension to the study of social capital, and possibly challenge the notion that social capital is declining in America. If social capital can exist online, it is possible that it has merely been shifting from physical space to virtual space, or that the development of virtual social capital has compensated for the decline in physical social capital. This research also has applied implications for those who seek to develop social capital in a community, or who wish to organize collective action online (e.g., political campaigns).

**Students:** Kayla Brantmeyer, Lisa Burdick, Gregory Kwasney, Kathryn Lorenz, Christine Luzzi, Louis Stoio

**Faculty Mentor:** Lawrence T. Guzy (Psychology)

### **Hydration Status, Mood and Performance on Women's Varsity Lacrosse Players**

The purpose of this study is to examine hydration status, positive and negative mood, and performance of a varsity women's lacrosse team during two practice sessions and a game. The following are among the hypotheses we will examine: 1) Whether athletes are coming to the activity hydrated; 2) If hydrated pre-activity, do they maintain hydration to the end; 3) Is performance related to hydration status; and 4) Is hydration status mood-related. Twenty-six members of the SUNY Oneonta Women's Lacrosse team volunteered their participation in this study of hydration status, positive and negative mood and their performance. Pre- and Post- Activity includes being administered: a) the Positive and Negative Affect Scale (PANAS); b) self-assessment of consumed drinks for the day and cognitive, physical, and psychological well-being; c) self-rating of performance during the practice and on a game day; and d) two saliva samples to identify levels of osmolality, e.g., salinity. High osmolality scores indicate higher levels of salinity and more dehydration. Performance during the game will be assessed by the coach, an experienced outside observer, and the players. Data collection will begin at the end of March and be completed by April 5th (the first home game, and prior to publication of this abstract).

**Student:** Karen Campbell

**Faculty Mentor:** Michael Brown (Psychology)

### **The Effects of Gender and Sexual Orientation on Juror Decisions in Sexual Harassment Cases**

In the case of *Oncale v. Sundower Offshore Services, Inc.* (1998) the U.S. Supreme Court legitimized same-sex sexual harassment as an important legal concern by granting individuals protection from such harassment under Title VII of the 1964 Civil Rights Act. However, little is known about how jurors perceive and utilize information about the gender and sexual orientation of the parties involved in cases of sexual harassment. Our research examined how such information might influence juror decision-making in a case of hostile work environment sexual harassment. Three hundred and twenty participants were randomly assigned to one of 16 experimental conditions and asked to read a trial transcript in which we manipulated the gender and sexual orientation of the plaintiff and defendant. In general, participants perceived same-sex sexual harassment as less serious than opposite-sex sexual harassment; however, the sexual orientation of the parties involved did not affect jurors' decisions. The implications of our findings, along with directions for future research, are discussed.

*Students:* Victoria Canfield, John Happaney, Alora Korb, Laura Lawrence, Morgan Muller, Janel Shaver  
*Faculty Mentor:* Lawrence T. Guzy (Psychology)

**Is the Numerosity of Fungiform Papillae on the Tip of the Tongue Related to Preference for Some Commercially Available Drinks?**

We observed that some commercially available drinks do not appeal to everyone. It appears that some drinks are not preferred by those individuals who have many fungiform papillae (taste buds) on their tongue. Those who have few fungiform papillae report a preference for those drinks. Using cross-modality matching of sound to perceived taste, we examined whether the number of papillae was related to preference/non-preference of these drinks. In two Psychology 100 classes, participants placed blue food coloring near the tip of the tongue and place a circular paper reinforcer with a 6-mm opening over the dyed area. Using a 7x magnifying mirror they counted the number of papillae in the 6-mm opening. Ten men and women with <10 papillae and ten men and women with >20 papillae were selected. These participants had their number of papillae verified prior to experimentation. They were presented with four drinks: Gatorade®, The Right Stuff®, cranberry juice, and Pocari®. After sipping the drink, they adjusted a dial for loudness from a white noise generator matching perceived sweetness, saltiness, and bitterness. A sound pressure level identified loudness.

*Student:* Victoria Chaffee

*Faculty Mentor:* Tracy K. Betsinger (Anthropology)

**Regional and Temporal Stress Differences Shown in Bone Length of Archaic and Late Mississippian Infants from East Tennessee.**

Long bone lengths of subadults, focusing on infants aged Newborn to 0.5 years, are assessed using metric data compiled from East Tennessee. Measurable bones, of which the count was not extremely high due to deterioration, were evaluated on not only physiological lengths, but also medial-lateral and anterior-posterior dimensions, circumferences (both minimum and maximum), and diameters of corresponding available measurements of femori, tibiae, fibulae, humeri, ulnae, and radii. The lengths of long bones are a determinant of stress due to growth inhibition that occurs during these periods. Numbers of burials, lengths, and percentages among the sites are looked at to compare the profiles of each site to make both regional and temporal comparisons. As individuals from both Archaic and Late Mississippian sites are looked at, the difference between infants of different backgrounds can be seen. Looking at the amount of Newborn to 0.5 year olds that are among the burials shows difference in the percentages of this group compared to the other individuals, a useful comparison in looking at the stress of the populations.

*Students:* Matthew Cohen, Robert Hillman

*Faculty Mentor:* Paul French (Physics & Astronomy)

**Billiardistic Physics: A Demonstration of Classical Mechanics**

The subject of physics can seem like a daunting obstacle in the academic life of a student who has never encountered it before. We have set forth to create to a comprehensive video collection on DVD demonstrating a few of the basic laws of classical mechanics in an easy-to-understand production. We have designed presentations that depict the laws of conservation of momentum and energy, impulse, and the force of friction. We have used VideoPoint software to assess the videos we have produced, and determined many physical properties captured by them. We have also designed animations to contrast ideal laboratory situations against the real world videos we have analyzed. To overcome limitations presented by the camera, we have used software to account for and correct lens distortion.

*Student:* Peter Cole

*Faculty Mentor:* Lisa Sorensen-Stahl (Anthropology)

**Doodling 101: An Anthropological Survey of Doodling**

*Doodling 101* is essentially an overview of doodling in the classroom from an anthropological perspective. The research covers several aspects of the behaviors, including a brief etymology of the word *doodle*, content often found in doodles, the cognitive processes involved in producing a doodle,

a discussion of doodling's relation to memory, and an argument as to whether or not doodles can be considered artwork. Also included is an interactive display, shown in the fine arts center as part of a gallery featuring the doodles of students from across the SUNY Oneonta campus. The central argument of the paper is to demonstrate that doodling is not as simple or counterproductive as it is reputed to be, and that doodling can contribute to memory in that it supersedes daydreaming as a method of keeping oneself entertained in a mundane setting. The research is also meant to show that doodling can be considered a personalized form of artwork, in that it provides both aesthetic pleasure and emotional release for its maker. In other words, doodles are not made for consumption, yet they retain the value of popularized arts on an individual basis.

*Students:* Alexis Cornell, Cameron Cortese, Leanne Enrico, Jamie Falco, Katharine Hess, Oluwakemi Ogunmuko

*Faculty Mentor:* Lawrence T. Guzy (Psychology)

### **Recognition of Facial Expressions as a Function of Facial Edema**

When astronauts encounter microgravity, fluids that normally drain from the head to the lower parts of the body due to earth's gravity instead collect in the head resulting in facial edema. This edema may prevent an astronaut from recognizing the facial expression of fellow astronauts. The problem is compounded as astronauts encounter each other in numerous orientations other than upright. Misidentification could lead to crew disharmony. We will examine facial expressions of happiness, anger, and grimacing to determine if edema and orientation (upright and 180 degrees) affect accuracy and speed. Twenty men and women from the introductory psychology class will serve as volunteers. Participants will be required to identify the three facial expressions of photographs with and without edema. Edema will be created by photographing the three facial expressions while lying on a slanted flat platform with head six degrees below the feet. This is standard procedure developed by NASA to examine simulated long-duration space flights. Normal photographs of the face will be taken while the target is standing upright. Each participant will call out the facial expression as quickly, but as accurately, as possible.

*Students:* Sarah Crosier, Katherine Whitcomb

*Faculty Mentor:* Tracy Allen (Geography)

### **Acquiring Baseline Surface Water Quality Data for Otsego County, NY, Prior to Natural Gas Exploration**

The purpose of this project is to establish baseline water characteristic data for Otsego County, NY, prior to natural gas exploration. Natural gas extraction through hydraulic fracturing poses a serious water and health contamination threat to Otsego County. Gas extraction has the potential to contaminate both surface and ground water with chemicals used for hydraulic fracturing, as well as from salts, and sediments. We will establish baseline surface water data for pH, turbidity, temperature, conductivity, and dissolved solids. This data will serve as a control for future water quality testing in order to determine if natural gas drilling contaminates Otsego County's water. We will be working with the Otsego County Conservation Association (OCAA), and the Otsego County Soil and Water Conservation District (SWCD) who have established fifty testing sites on streams throughout Otsego County. We will be testing each of these sites biweekly and then downloading the data at the OCAA office, where we will then create spreadsheets and graphs that will be made available to the public. It is our goal to establish baseline data in order to provide solid evidence of any changes in water quality, if it should be summoned.

*Students:* Alissa DeBaun, Jung Hwa Lee, Nicholas Walion

*Faculty Mentor:* Charlene Christie (Psychology)

### **Where Nobody Knows Your Name: The Nature of Extreme Opinions in the Anonymity of Cyberspace**

The purpose of this study was to determine whether anonymity has an impact on an individual's evaluation of others. Students were asked to read an article that explains several policies that are being considered as efforts to bolster the College's "green" reputation. Following this, they read a

series of comments made by other students in reaction to the anticipated policy changes. Participants were then asked to give their own feedback about the policies. Half of the participants were asked to provide their name prior to submitting feedback, while the other half remained anonymous. After providing feedback to the proposed policies, they were asked to rate their peers' comments. We hypothesized that the participants who were identifiable (those who were prompted to attach their name to their comment) would be less extreme in their evaluations of the others compared students who were anonymous. Participants also completed five different measures: Rosenberg Self-Esteem Scale, Brief Fear of Negative Evaluation scale, Eysenck Personality Questionnaire, Empathy Questionnaire, and Social Conformity vs. Autonomy questionnaire. These measures were used to account for other variables that may be influencing the participants' evaluations of their peers.

*Students:* Amanda Devens, Kelsey Lubeck, Amanda Vandenburg

*Faculty Mentor:* Shih-Ming Hu (Human Ecology)

#### **Healthy Blondies Made with Chickpeas**

Fat consumption has increasingly become a problem in America. Most individuals are not willing to sacrifice taste for health. This study was created to test the acceptability of chickpeas, a legume that is low in fat and high in fiber, as a fat replacement in blondies. The purpose of this study was to test the acceptability of blondies with different ratios of chickpeas. The acceptability was rated by taste, texture, color, flavor and overall acceptability using a questionnaire. The four different blondies made were a control (100 percent butter), 25 percent chickpea, 50 percent chickpea, and 75 percent chickpea. The results showed that as up to 50 percent replacement of butter with chickpea was accepted by consumers. We found that the healthiest and most accepted recipe was that which was made with 25 percent chickpea 75 percent butter. This recipe had decreased fat, calories, and increased fiber thus it should be recommended over its full-fat counterpart.

*Student:* Michael Diefenbacher

*Faculty Mentor:* Dona Siregar (Economics, Finance & Accounting)

#### **Derived Factors in Investment Allocation Across Life Stages**

The theories of investment allocation can pertain to various life stages in a variety of ways. I have conducted a research pilot test that is geared towards finding which factor of investment allocation has the most dramatic effect on each stage of life. The stages of life are classified in three groups: young (18-22, 23-30) middle (31-40, 41-50) and elderly (50 and over). The factors analyzed are income, debt, risk, educational background, and usage of a financial advisor. The proposed question of research is: How do investment factors play a role in investment allocation across different life stages? At certain periods in life, many extraneous factors can encourage or discourage a potential client to invest. Conclusions from the study can be used to describe factors for youth, middle age, and elderly in financial decision-making.

*Students:* Ashley D'Imperio, Jessica Klein, Allison Mlodzinski

*Faculty Mentor:* Shih-Ming Hu (Human Ecology)

#### **Acceptability of Honey as a Sugar Substitute in Oatmeal Raisin Cookies**

The average oatmeal raisin cookie recipe has a high percentage of brown sugar and granulated white sugar. To prepare an acceptable reduced-sugar product may be a unique challenge to culinary professionals. This study investigates the acceptability of using honey as the replacement for sugar in oatmeal raisin cookies and develops the options of a replacement method. The application of this new technique will increase antioxidants and hopefully create a nutritional snack to decrease the obesity epidemic.

**Student:** Anthony Dipietro, Timothy Kelley

**Faculty Mentor:** Hugh A. Gallagher, Jr. (Physics & Astronomy)

### **A New Technique for Determining the Baseline Total Electron Content of the Mid-Latitude Ionosphere**

The ionosphere is a partially ionized gas within the Earth's upper atmosphere from about 80 to 1000 km. In response to forcing by the lower atmosphere (i.e., gravity waves), upper atmosphere, magnetosphere, sun and solar wind, the electron density in this region varies considerably over a large range of spatial and temporal scales. Electron density structures can alter radio wave propagation through the ionosphere and adversely affect satellite based communication and navigation systems. An array of five University of Texas Austin Applied Research Laboratory Coherent Ionospheric Doppler Receivers (CIDRs) has been established in the Northeastern U.S. By monitoring satellite beacons, the receivers in the North East CIDR array make observations of the change in the column electron density (Rate of Total Electron Content, ROT). If the baseline TEC can be determined, the ROT may be integrated to determine the absolute TEC, providing large scale variations of the ionospheric electron density. We evaluate a new technique for inferring the baseline TEC from the average variation of the ROT with viewing geometry. The technique is applied to observations by the MIT CIDR and the baseline TEC is determined. The results are then compared to the TEC values derived from electron density measurements made by the MIT Incoherent Scatter Radar (ISR) in Westford, MA.

**Student:** Jacob Donnell

**Faculty Mentor:** Vicky Lentz (Biology)

### **Purification of Largemouth Bass (*Micropterus salmoides*) Immunoglobulin M (IgM) Using Dialysis and Size-Exclusion Chromatography**

Few studies have been performed on the immune system of the Large Mouth Bass (LMB) (*Micropterus salmoides*). Previous studies have shown that there are multiple proteins within the sera of the LMB. We are interested in the Immunoglobulin M (IgM), a large tetramer that has not been studied. Previous attempts to purify LMB IgM have shown it to be an unstable molecule that breaks apart under simple stresses. Two fish were obtained and bled to collect blood. The blood was centrifuged, and the serum collected. One third of the sera was purified using dialysis with a Spectra/Por Float-A-Lyzer with molecular weight cut off of 100 KD against 1X PBS. The dialyzed serum was analyzed by SDS PAGE under native, non-reducing or reducing conditions. These tests have shown that the molecule is still unstable under these purification procedures. A second vial of sera was purified using a size exclusion column. The fraction that contained IgM was collected and stored for future studies. The collected samples will be concentrated and run under the same conditions.

**Students:** Anna Downey, Valerie Boos, Michael Eramo, Alex Chase, Dan Cole, Ashley Doody, Peter Fitzgerald, Michael Kleemann, Eva Mastrantuono

**Faculty Mentors:** Paul Bischoff (Science Education), Paul French (Physics & Astronomy), James Ebert, Todd Ellis (Earth Sciences), John Schaumlöffel (Chemistry & Biochemistry)

### **Noyce Scholars Experiential Learning in the NYC Public Schools**

The National Science Foundation-funded Robert Noyce Scholars Program was created to prepare science majors with the skills necessary to be successful in teaching in high-need rural and urban schools. Under the direction of Dr. Paul Bischoff, nine SUNY Oneonta Secondary Science Education majors were granted the opportunity to observe various school districts within the New York City (NYC) public school system during the winter break of 2011. The main purpose of the NYC trip was "experiential learning" that would enable the participants to make a more informed decision about seeking student teaching, and even permanent teaching positions, in the NYC school system. To assess the effectiveness of the NYC school experience, participants were asked to complete a series of reflective essays before, during, and after returning from the trip. Upon return the nine participants met weekly to qualitatively analyze the reflective narrative data. Results of the data analyses revealed that the perceptions of urban teaching shifted from "uncertain or not considering" a career in NYC to "excitement about the opportunities" that urban teaching holds.

*Student:* Glorianne Dziuba

*Faculty Mentors:* Jennifer L. Bueche, Mary Ann Dowdell (Human Ecology)

**Effects of Education and Environmental Change on Fruit and Vegetable Consumption of Students Attending a Small Private School in Northeastern Pennsylvania**

*Background:* Due to the increasing rate of overweight and obesity in today's children and adolescents, effective dietary intervention strategies targeting this age group are imperative. A needs assessment was given to 6<sup>th</sup>–12<sup>th</sup> grade students and their parents at New Covenant Academy, a small K-12 private school located in Mansfield, Pennsylvania. Results showed that the students were consuming far less than the daily recommended amounts of fruits and vegetables. *Objective:* To evaluate the effectiveness of a short term intervention program focused on increasing fruit and vegetable consumption on the knowledge and eating behavior of the adolescent students involved. *Design:* Quasi-experimental single-group, pre-test, post-test design. *Subjects:* Forty-six 6<sup>th</sup>–12<sup>th</sup> grade students took part in the study from January 20, 2011 to February 18, 2011. All students who began the study finished it. *Main Outcome Measures:* Changes in frequency of fruit and vegetable consumption, and knowledge regarding their benefits were evaluated via administration of pre- and post-intervention surveys. *Results:* Students reported an increase in daily fruit and vegetable consumption from a mean of 1.86 servings of fruits and vegetables per day prior to the intervention to a mean of 3.69 servings of fruits and vegetables per day post-intervention. Knowledge of the benefits of fruit and vegetable consumption was increased by 110 percent.

*Students:* Andrew Feiner, Curtis Frederick, Joseph Prio

*Faculty Mentor:* Keith Schillo (Biology)

**Effects of Dehydration on Spatial Learning in Mice**

Although it is well established that adequate hydration is necessary for normal brain function, research regarding the effects of dehydration on cognition is limited and contradictory. Nevertheless, recent research supports the hypothesis that mild dehydration (loss of 1-2 percent of body weight) in vulnerable populations (children, elderly people and individuals with illnesses) results in degraded mental abilities. In light of these results, we are testing the hypothesis that mild dehydration impairs spatial learning in mice. Our experiment includes two groups (n=6) of adult male mice: 1) fully hydrated; and 2) dehydrated. Dehydration is accomplished by removing water during a 12-hour period preceding cognition testing. This level of water withdrawal results in a 5-10 percent loss of body weight. Spatial learning is being assessed by measuring the rate at which mice learn to successfully negotiate a Barnes maze. Such assessments involve measuring the time required to complete the maze and the number of errors committed by the mouse during each test. Improvement in performance is measured over a four-day period. Preliminary results demonstrate that mice learn to complete the maze with minimum errors within three days. If dehydration impairs this type of learning, we expect that dehydrated mice will take longer to complete the maze and/or commit more errors than fully hydrated mice.

*Student:* Emily Ferencik

*Faculty Mentor:* Kirsten Hilpert (Human Ecology)

**Effect of Dairy Foods on Endothelial Health**

Endothelial dysfunction is strongly correlated with coronary disease and its risk factors. Atherosclerosis is often initiated by the adhesion and migration of circulating leukocytes across the vascular endothelium. Cellular adhesion molecules (CAMs) mediate this process and are considered biomarkers of endothelial dysfunction. CAMs are poorly expressed by a healthy endothelium, but upregulate during inflammation and hypertension. Although research has focused on ways of lowering them, studies of dietary effects on CAMs levels are lacking. Three experimental diets will be evaluated: a high dairy, high fruit/vegetable diet (30 percent fat, 7 percent saturated fat [SFA], 3.4 servings dairy/day, 9.6 servings fruit & veg./day); a high fruit/vegetable diet (30 percent fat, 7 percent SFA, 0.4 servings dairy/day, 9.6 servings fruit & veg./day); and an average American diet (36 percent fat, 15 percent SFA, 0.4 servings dairy/day, 3.6 servings fruit & veg./day). Previously published results showed that the dairy-rich diet lowered blood pressure and created an ideal intracellular ion



balance. The current project will investigate the effect of dairy foods on endothelial health. Compared to the average American diet, the dairy-rich and fruit/vegetable diets are expected to reduce CAMs. Additionally, the expression of CAMs will be further decreased in response to the dairy-rich diet, compared to the fruit and vegetable diet.

*Student:* Jillian Ferris

*Faculty Mentor:* Cynthia Falk (Cooperstown Graduate Program)

### **Subversive Museum Critique**

Subversive institutional critique offers art museums authentic voices of criticism with insight into the representativeness and social responsibility of museums. Such artwork is undertaken in a museum setting without the knowledge of consent of the museum's board of trustees or professional staff. By understanding the motivations behind and backgrounds of works of subversive institutional critique, museums can improve as institutions.

*Students:* Lauren Foley, Andrea Pais, Shannon Gorman, Benjamin Franks

*Faculty Mentor:* Shih-Ming Hu (Human Ecology)

### **Application of Tofu on Healthy Yellow Cake**

Heart disease is a leading cause of death among Americans. High LDL cholesterol level ("bad" cholesterol) is a risk factor for heart disease. Cholesterol can block arteries and cause harm to the heart. In the U.S., high-cholesterol diets have led to obesity. This study investigates the acceptability of using tofu as a cholesterol and fat replacer in yellow cake, and develops the option of replacement methods. The independent variable is the amount of silken tofu used to replace the eggs; the dependent variable is the acceptability of the product. The test was measured using a questionnaire that allowed participants to rate the texture, taste (mouth feel), color, and flavor of the four sample cakes. The results show that each of the sensory characteristics of each of the four yellow cakes were accepted, with the exception of flavor.

*Student:* Jessica Forlano

*Faculty Mentors:* Dawn Hamlin, Nathan Gonyea (Educational Psychology, Counseling & Special Education)

### **Adaptive Arts**

The Adaptive Arts poster provides useful information to help teachers integrate art into the curriculum. The research includes goals for an effective special education program incorporating art. General and special education teachers can find easy adaptations for their classrooms and their materials to make art more accessible for students with physical impairments. The research touches upon benefits of art therapy and outlines steps for implementing a successful program. Additional websites and brochures are available for those interested in learning more about Adaptive Art.

*Students:* Amanda Foti, Kristina Foti, Kimberly LaMora

*Faculty Mentor:* Shih-Ming Hu (Human Ecology)

### **Fat Substitution with Okra Gum in Zucchini Bread**

Obesity and being overweight are major problems in America. Most baked goods contain high amounts of fat that contribute to this problem. The goal of this study was to prepare an acceptable low-fat baked good that Americans could eat to help reduce their fat intake. In this study, okra gum was used as a fat replacer in zucchini bread. The use of this fat replacer will help to reduce the fat and calorie intake of Americans. This will help to reduce the prevalence of obesity and other diseases such as cardiovascular disease and diabetes that are linked to high fat and high calorie diets.

**Students:** Austin Fox, Alexis Cornell, Samantha Rivet, Ileri Vasquez, Rebekah Cramer, Lindsey Doxtader, Christopher Bax

**Faculty Mentor:** Lawrence T. Guzy (Psychology)

**Hydration Status, Positive and Negative Affect, and Test Performance During Two Introductory Psychology Test Days and a Non-Test Control Day**

Research showed that prolonged sitting during a simulated long-distance flight resulted in dehydration. If this is true, students who are mostly sedentary during their exam preparation may have similar dehydration effects. We examined hydration status on a non-test class day and compared that to two test days. Ninety men and women volunteered. Saliva samples were collected to identify hydration status. A hydration survey administered Pre- and Post-Test/Non-Test identified: a) quantity and type of beverages consumed; b) well-being; c) daily exercise; and d) importance of any tests they were having on that day. Positive and Negative Affect (PANAS) was also assessed Pre- and Post. A t-test showed that on the first test day, participants were hydrated compared with the non-test day,  $p < 0.001$ . The third test resulted in osmolality scores indicating significant levels of dehydration compared with the first test. The third test supported the anecdotal comments concerning changes in hydration status when studying for the test. Test 1 hydration status may have reflected participants' confidence level in scoring well on their first test. Participants indicated that they were significantly more concerned about the test after the test than prior to it.

**Students:** Robyn Fried, Danielle Borza, Christina MacNair, Kelly Woodard

**Faculty Mentor:** Shih-Ming Hu (Human Ecology)

**Okra Gum as a Fat Replacement in Oatmeal Raisin Cookies**

Cookies are a favorite snack for people of any age. In this study we have tried to reduce health risk by using okra gum in place of butter in Oatmeal Raisin Cookies. This experiment used 25-, 50-, 75-, and 100-percent replacement of fat from the original recipe with okra gum. A survey was designed and conducted with approximately 25 participants. This sensory survey evaluated the taste, texture, odor, and overall acceptability of the cookies. This survey was a blind study and no one knew of the replacement or the original product. This method increases the reliability of the research for determining if okra gum is an acceptable fat replacement product in cookies. Using okra gum to replace the butter in cookies has led to a reduced-fat product that helps promote the dietary guidelines for healthy Americans. This fat substitute is an enjoyable and acceptable way to eat a favorite snack and not feel guilty about it, as well as being health conscious.

**Students:** Karen Gilbertson, Kate Jaffie, Andrew Bowen, Heather Kelly, Heather Ketchum Wilcox

**Faculty Mentor:** Joan Marshall (Educational Psychology, Counseling & Special Education)

**Program Evaluation Conducted by Graduate Students in Counselor Education**

Graduate students in the Master in Education School Counseling (K-12) program conducted program evaluation. The first two studies evaluated school counseling practicum students' performance and effectiveness of individual and group counseling in the schools; data was collected from the school referrers of student/clients. The third study evaluated how effectively the School Counseling program at SUNY Oneonta prepares graduates. The graduate student researchers analyzed data of similar studies along with their findings to identify patterns and average ratings based on client surveys. Overall, the ratings indicate that practicum students were effective in both individual and group counseling, and clients benefited from the counseling experience. The research evaluating the Division of Education's Counselor Education (K-12) Master's program in successfully preparing graduates for their roles as practicing School Counselor was conducted by surveying graduates between 2004 and 2009. Participants were asked to evaluate each individual course indicating if they used the course in their current employment and if so how often. The results indicated that the majority of graduates found both required and elective coursework to be useful. This research is evaluated and used by the Division of Education to continually review and monitor the effectiveness of the program, and to make any necessary changes to ensure that students receive the education needed to succeed in the field of School Counseling.

*Student:* Nancy Gladstone

*Faculty Mentor:* Michael Brown (Psychology)

### **Psychometric Properties of the Gender Role Beliefs Scale and Development of a Short Version**

This study examined the psychometric properties of the Gender Roles Beliefs Scale (GBRS, Kerr & Holden, 1996) with a sample of 451 undergraduate students, and identified items that could be used to develop a short version of the scale. A shorter version of the GRBS can be beneficial to researchers, especially when traditional gender role beliefs is not the primary outcome variable or when the scale is embedded in a series of questionnaires. The original GRBS demonstrated strong reliability; however, the unidimensionality of the scale noted by Kerr and Holden was not supported. Confirmatory factor analysis suggested a two-factor solution (benevolent gender role beliefs and hostile gender role beliefs). We retained ten items from the GRBS to create a short version of the scale. Next, we examined the psychometric properties of the 10-item GRBS using a sample of 233 community members. Confirmatory factor analysis confirmed a two-factor solution. The ten-item GRBS had strong reliability and demonstrated the same pattern of construct validity reported by the authors of the original scale. Finally, we conducted a test-retest reliability analysis of the ten-item GRBS. Preliminary results suggest that the short-version scale has strong test-retest reliability. Thus, the ten-item GRBS can provide researchers with a reliable and shorter measure of gender role beliefs without sacrificing the construct validity of the original scale.

*Students:* Matt Iorio, Greg Olsen, Blake Dwyer

*Faculty Mentor:* Shih-Ming Hu (Human Ecology)

### **The Use of Blueberries as a Fat Replacement in Oatmeal Raisin Cookies**

Obesity is an epidemic in the United States; over 34 percent of Americans over the age of 21 are classified as obese. Cookies are one of the most popular snack foods in the world. Cookies usually have large amounts of fat that are high in saturated fats, calories, sodium, and cholesterol. Creating an acceptable low-fat, low-calorie, and low-cholesterol product can be a challenge to culinary and nutritional professionals. This study explores the acceptability of using blueberries as the fat replacer in oatmeal raisin cookies and evaluates the options of this replacement method. This experiment can be useful in developing other foods or desserts to lower saturated fat, cholesterol, calories and sodium, as well as having a better nutrient profile, while retaining acceptability.

*Student:* Stephen Job

*Faculty Mentor:* Devin Castendyk (Earth Sciences)

### **Baseline Water Quality Monitoring in the Butternut Basin, New York: Surface Water**

The objective of this study was to establish baseline surface water characteristics of the Butternut Watershed, Mount Upton, NY prior to natural gas exploration. The Butternut Watershed is located above the gas-bearing Marcellus and Utica shale formations which have been the source of much controversy over whether or not natural gas exploration should be pursued. Many fear that the hydraulic fracturing fluids used during the drilling for natural gas, which contain many harmful chemicals, will contaminate ground and surface water throughout the process. Samples were collected on a weekly basis starting in August 2010 and continuing throughout May 2011. Three water samples were collected: one to test for anions, one for cations, and one for alkalinity titration. Field analysis included pH, temperature, electrical conductivity, and turbidity of the creek. Finally, in order to determine the load values in the water, gauging of the creek was necessary to determine the discharge of the Butternut. The results of this study found the Butternut Watershed to have a relatively high water quality. Concentrations of trace metals were far below EPA Drinking Water Maximum Concentration Limits, while anion levels were also found to be at low levels.

*Student:* August Johnson

*Faculty Mentor:* Richard Lee (English)

### ***Ego Death***

*Ego Death* is a project created to challenge both the poet's role as a creative force and the audience's conception of poetry. *Ego Death* works with predetermined words and phrases, manipulating text to create meaning rather than creating text to manipulate meaning. Instead, this project investigates the manipulation of existing texts (as ready mades), infusing an existing text with novel meanings that challenges the poet's role as story-teller and creative force. Further, this re-formulation of another's words as I "re-mean" them shows the poet as one who is attentive to the way words work with and against each other to create meaning. The exhibited piece focuses on highlighting individual blocks of text for their unique poetic natures and shows that the spatial arrangement of these individual blocks infuses nearby text(s) with meanings that are not necessarily literally present. Thus, the presented piece asks the audience to reconsider their preconceptions of how poetry is created and interpreted and how reader's responses to texts color their interpretive certainty. *Ego Death* is a multifaceted, on-going project. Notes on the pieces that are not being displayed and the future of this project will be made available.

*Students:* Anyango Kamina, Marykate Kalotschke

*Faculty Mentors:* Nancy Bachman (Biology), Jacqueline Bennett (Chemistry & Biochemistry)

### **Cell Imaging using Fluorescent Imines**

Fluorescent imaging is a technique that uses a fluorescent microscope to image the light emissions of dyes that localize in cells. A potential category of dyes that can be used in fluorescent imaging is imines, molecules used as intermediates in organic chemistry. Various imines synthesized by the Building a Legacy of Outstanding New Developments in Excellence and Science (BLONDES) research group were used in staining mouse fibroblast (NIH 3T3) cells. The characteristics that led to their application in fluorescence imaging are: 1) these imines naturally fluoresce, typically emitting in both red and green ranges; and 2) their molecular structures are similar to commercial dyes used to stain various organelles and proteins in cells. Preliminary experiments showed that two imines [ $\alpha$ -(4-chlorophenylimino)-2-methoxy-para-cresol, and N-(Cinnamylidene)-p-anisidine] localize to the lysosomes and/or endosomes and the endoplasmic reticulum (ER), respectively. The next step is to confirm these staining patterns by performing a co-localization experiment with our imines and commercial dyes for the ER (ER-Tracker™) and lysosomal/endosomal pathway (LysoTracker™). In preliminary experiments, we noticed that the highest concentration of imine used caused more cells to adhere to the cover slips. Thus, a dose response experiment will be also performed.

*Students:* Samantha Kamp, Michelle Linder, Alyson Marmet, Anyango Kamina

*Faculty Mentor:* Jacqueline Bennett (Chemistry & Biochemistry)

### **Lactic Acid as a Green Catalyst for Imine Synthesis**

Prior research by our group has shown that ethyl lactate is an effective solvent for rapid synthesis of aryl aldimines at room temperature. Some imines, however, still take several hours to form under these conditions, especially those imines derived from vanillin and piperonal. One remedy for this problem is to use an acid to catalyze the reaction, which is common in imine reactions. For example, acidic Dowex® resin and p-toluenesulfonic acid are common acid choices for speeding up imine reactions. However, environmentally friendly acid catalysts for imine reactions have not been examined thoroughly. Here we present the results of our investigation of lactic acid as a green catalytic alternative for imine synthesis.

*Students:* Kelsey Knutsen, Ivan Chio

*Faculty Mentor:* Paul French (Physics & Astronomy)

### **Tuning Methods For Air Column Resonance**

Air column resonance is fundamental to many musical instruments. This project entails the design, measurement, and modeling of resonant structures with the goals of developing tuning methods and

understanding shape effects. Results show that the ideal open-air column confirms a linear relationship between the inverse frequency and length. The half-open air column data appear linear as well, although the preliminary speed of sound was found to be off by 14 percent, compared to an error of less than five percent for the ideal resonator. Pitch should vary logarithmically with length. Early results, although complicated by boundary effects, appear to agree with theoretical predictions.

*Students:* Alora Korb, Michelle Sinagra, Dustin Smith, Nickeema Cox, Annie Bischoff

*Faculty Mentor:* Kenneth S. Walters (Psychology)

### **The Role of Sustained Attention in the Clinical Assessment of Attention-Deficit/Hyperactivity Disorder among College Students**

This study examined deficits in sustained attention among college students reporting symptoms of Attention-Deficit/Hyperactivity Disorder (ADHD). Participants included 76 college students (16 men and 60 women) ranging in age from 18-23 years. Subjects completed the Current Symptoms Scale (CSS) to measure symptoms of ADHD (i.e., inattention and hyperactivity/impulsivity). Subjects were then classified into a normal group and a diagnostic group (i.e., likely ADHD). Subjects completed the Conners Continuous Performance Test II (CPT-II). The CPT-II, commonly used in the clinical assessment of ADHD among children, is a computerized task measuring multiple facets of sustained attention. Compared to the normal group, the ADHD group exhibited greater omission errors, commission errors, and perseveration errors. In addition, they also displayed greater slowing of reaction time as the intervals between presentations of target stimuli increased. At a broader level of analysis, the total profile of CPT-II scores form an overall Clinical Confidence Index (CCI), which represents the probability that a specific individual is a member of the population known to have ADHD. Subjects in this study classified with ADHD had greater scores on the CCI compared to the normal group.

*Students:* Wendy Kosakowski, Jamie Milchanowski, Laura Newswanger

*Faculty Mentor:* Shih-Ming Hu (Human Ecology)

### **Measuring the Acceptability of Banana as a Fat Replacer in Brownies**

This experiment was designed to test the acceptability of using bananas as a fat substitution in brownies. The sample in this experiment was a brownie, the dependant variable was acceptability, and the independent variable was the percentage of banana used. In the experiment, four different samples of brownies were produced: a control; one with 25 percent banana and 75 percent fat; one with 50 percent each of banana and fat; and one with 75 percent banana and 25 percent fat. The brownies were then randomly labeled as samples 1, 2, 3, and 4 and were taste-tested by a panel of peers. This group of about 20 students sampled each brownie and were asked to fill out a survey rating the color, flavor, mouth feel, and overall acceptance on a Likert scale from 1 to 5, 5 being well-liked. Through this experiment it was found that, although the control was the most well-liked brownie, those brownies using fat replacement were also liked. The overall scores for all the brownies, an average of the color, flavor, texture and taste, were all over 3. With the results of this experiment, it was concluded that for those who want a healthier brownie, bananas can be used to replace fat with acceptability.

*Students:* Joseph Krikorian, Christopher Keefe

*Faculty Mentor:* Devin Castendyk (Earth Sciences)

### **Using Long-Term Leachate Tests to Identify Potential Contaminants of Concern in Drill Cuttings from the Marcellus Shale, Otsego County, NY**

Proposed natural gas development using horizontal drilling and hydro-fracturing techniques is a topic of intense public debate due to concerns over potential environmental impacts. One concern is metals leaching from drill cuttings and migrating into surface water or shallow groundwater. The purpose of this experiment was to determine what metals would leach from weathered rock cuttings collected from the Marcellus formation exposed along Route 20 in Cherry Valley, New York. The cuttings were hand-crushed into twelve 10-gram pebble-sized samples. 1000 mL of de-ionized water was leached, collected, and re-percolated through each respective 10-gram sample once daily for 25, 53,

80, and 110 days. The leachate was analyzed for pH, electrical conductivity, and dissolved metals using an ICP-ES;  $\text{SO}_4^{2-}$  and  $\text{Cl}^-$  using an adsorption spectrophotometer; and carbonate alkalinity by titration. Metal concentrations of whole-rock samples were completed using X-ray fluorescence. ICP results from this study found that concentrations of Pb and Cd increased in the leachate over time, whereas Sr decreased and Cr, U, and As remained relatively constant. Electrical conductivity also increased, whereas  $\text{SO}_4^{2-}$  remained relatively constant over time. Our study provides an understanding of the mobility of metals from the Marcellus formation.

**Student:** Christine LaGuardia

**Faculty Mentors:** Dawn Hamlin, Nathan Gonyea (Educational Psychology, Counseling & Special Education)

### **Adaptive Physical Education**

Physical education is important for all students, but holds additional value for exceptional students, including those with intellectual, physical, and emotional disabilities. Our research focused on adaptive physical education for children with exceptionalities, including visual impairments, emotional disturbances, cerebral palsy, autism, and Down syndrome. A large portion of students with disabilities exhibit other health-related struggles, including obesity, which is why physical education holds value in their lives. This research focused on the types of activities that are available for students with special needs as well as strategies and tools that are available for educators and families. Additional resources and strategies are available in our brochure.

**Students:** Kyle Lamprecht, Emily Harrington, Allison Clearwater, Taylor Foreman

**Faculty Mentor:** Shih-Ming Hu (Human Ecology)

### **The Acceptability of Oatmeal Cookies with Pumpkin Purée as a Fat Substitute**

Obesity is an increasing problem in the U.S. and is linked with high-fat diets. The development of products that are reduced in fat enables American consumers to eat their favorite foods while limiting their fat intake. Fruit purées have been used to reduce fat content in baked products. The objective of this study is to determine if pumpkin purée as a fat substitute is acceptable in oatmeal cookies. The 25 percent pumpkin purée cookie had the highest overall acceptance. The 50 percent replaced cookie qualifies for the title of reduced fat and scored only 0.19 less in overall quality than the 25 percent. Based upon our results, all pumpkin-replaced cookies were acceptable (scored above a 3.5). These cookies may be substituted for normal oatmeal cookies in future baking situations, depending on one's like of pumpkin.

**Student:** Thomas Lansing

**Faculty Mentor:** Donna Vogler (Biology)

### **Flora of Mount Tom, NY**

A record of plant distributions is essential for understanding biodiversity. Plants are indicator species of a wide variety of ecological conditions, and many New York species of plants are of interest to conservation studies. Floristic inventories also serve as a means to monitor invasive species. Mount Tom is a SUNY Oneonta Biological Field Station (BFS) holding consisting of approximately 200 acres in the town of Springfield. The area formed out of a Devonian coral reef. Mount Tom is a Karst landscape, characterized by calcareous soil. Given the topography of the site, Mount Tom is likely host to a suite of uncommon plant species. This project will entail field surveys and herbarium work. The field surveys will consist of weekly trips from May through October 2011. Two vouchers for each specimen will be prepared for the SUNY Oneonta Herbarium and BFS teaching collections. The goal of the field study will be to update the SUNY Oneonta Herbarium, as well as to more accurately represent the species richness for Mount Tom. The project will culminate in a technical report which will be published in the BFS Annual Report.

**Student:** Tami LaPilusa

**Faculty Mentor:** Jeffrey Heilveil (Biology)

**Genetic Diversity of the Commodity Species *Cardisoma guanhum* Latreille (Decapoda: Gecarcinidae) on Andros Island, Bahamas**

*Cardisoma guanhum* Latreille, the blue land crab, is one of the species upon which the Androsian economy hinges. Decades of over-harvesting have caused a precipitous decline in the species. Little is known about the abundance and health of Androsian blue land crabs; even the number of populations on the island is unknown. Between the visually apparent decline in the number of crabs and the importance of the species to the Androsian economy, a study of the population structure and genetic diversity of *C. guanhum* on Andros is critical. Using DNA sequences from the mitochondrial D-loop, this study will determine the number of genetically distinct populations and the amount, if any, of gene flow between them.

**Student:** Sean Long

**Faculty Mentor:** Sen Zhang (Mathematics, Computer Science & Statistics)

**Visualizing Algorithms**

Throughout this past school year I have been working on a project called "Visualizing Algorithms." I chose to write a program that teaches students how specific algorithms work, namely the Binary Search Tree and the AVL. I feel this type of work is important because as a student it has been somewhat difficult for me and my classmates to learn these topics due to the fact it is all conceptual and the normal presentation involves only words. I have manipulated the Microsoft PowerPoint API to give a step-by-step image of how these algorithms move sections of data. The data that it uses is an XML format that I have chosen so professors, or even students, wanting to learn can send in and receive a personal tutorial in the desired algorithm.

**Students:** Fiona Lowry, Alexander Soroka, Anyango Kamina

**Faculty Mentor:** Devin Castendyk (Earth Sciences)

**Kenya Water Project**

Water testing is important in water conservation because it provides information on how to better protect drinking water resources. One vital aspect of water testing is the equipment used. Our group is interested in testing the effectiveness of water kits that test for fecal coliform and contamination due to fertilizers (nitrates and phosphates). The primary goal of this research is to identify water kits that are effective and accurate in testing for microbial contamination. Secondary goals are to perform comparison analyses on the affordability, reliability and ease of transportation of the water kits. Water samples to be used in this investigation will be collected from the Oneonta Waste Water Treatment Plant, located in Oneonta, NY, and from local septic leach fields. Based on the results, the water sampling equipment that meets our goals will be purchased in large quantities to be used for sampling drinking water sources in rural Kenya. We would like to educate communities about how to properly use these kits to evaluate the quality of their own water. By doing so, we hope to improve water conservation and sanitation techniques in places where sanitary water is scarce.

**Students:** Duncan MacCrea, Christopher Keefe, Joseph Krikorian

**Faculty Mentors:** Keith Brunstad (Earth Sciences), Fred Zalatan (Biology)

**Biominalization of Acid Mine Drainage**

Acid mine drainage (AMD) refers to the detriment of water quality as a result of the mining of metals. Although improvements have been made to remediation practices and regulations, contaminated sites still exist from a time when there was little or no remediation protocol. Old mine pits such as the Berkley pit lake of Butte, MT stand out as examples of AMD.

*Students:* Maxine Malikin, Joelle Mazo

*Faculty Mentor:* Keith Schillo (Biology)

**Does the Type of Caloric Sweetener Influence Weight Gain and Onset of Puberty in Female Mice?**

The use of high caloric sweeteners has been associated with increased obesity in humans. A particular concern is the use of high-fructose corn syrup (HFCS) as a replacement for sucrose. This experiment tests the hypothesis that consumption of HFCS promotes weight gain, obesity and early onset of puberty in female mice. The experiment involved three groups of 21-day-old mice. Each group was allowed free access to feed and isocaloric solutions of 8.1 percent glucose, 7.6 percent sucrose, or 10 percent HFCS. Body weight, feed intake, and fluid intake were measured weekly over a four-week period. In addition mice were examined daily for evidence of vaginal canalization to determine age at puberty. At the end of the fourth week, mice were euthanized and abdominal fat was removed and weighed to estimate body fat. Based on previous work done in rats, we expect that the mice consuming HFCS will exhibit greater weight gains and higher body fatness than the mice consuming either the sucrose or glucose solutions. Since it is well established that growth rate is inversely related to age at sexual maturation, we expect HFCS to reduce age at puberty compared to the other treatments. The results of this study will add to a growing body of literature on the effects of high caloric sweeteners on growth and metabolism in humans.

*Student:* Alyson Marmet

*Faculty Mentor:* Jacqueline Bennett (Chemistry & Biochemistry)

**Green Synthesis of Imines from p-Ethoxyaniline and Various Aldehydes**

Aryl aldimines, commonly known as imines, are useful intermediates in numerous pharmaceutical compounds. They are involved in the production of pharmaceutical products such as Zetia® (ezetimibe), a popular cholesterol reducer; Taxol® (paclitaxel), a chemotherapy drug; and Gleevec® (imatinib mesylate), one of the first targeted cancer drugs used to specifically treat Philadelphia chromosome-positive chronic myeloid leukemia (Ph+ CML) and Kit-positive gastrointestinal stromal tumors (Kit+ GIST). The traditional synthesis of imines usually involves several hours of refluxing an aniline with an aldehyde in solvents that are known carcinogens, mutagens, and teratogens. Here we report the synthesis of numerous imines from p-ethoxyaniline with various aromatic aldehydes in minutes at room temperature using a novel, "green" method. Ethyl lactate, a biodegradable and renewable solvent, is used along with 0-30% water to synthesize these imines with high yield and high purity.

*Student:* Erin Mason

*Faculty Mentor:* Jeffrey Heilveil (Biology)

**Inheritance of Alleles Contributing to Type 1 Diabetes**

This study examined alleles of the immunity gene HLA (part of the Major Histocompatibility Complex, MHC) in a male with diagnosed Type 1 diabetes and his biological child, who does not exhibit Type 1 diabetes. HLA alleles have been shown to strongly contribute to Type 1 diabetes, a disease with a heritability of 70 percent. This study is part of a larger thesis study on the inheritance of genes for four genetically-linked diseases: Type 1 diabetes, leukemia, restless leg syndrome and congenital heart disease, and implications for genetic counseling.

*Student:* Travis Mazur

*Faculty Mentor:* Nancy Bachman (Biology)

**The Role of HSF1 in p53 Importation**

The heat shock factor 1 (HSF1) gene codes for a protein that handles stress and facilitates survival of the cell. It is also the master regulator of the cells' "heat shock response" and in times of major stress can save a cell from destruction. HSF1 has been found to play a role in the import of p53 (a critical tumor suppressor gene) into the nucleus. This suggests that the pathway that controls p53 nuclear import might be a target for disruption during tumorigenesis. We set out to answer the question: "how



does HSF1 interact with p53 in the cell?" To answer this question we will design two primers and then demonstrate the use of overlap extension polymerase chain reaction (OE-PCR) to mutate the nuclear localization signals (NLS's) of two human isoforms of HSF1, alpha and beta. We will then insert coded regions into an expression vector to find out how the isoforms enter the nucleus and interact with other proteins. These studies may help us understand cancer mechanisms that can be targeted by specific drugs.

*Student:* Nicholas Mazziotta

*Faculty Mentor:* Matthew Albright (Biological Field Station)

#### **Canadarago Lake Management Plan Research Efforts**

Canadarago Lake, located in Otsego County, NY, is a dimictic water body formed by glacial activity and is considered eutrophic due to its high nutrient levels and tendency to lose oxygen in hypolimnetic waters. Tributaries to the Lake include Oaks Creek, Hyder Creek, Herkimer Creek, Trout Brook and Ocquionis Creek. There are many residential onsite wastewater treatment systems present around the lake; however, no inspection program is currently instituted to monitor them. Funds have recently been committed for the development of a "State of the Lake" annual report, which is intended to serve as the basis for the development of a management plan for Canadarago Lake. Topics of research have included aquatic macrophyte biomass, zooplankton biomass, temperature, dissolved oxygen, conductivity, pH, total phosphorus, ammonia, total nitrogen, nitrite plus nitrate, turbidity content, storm event monitoring and fecal coliform levels. Some key findings include high levels of internal phosphorus loading, increased fecal coliform levels, early summer hypolimnion, dissolved oxygen loss and the possibility of stream bank erosion in Herkimer Creek during storm events.

*Student:* Daniel McCahill

*Faculty Mentor:* Dona Siregar (Economics, Finance & Accounting)

#### **Correlation between Executive Compensation Packages and the Risk-Taking Decisions of Upper Management**

This study is exploring the relationship between executive compensation packages and the risk averseness of CEOs. Much literature exists on how executive risk averseness is affected by stock options and salary. This research differentiates from these previous studies by focusing on the relationship between CEO risk averseness and compensation in the form of cash bonuses. The following hypothesis has been formed: CEOs who receive a heavier weight of their compensation in the form of cash bonuses will be associated with less risk aversion than CEOs who receive a smaller portion of their compensation in cash bonuses. The study sample consists of compensation received by 200 CEOs from 199 firms in 2008 and 2009. The firms represented by these CEOs are all incorporated in the United States and each has annual revenue of at least \$5.78 billion. This study contributes to our understanding on the complex issues of CEO compensations in the context of principal agent relationship between shareholders and management.

*Students:* Hannah Menard, Valarie Platt

*Faculty Mentor:* Doreen Comerford (Psychology)

#### **Persuasiveness of Advertisements as a Function of Self-Esteem, Use of Attractive Models, Gender, and Advertisements' Target Audience**

The primary goal of this research was to assess whether self-esteem plays a role in the persuasiveness of advertisements. Self-esteem was examined through the Rosenberg Self-Esteem Scale. Afterward, participants were exposed to advertisements with and without attractive models. In addition, advertisements were balanced in terms of the intended target audience (male, female, or neutral). Persuasiveness of advertisement was assessed by a questionnaire. Preliminary analyses suggest an interactive relation between the participant's gender and participant self esteem as it relates to persuasiveness of advertisement. For participants with high self-esteem, the persuasiveness of the advertisement did not appear to be related to the presence or absence of models, and this finding was consistent for males and female participants; however, gender differences were found for participants

with relatively lower self-esteem. Specifically, males with low self-esteem were more likely to be persuaded by advertisements with models than advertisements without models. To the contrary, females with relatively low self-esteem were similar to participants with high self-esteem, in that the presence or absence of a model did not appear to impact how persuasive an advertisement was.

**Student:** Kelsey Minnich

**Faculty Mentors:** Marjean McCaslin-Doyle, Caitlin Smith Rapoport (Theatre)

**Costume Designer in Collaboration with The Deconstructive Theatre Company and Strong Coffee Stage on Their Adaptation of *Antigone*, by Sophocles.**

For Strong Coffee Stage and the Deconstructive Theatre Project's Production of *Antigone*, Kelsey aided in developing the characters through their costumes. She was greatly inspired by ancient Greek clothing and the concept of theatrical masks and how they represented the personality of the character. Also, the significance of color among multiple cultures greatly influenced particular costumes. The performance of *Antigone* was highly acrobatic and physical, and Kelsey had to take much of this into consideration when designing garments and buying fabric for the costumes. One of the greatest challenges as a designer was the need for a minimalist approach to costume changes, while allowing the audience to easily identify and differentiate between each character. This was crucial to the play because there were only two actors playing multiple roles, and they never leave the stage. Thus, a singular piece or garment became the distillation and representation of the character. She will display the costumes created, and how each piece represented a character when worn. Also, she will be showing the timeline of costume creation starting from inspiration and collaboration, through research, to fabrication of the designs.

**Student:** Annelise Muscietta

**Faculty Mentor:** Martha Growdon (Earth Sciences)

**Deciphering the Nature of the Contact on Matinicus Island with New Bedrock Geologic Mapping**

Bedrock contact relationships mapped on the Bedrock Geologic Map of Maine (Author et al., 1985) are problematic. Specifically, older, Ordovician, sedimentary rocks are mapped in direct contact with younger, Devonian, granitoids on Matinicus Island south of Penobscot Bay. Observations of the extent of the granitoid pluton in the Penobscot area suggest that heat associated with this pluton should have been sufficient to contact metamorphose the older sediments on Matinicus Island. Additionally, since the coarse-grained granites must have intruded the sediments at depth, the sediments should have experienced burial metamorphism. In either of these scenarios, the mapped rocks should be quartzite and schist. However, if, the sediments are, in fact, un-metamorphosed, the mapped intrusive contact must instead be a fault contact. This research will specifically address these issues through detailed mapping of the lithologies and contacts present on Matinicus Island. The results of this investigation will be two-fold: 1) the results will be compiled on a 1:24,000-scale Matinicus Quadrangle Bedrock Geologic Map, where none currently exists; and 2) this research will clarify the specific nature of the contact. The results of this investigation could also have societal implications pertaining to the availability of groundwater along this possibly faulted contact.

**Students:** Carolyn Nasr, Megan Record, Nicole Mihou, Marykate Kalotschke

**Faculty Mentor:** Jacqueline Bennett (Chemistry & Biochemistry)

**Green Synthesis of Imines Derived from a Common Topical Anesthetic**

An imine is a functional group that contains a carbon-nitrogen double bond. Imines are important for synthesizing more complicated compounds, many of which are biologically active. Benzocaine, a topical anesthetic found in over-the-counter products like Anbesol®, can be used as a starting material for imine synthesis. Because benzocaine itself has known medicinal activity, we expect that its imine derivatives will also show biological activity. By reacting benzocaine with various aldehydes, we will be able to investigate certain physical properties such as the melting point and possible fluorescence. Using a "green" method of synthesis the reactions become much more time-efficient compared to the traditional synthetic methods. By varying the percentage of ethyl L-lactate

and water, which is a "green" solvent, the reaction times change. Lactic acid can also be used in addition to the ethyl L-lactate and water mixture to speed up the time of the reaction.

**Students:** Brett Nicholas, Savannah Sleicher, Allura Starr, Shane Whalen, Stephanie Spielberger

**Faculty Mentor:** Kenneth S. Walters (Psychology)

### **Assessment of Academic Difficulties among College Students with Attention-Deficit/Hyperactivity Disorder**

The purpose of this study was to determine whether college students reporting symptoms of Attention-Deficit/Hyperactivity Disorder (ADHD) experience greater academic difficulties, compared to the general student population. Participants included 510 college students (179 men and 331 women), ranging in age from 18-24 years. Participants completed the Current Symptoms Scale (CSS) as a standardized clinical assessment of ADHD symptoms. Based on normative data participants were categorized into two groups, a clinical group (i.e., likely ADHD) versus a normal comparison group. Participants also completed a survey instrument to provide data concerning their academic functioning. Results indicated that students in the ADHD group had significantly lower grade point averages than the normal group. In addition, students with ADHD symptoms were more likely to have failed a college course. They were also more likely to have received tutoring services, relative to the normal comparison group. Participants also provided ratings of key sentiments pertaining to their academic performance. Results indicated that compared to normals, those in the ADHD group tend to worry more about their academic performance, consider academic work more of a struggle, and have less confidence that they will complete their academic program.

**Student:** Brianna Olsen

**Faculty Mentor:** Donna Vogler (Biology)

### **Phosphorus Content in Reed Canary Grass (*Phalaris arundinacea*) in a Treatment Wetland, Cooperstown, NY**

The Chesapeake Bay is continually threatened by eutrophication. This process of nutrient enrichment is accelerated by both an excess of fertilizers and the output of wastewater treatment centers. As the headwaters of the Susquehanna River watershed, our region plays a major role in the health of the Chesapeake Bay. In 2003, the Village of Cooperstown funded the creation of a wetland for tertiary wastewater treatment and nutrient reduction. The goal of this study was to provide insight into this wetland's treatment efficiency in 2010, the first year it received treated effluent. I delineated the extent of the functioning wetland and sampled leaves of Reed Canary Grass (*Phalaris arundinacea*) both in- and outside the delineated wetland. *Phalaris* leaves from six sites were analyzed for phosphorus content through the Dry Ash/Acid Extraction Method. Sites within the wetland (42 percent) exhibited a higher concentration than those out of the effluent flow path (33 percent); both the sites within and -out of the flow path contained higher concentrations of phosphorus than in the control wetland site (23 percent), demonstrating some amount of phosphorus removal by the plants. This study serves as a baseline for future monitoring of the wetland's efficiency.

**Students:** Brianna Olsen, Sonny Von Tiedemann

**Faculty Mentor:** Gina Keel (Political Science), Thomas M. Rathbone (Facilities Planning)

### **SUNY College at Oneonta Greenhouse Gas Inventory – 2000**

Greenhouse Gas Inventories are being conducted at schools across the nation as a way to determine carbon footprints and climate impact. The SUNY Oneonta Greenhouse Gas Inventory – 2000 continues an ongoing project as part of the College's commitment to sustainability. During the 2009 fall semester, student interns Maribeth Rubenstein and Katherine Ogut conducted an inventory of emissions in 2008. To put these more recent emissions into perspective, the College felt it necessary to compare them to a point further back in time, such as 2000. The interns for the 2000 study, Katherine Ogut and Brianna Olsen, collected the data needed for input into the Clean Air-Cool Planet Campus Carbon Calculator. Calculations reveal emissions from various sources throughout the campus in metric tons of eCO<sub>2</sub>. With 2000 and 2008 data, the interns were able to make comparisons and draw conclusions about the highest contributing practices on campus. Now that the baseline data

has been collected, it is possible to target particular emissions sources in the next step of the process, the Climate Action Plan, which will express the College's goals and methods of reducing emissions and will be reviewed by faculty, administration, and President Kleniewski.

**Student:** Larry Pestana

**Faculty Mentor:** Dona Siregar (Economics, Finance & Accounting)

### **The Impact of the Dodd-Frank Act on Board Function and Bank Returns**

On July, 21, 2010 the Dodd-Frank Wall Street Reform and Consumer Protection Act was signed into law by President Obama in response to the recent financial crisis. The Act has provisions that relate to executive compensation and corporate governance which will directly and significantly impact stakeholders. This new Act will impose more federal regulation and supervision as well as oversight on corporations that will, in turn, affect their governance. In this paper we study the announcement effect of the new governance regulation on firm value. In order to analyze the effect of the passage of the Act the standard event study methodology is applied, with the enactment date as the particular event date. This paper will analyze the specific regulation imposed by the Dodd-Frank Act which directly affects specific principles of corporate governance that potentially influence investors in the stock market. Specifically, we test CEO duality in bank holding companies to examine how certain corporate governance was affected.

**Student:** Steven Piteo

**Faculty Mentors:** Patrice Macaluso, Caitlin Smith Rapoport (Theatre)

### **Sound Designer in Collaboration with The Deconstructive Theatre Company and Strong Coffee Stage on an Adaptation of *Antigone***

Steve has taken knowledge from his Music Industry major, Audio Production minor, and theatre background to create original sound designs for the stage. His previous work within the Theatre Department led to the opportunity to collaborate with SUNY Oneonta Theatre faculty and professionals from two different theatre companies, The Deconstructive Theatre Project of New York City and Strong Coffee Stage of Brattleboro, VT, on an adaptation of Sophocles' *Antigone*. The research conducted for this design was spent in the areas of ancient and modern Greek music, minimalist music, and recording and production techniques. Steve initially planned to focus his musical research in modern and ancient Greek music, and combine the two to create a unique design. Through extensive research, however, he found new inspiration in minimalist composers and their works, and decided to re-direct the focus of his design. In this presentation of the design and production process for *Antigone*, Steve will be taking us step-by-step through the creative and collaborative process. We will see how Steve overcame the difficulty of collaborating over long distances, how his research and initial hypothesis changed, and how his design helped bring *Antigone* to a new level. So come and explore the collaborative and exacting art of theater!

**Student:** Daniel Plows

**Faculty Mentor:** Thomás Sakoulas (Art)

### **Digital Sculpture**

Digital sculpture uses a state-of-the-art printer (commonly used for rapid prototyping) that produces three-dimensional objects. Once the artwork is sculpted using a computer program, the 3-D printer brings the digital artwork into its physical form. The printer works in a purely additive process, opposed to the typical subtractive process such as carving a stone. Starting from the bottom and working its way up, the 3-D printer drops a millimeter of melted plastic onto a platform while constantly zigzagging around to trace the outline of the piece, filling it in line after line, and then moving up to the next level. Although the final product is automated via the computer and the printer, traditional sculpture techniques are emulated through the computer software when the 3-D model is created. This process gives the artist several advantages; for example, the artist can perfect delicate details without the worry of breaking his/her piece. Another advantage is always having the option to undo certain decisions without consequence. Obviously, this would not be possible when carving

stone or wood. Also, since the artwork is saved on the computer, if anything ever happened to the piece once printed, the artist has the freedom to print another copy.

**Student:** Erin Potter

**Faculty Mentor:** Melissa Godek (Earth Sciences)

### **Assessing the Impact of Air Mass Frequency on Major Flood Events in the Susquehanna River Basin**

Floods can have a significant impact on human populations, affecting business, industry, and natural resources. This is especially true in the Susquehanna River Basin watershed, which contains approximately four million inhabitants within its confines. Warning times for floods are often too short and it can be difficult to predict exactly where and when a flood will occur; therefore, it is important to improve flood forecasts in order to decrease the cost of damages and minimize loss of life. The goal of this project is to approach the issue of major flooding on a climatological level by assessing air mass frequencies to determine the relationship between any one air mass type and the timing of major flooding. Air masses are defined by the Spatial Synoptic Classification, and frequencies during significant floods over the past 20 years will be calculated to compare to the long-term period of record frequencies. Flood periods are identified using flood stage, crest, and stream flow. Ultimately this data should improve the information used by meteorologists to forecast floods since there is high skill involved in predicting air masses. Preliminary results indicate moist air mass types are more frequent during significant flood events.

**Student:** Alicia Pucci

**Faculty Mentor:** James Ebert (Earth Sciences)

### **A New Source of Biogenic Sediment in the Great Lakes: Contributions of Quagga Mussels (*Dreissena rostriformis bugensis*) to the Beach Sediments of Lakes Ontario and Erie**

Invasive mussels *Dreissena polymorpha* (zebra) and *D. rostriformis bugensis* (quagga) have had a profound impact on the benthic communities and limnology of the Great Lakes. We report a new sedimentologic impact – the production of bioclastic sediment that now comprises a significant portion of the beach sediments in the eastern Great Lakes. Surface samples were collected from the swash zone at Selkirk Shores and Sandy Island Beach state parks on Lake Ontario. Mussels were identified by Dr. Thomas Horvath as quagga mussels. Concentrations of bioclasts range up to 25.6 percent in the surf zone at Selkirk Shores and 2.9 percent in dunes at Sandy Island Beach (random point counts, n=95-142). Weight percent carbonate ranges up to 13.6 percent in swash samples. *Dreissena* debris also occurs on a Lake Erie beach (Dunkirk, NY). Quagga mussels have weaker byssal attachments than zebra mussels, which makes these mussels easier to dislodge and transport. We hypothesize that quantities of *Dreissena* bioclasts have increased since quaggas have outcompeted zebra mussels. Present lake geochemistry suggests that *Dreissena* fragments are chemically stable; therefore, we expect quantities of bioclasts to increase in the sediments of the Great Lakes. This research was presented at the combined meeting of the Northeast and North Central sections of the Geological Society of America.

**Students:** Colleen Rappa, Cailey Wood, Elly Powers, Anna Downey

**Faculty Mentor:** James Ebert (Earth Sciences)

### **Counteracting Student Misconceptions Regarding Formation of Sedimentary Rocks**

Students have numerous misconceptions regarding processes that form sedimentary rocks, including that: 1) accretionary processes form clasts within environments of deposition, 2) lithification results from drying, and 3) pressure is required to lithify sediments. We have designed a physical model to counteract some of the most common student misconceptions regarding lithification and the formation of sedimentary rocks. Our model comprises readily available, inexpensive, safe materials. A supersaturated solution of sodium acetate trihydrate is used to lithify aquarium gravel. The process takes literally minutes. This model directly confronts students' accretionary, drying and pressure misconceptions, as these processes are clearly not present in the formation of the synthetic rock. Our model may be used as a student-centered activity or a teacher-led demonstration. The model's key

advantage is that it directly confronts the most common misconceptions regarding lithification. The rapid formation of the synthetic rock may reinforce misconceptions regarding time scales of geologic processes, and the relatively small size of the synthetic rocks may reinforce the "rock as clast" misconception. However, if used properly, the advantages of the model outweigh any disadvantages. This research was presented at the combined meeting of the Northeast and North Central sections of the Geological Society of America.

*Student:* Katherine Reinhardt

*Faculty Mentor:* Joseph Chiang (Chemistry & Biochemistry)

### **Bioethanol**

There are many different forms of solid waste technology. This paper will focus on recycling solid waste technology. One of the main issues that America faces today is how to conserve energy. One solution for conserving oil is to recycle our agricultural feedstocks and produce fuel from them. Common crops such as such as sugar cane, potato, manioc and corn can be converted into bioethanol fuel. Also there have been recent developments of cellulosic ethanol production, bringing cellulose fibers, a major component in the plant cell wall, to produce ethanol fuel.

*Students:* Racquel Riccardi, Zoe Mahlum

*Faculty Mentor:* Shih-Ming Hu (Human Ecology)

### **Egg Replacement with Chia Seeds**

Heart disease, often caused by an imbalance between omega-6 and omega-3 fatty acids, increased caloric intakes and sedentary lifestyles, is the number one cause of death in the U.S. Omega-6 fatty acids promote inflammation and a weakened immune system when consumed in excess. Chia seeds are a rich source of omega-3 fatty acids, which are anti-inflammatory and anti-atherogenic. When chia seeds are mixed with water, they form a gel with a similar viscosity of an egg when applied in baked goods. Therefore, traditional baked goods could be modified by removing the eggs and, thus, decreasing overall fat, calories and cholesterol through the incorporation of chia seeds. Three separate trials were conducted in this study: a control blueberry muffin made with 100 percent egg, a 50 percent egg replacement (with 50 percent chia seed and 50 percent egg) muffin, and a 100 percent egg replacement (100 percent chia seed and 0 percent egg) muffin. Through a Likert Scale survey (1 = strongly disagree, through 5 = strongly agree) distributed to 25 students and one professor on the SUNY Oneonta campus, it was determined that chia seeds can substitute for up to 50 percent of the egg in bakery products. By applying chia seeds as an egg replacer in baked goods, one can create a healthier product by reducing cholesterol and calories, and increasing fiber and omega-3 fatty acids.

*Student:* Racquel Riccardi

*Faculty Mentor:* Shih-Ming Hu (Human Ecology)

### **The Application of Soy Cheese (Tofu) in Traditional High Cheese Products**

High caloric and saturated fat consumptions have contributed to the U.S. obesity epidemic and childhood-onset type II diabetes to rise. Ricotta cheese, a widely-used, traditional ingredient in lasagna and ricotta pie, is very high in saturated fat, cholesterol, calories and overall fat, and consumption may increase the risk of obesity and cardiovascular disease. Soy cheese (tofu) contains no saturated fat, no cholesterol, very low calories and very low overall fat. The application of tofu in high-cheese recipes, hot or cold, would significantly reduce such health disparities. In this study, standard recipes produced traditional lasagna and ricotta pie control samples. Using the same recipe, two different cheese substitutions, medium-firm tofu and firm tofu, were used. Survey participants consisted of students and faculty members without previous knowledge of the research. The taste, texture, odor, appearance, and overall acceptability were evaluated through a Likert scale of 1 (strongly disagree) to 5 (strongly agree). The control lasagna was rated the highest, with the extra firm tofu lasagna in close comparison. The medium-firm tofu was rated the lowest, but received close to neutral ratings. Trials for ricotta pie are still being conducted. With success, this technique could be applied in restaurants, homes, and commercial production kitchens.

*Student:* Samantha Rivet

*Faculty Mentor:* Erik Lind (Physical Education)

### **Predictive Utility of Competitive Anxiety and Burnout Measures on the Use of Self-Talk Among Competitive Collegiate Swimmers.**

Competitive anxiety can impede athletic performance and increase feelings of either global burnout or one of its dimensions (e.g., reduced sense of accomplishment). Self-talk is a common strategy for countering the negative effects of competitive anxiety and burnout. The purpose of this study was to develop predictive models of cognitive and motivational self-talk using the state and trait dimensions of cognitive and somatic anxiety and dimensions of burnout. Eighteen competitive collegiate swimmers were administered the following questionnaires 24 hours prior to athletic competition: Sport Anxiety Scale (SAS), a trait anxiety measure; Competitive Sport Anxiety Inventory-2 (CSAI-2), a state anxiety measure; Athlete Burnout Questionnaire (ABQ); and the Self-Talk Questionnaire (STQ). Significant correlations were found between cognitive self-talk and cognitive and somatic anxiety of the SAS, and for the CSAI-2 dimension of somatic anxiety. Regression analyses demonstrated significant variance in cognitive self-talk using the SAS and CSAI-2 alone. Significant variance in motivational self-talk was only observed after adding reduced sense of accomplishment to the SAS and CSAI-2, respectively. Competitive swimmers' self-talk appears related to a specific dimension of burnout and/or competitive anxiety measure and may reflect a unique difference between cognitive and motivational self-talk.

*Students:* Eileen Rodriguez, Britany Thomas, Kaitlin Ehl, Araya Henry, Lina Fox

*Faculty Mentor:* Fred Zalatan (Biology)

### **Environmental Sequencing of Microbes in Water Samples**

Water samples were collected from Otsego Lake and Hunt Union Pond in order to analyze the bacterial species present. DNA was extracted and isolated from the samples, and a segment of bacterial DNA was amplified using the polymerase chain reaction (PCR). Once PCR products are synthesized successfully, the amplified bacterial DNA will be sequenced. This method, also known as environmental sequencing, allows the analysis of bacterial species present in the water samples without culturing the bacteria.

*Student:* Tyson Robb

*Faculty Mentor:* Martha Growdon (Earth Sciences), Trudy Thomas-Smith (Chemistry & Biochemistry)

### **Alternative Remediation of Acid Mine Drainage**

Through the use of electrolysis, I have investigated the change in overall water quality in several acidic solutions. I have also examined the feasibility of energy production from de-acidifying water. This study is very important, especially now with the growing necessity for clean water coupled with the realization that there is no choice other than sustainable energy production for our nation's future. The process that I have developed harnesses green energy for electrolysis and can create electricity using the hydrogen gas produced from acidic solutions. This process produces an excess of hydrogen, which has a real potential for energy production. With electrolysis and Veneer Probes, I have measured the change in acid mine drainage quality and simultaneous potential for energy production. I have analyzed samples of different pH concentrations and chemistries. Within my experiments, I have placed charged plates (which create an energy field) into these polluted solutions. This process has effectively broken the bonds of hydrogen, leading to a rise in pH, causing various heavy metals to precipitate out of solution. This process involves much less energy than conventional methods used to remediate the acidic mine drainage and may be a valid option to restore our waters to health.

*Student:* Erin Roth

*Faculty Mentors:* Mary Ann Dowdell, Jennifer L. Bueche (Human Ecology)

### **Happy and Healthy Kids, Happy and Healthy Futures**

Research suggests that school-based interventions initiated during preschool years could play a key role in changing the distribution of obesity in the specific populations targeted, and could potentially

take the children off the trajectory of becoming obese later on in life. In addition, research identifies the importance of successful obesity prevention programs within Head Start that concentrate on increasing the staff members' and parents' knowledge. A needs assessment conducted by Opportunities for Otsego found that 51 percent of staff members felt they did not have the appropriate training on how to address a child's body mass index (BMI) with their parents. In addition, 93 percent of parents find their child's weight, growth, and health important. Potential participants included staff members (n=46) of all 11 Head Start classrooms in Otsego County, New York, and parents (n=40) of children enrolled in the program. The participants were targeted through the participation in monthly staff meetings and parent meetings. Educational workshops were conducted at each Head Start classroom during staff meetings and during parent meetings. An overall increase in staff knowledge regarding BMI, its importance, the potential health risks of a high BMI in children, and how to discuss high BMIs with parents was the main outcome for the staff workshops. An overall increase in parent knowledge regarding BMI, its importance, the potential health risks of a high BMI in children, and how to buy healthy foods on a budget were the main outcomes for the parent workshops. During the five-week process ten staff member workshops, in comparison to nine parent workshops, were conducted throughout Otsego County. Overall staff posttest knowledge increased by an average of 1 point in comparison to the pretest results. Overall parent posttest knowledge increased by 0.6 points in comparison to the pretest. No statistical significance was identified through these results. Although the results were not statistically significant, HHK-HHF helped provide the staff members with needed training and increased their knowledge regarding BMI. Educational workshops regarding BMI and how to appropriately discuss this issue with parents is an excellent recourse for the Head Start program in Otsego County, New York. Although these results may not be statistically significant, they are encouraging, because there is a noticeable increase in knowledge regarding addressing parents who have children with high BMIs, as well as educating parents on how to provide healthy meals to their children.

**Students:** Rachael Ryan, Alyssa Manion

**Faculty Mentors:** Dawn Hamlin, Nathan Gonyea (Educational Psychology, Counseling & Special Education)

#### **Sexual Education for Students with Disabilities**

Sexual Education is often a controversial and awkward subject for many parents and teachers. When a student is faced with exceptionalities, the topic becomes even more controversial. Our poster discusses in detail some of the various questions we had concerning this topic.

**Student:** Joanna Salvino

**Faculty Mentor:** Jeffrey Heilveil (Biology)

#### **Indirect Effects of Urbanization on New York Populations of *Nigronia serricornis* (Say) (Insecta: Megaloptera: Corydalidae)**

Understanding historical events is critical in determining the repercussions of anthropogenic development, since contemporary events are based on historical events. The study of the impact of geography and historical events on a species is called phylogeography. This project used phylogeographic analyses to test whether fine-scale (< 12 km) patterns of gene flow differed between sets of populations in urbanized and un-urbanized regions in *Nigronia serricornis* (Say), an indicator species of high water quality. Individuals were collected from southeastern New York and the mitochondrial gene Cytochrome Oxidase I was amplified and sequenced. Preliminary data show high genetic diversity in un-urbanized areas, even over these short distances.

**Students:** Shulamit Shechter, Jaimie Ravit, Karen Cutler, Paul Rosbrook

**Faculty Mentor:** Shih-Ming Hu (Human Ecology)

#### **Avocado Purée as a Fat Substitute in Peanut Butter Cookies**

Saturated Fats have been proven to increase risk factors for cardiovascular disease such as LDL cholesterol and atherosclerosis. Research has suggested that for a heart-healthy diet, consumers' diet should consist of a larger proportion of monounsaturated to saturated fats. The goal of this experiment



is to replace saturated fats with monounsaturated fats in order to reduce risk factors for heart disease. Therefore, in this experiment, the butter in peanut butter cookies will be substituted by different amounts (25%, 50%, and 70%) of avocado purée, rich in monounsaturated fats, to attempt to maintain similar quality characteristics such as texture, mouth-feel, appearance, and taste. This product could be accepted by consumers because it has more health benefits and less saturated fat and calories than peanut butter cookies using 100% butter. This cookie is a more heart-healthy version of a traditional peanut butter cookie.

**Student:** Lauren Shore

**Faculty Mentor:** Halimah Sayahi (Chemistry & Biochemistry)

**Molecular Docking of Antituberculosis Drug Pyrazinamide (PZA) to *Mycobacterium tuberculosis* (Mtb) Fatty Acid Synthase I (FAS I)**

According to the World Health Organization, Mtb infects one third of the world's population with approximately two million deaths each year. The rapid spread of multidrug-resistance tuberculosis, as well as the emergence of extensively drug-resistant strains that are resistant to virtually any known antibiotic, has transformed this once-curable disease into a major public health challenge. To regain control of this disease new antibiotics are urgently needed. The mechanism of action of PZA, a frontline drug in the treatment of tuberculosis, is poorly understood. It has been shown that PZA inhibits FAS I, and it has been suggested that two particular catalytic domains of FAS I could potentially be targeted by PZA, namely the keto-reductase (KR) and enoyl-reductase (ER) domains. Molecular docking is a valuable tool to elucidate the binding of PZA to the KR and ER domains as it predicts the orientation of the ligand (PZA) upon binding the protein (FAS I). Since the structure of Mtb FAS I has yet to be determined, BLAST was implemented to search for homologs of the KR and ER domains. It was found that *E.coli* FabG and *S. pneumonia* FabK are good candidates for molecular docking.

**Students:** Michelle Sinagra, Nickeema Cox, Alora Korb, Annie Bischoff, Dustin Smith, Allura Starr

**Faculty Mentor:** Kenneth S. Walters (Psychology)

**Clinical Assessment of Cognitive Deficits among College Students with Symptoms of Attention-Deficit/Hyperactivity Disorder**

This study assessed patterns of cognitive deficits among college students reporting symptoms of Attention-Deficit/Hyperactivity Disorder (ADHD). Participants included 68 college students (12 men and 56 women), ranging in age from 18-23 years. Symptoms of ADHD (i.e., inattention and hyperactivity/impulsivity) were assessed using the Current Symptoms Scale (CSS). Based on normative data, subjects were then classified according to likely diagnostic status (i.e., normal vs. likely ADHD). Subjects completed an extensive clinical assessment battery, focused on measurement of cognitive abilities across multiple domains. Compared to normals, college students with symptoms of ADHD demonstrated a pattern of multiple cognitive deficits, including weaknesses in sustained attention, behavioral inhibition, processing speed, nonverbal working memory, and divided attention / cognitive flexibility. Scores on those cognitive measures were then used within a discriminant function analysis, in order to classify subjects into their respective diagnostic groups (i.e., normal vs. likely ADHD). This resulted in a single significant discriminant function, which demonstrated an 86.80 percent correct classification rate.

**Students:** Dustin Smith, Annie Bischoff, Alora Korb, Nickeema Cox, Michelle Sinagra

**Faculty Mentor:** Kenneth S. Walters (Psychology)

**Behavioral Inhibition and Impulsivity among College Students with Symptoms of Attention-Deficit/Hyperactivity Disorder**

This study investigated the role of behavioral inhibition (i.e., impulsivity) in the clinical assessment of Attention-Deficit/Hyperactivity Disorder (ADHD) among college students. Participants included 75 college students (16 men and 59 women) aged 18-23 years. Symptoms of ADHD (i.e., inattention and hyperactivity/impulsivity) were assessed with the Current Symptoms Scale (CSS). Normative data on the CSS were used to classify subjects according to diagnostic status (i.e., normal vs. likely ADHD).

Subjects completed a cognitive assessment battery, including the Conners Continuous Performance Test II (CPT-II) and the Stroop Color and Word Test. From those instruments, three measures served as indicators of behavioral inhibition and impulsivity. These included the Stroop interference score, as well as commission errors and perseveration errors from the CPT-II. Results indicated a pattern of significant differences between diagnostic groups. Subjects in the ADHD group demonstrated: 1) greater commission errors (i.e., failing to respond to target stimuli) on the CPT-II; 2) greater perseveration errors (i.e., inappropriate repetitive responding to the same target) on the CPT-II; and 3) greater interference on the Stroop task. Results also indicated that measures of behavioral inhibition and impulsivity were more strongly related to ADHD symptoms of hyperactivity than to symptoms of inattention.

*Student:* Teniola Sodeinde

*Faculty Mentor:* Nancy Bachman (Biology)

#### **Using Protein Interactions to Reveal Cellular Functions**

Our research deals with protein-protein interactions. The main point of our research is to discover if the protein TTC35 binds to human proteins COX4NB (cytochrome oxidase subunit IV gene neighbor), CGI-112 (function unknown), or to both. TTC35 is a protein implicated in cell death and cell division. The repeat region in TTC35 is very similar to a region of a bacterial protein that is essential for cytochrome c assembly. If results show that TTC35 binds to both COX4NB and CGI-112, then we might hypothesize that TTC35 plays a role in assembling COX4NB and CGI-112 in a larger complex, perhaps one that assists cytochrome oxidase. We obtained a plasmid containing the cDNA sequence of TTC35. We then isolated plasmid DNA and used restriction enzymes (EcoRI and PstI) to excise the coding region, and ran gel electrophoresis to find the insert size (1500 bp). We found, using automated dideoxy sequencing, that the entire protein coding sequence is contained in this region. Once we complete the sequence of the coding region, we plan to insert it into an expression vector to enable the TTC35 protein to be made in bacteria. In future studies, His-tagged CGI-112 or COX4NB proteins produced in *E.coli* will be tested to see if they interact with a TTC35-GST fusion protein.

*Students:* Stephanie Spielberger, Allura Starr, Savannah Sleicher, Brett Nicholas, Shane Whalen

*Faculty Mentor:* Kenneth S. Walters (Psychology)

#### **College Students with Attention-Deficit/Hyperactivity Disorder: Differences across Multiple Dimensions of Self-Concept**

This study examined differences in the area of self-concept between college students with and without symptoms of Attention-Deficit/Hyperactivity Disorder (ADHD). A total of 511 college students (177 men and 334 women) were included in this study. Participants ranged in age from 18-23 years. The Current Symptoms Scale (CSS) was used to assess symptoms of ADHD. Published norms with recommended clinical cut-off scores were used to form a normal group and a group with likely ADHD. In order to assess self-concept, participants completed the Self-Perception Profile for College Students (SPPCS). The SPPCS measures self-perceived competence across multiple domains of functioning, including: Job Competence, Scholastic Competence, Social Acceptance, Appearance, Parent Relationships, Close Friendships, Intellectual Ability, Morality, Romantic Relationships, Humor, Creativity, Athletic Competence and Global Self-Worth. Results indicated that college students in the ADHD group exhibited significantly lower self-perceived competence, compared to the normal group, in the following areas: Scholastic Competence, Parent Relations, Close Friendships, Intellectual Ability, Morality, Romantic Relationships and Global Self-Worth. Common themes which underlie the group differences in self-concept are discussed.

*Students:* Emily Taylor, Margaret Burkett, Shannon Hopkins, Nikita Federov

*Faculty Mentor:* Shih-Ming Hu (Human Ecology)

#### **The Acceptability of Using Okra Gum as a Fat Replacement in Pound Cake**

The original pound cake recipe calls for a pound each of butter, sugar, eggs, and flour. This leads to a product that is high in fat, calories, and cholesterol. Unhealthy diets can lead to obesity and illnesses

such as diabetes, heart disease, and some cancers. This study investigates the acceptability of using okra gum as a butter replacement to improve the nutritional value of pound cake. The findings of this study can be used to develop more healthful products for consumers. This could lead to a decrease in the obesity epidemic and an increase in healthy lifestyles.

**Student:** Karen Teitelbaum

**Faculty Mentor:** Fred Zalatan (Biology)

**Inhibition of *Caulobacter crescentus* via Modification of PYE Agar with Oleic Acid and Lecithin**

The interactions of fatty acids and their transport systems are integral to cell physiology. This study determined the concentration of oleic acid necessary to inhibit the growth of *Caulobacter crescentus*, to facilitate future studies of the mechanisms for uptake of monounsaturated fatty acids and comparison to mutants resistant to oleic acid. *C. crescentus* was grown in PYE broth with 0.5% Brij 58 and 0-112  $\mu$ l of oleic acid/5 ml and then streaked onto PYE agar. The inhibitory concentration was 60  $\mu$ l of oleic acid. This data was used to develop a modified PYE/oleic acid agar with lecithin, to permit testing of isolates directly on solid media.

**Student:** Andrew Turner

**Faculty Mentor:** David Ring (Economics, Finance & Accounting)

**The Effect of Major League Baseball Rehab Assignments in the International League**

An Ordinary Least Square (OLS) regression model is specified to determine the factors that affect attendance in the International Baseball League. This study expands on previous studies by proposing new methods to measure independent variables and including a Major League Baseball rehab assignment variable. The other independent variables considered include population, income per capita, win percentage, opponents win percentages, day of the week, promotions, and weather. Data from 14 teams during the 2010 season are analyzed to provide insight on the significance of each variable.

**Student:** Danielle Valenichis

**Faculty Mentor:** Jon Arakaki (Communication Arts)

**The Ugly Truth: Viewing Romantic Comedies Through a Feminist Lens**

My research on first- and second-wave feminism, film studies and, specifically, romantic comedies, have led to emergent themes; in this paper I will expand upon those themes and explore them using various academic theories. I will analyze the top grossing romantic comedies of 2009: *The Proposal*, *He's Just Not That Into You*, and *The Ugly Truth*. Through a feminist lens, I will analyze them for any recurring themes. I will then compare the themes of the movies to the progress of first- and second-wave feminism. My hypothesis is that even though the first and second feminist movements made huge progressive changes in women's rights and equality, there are still many resounding messages in popular romantic comedies that propel women's second-class status. If my hypothesis proves correct, I will use that information to argue that filmmakers need to change romantic comedies to give women less of a submissive role in their movies.

**Student:** Maria Vann

**Faculty Mentor:** William Walker (Cooperstown Graduate Program)

**Sirens of the Sea: Female Slave Ship Owners of the Atlantic World**

Some women gained economic and social influence in the Transatlantic Slave Trade through their involvement as profitable investors and eventual participants, which rebukes the dominant narrative that white men exclusively controlled the trade. Traditionally accepted gender characteristics are transformed by female slavers' existence, and prove that cruelty and racial superiority were not gender-specific. This thesis is organized into three chapters. Chapter One provides historical background about the Transatlantic slave trade with evidence of women's involvement and their complete embrace of slavery for profit. Chapter Two outlines the empirical and peripheral conditions, including trade networks and colonial legalities, which afforded women ownership and business

opportunities. Emphasis is upon North America with a concentration upon New York, a former Dutch colony that fell under English rule. Chapter Three discusses how some women at the turn of the eighteenth century, not unlike other maritime women, demonstrated gender roles that were often situational and sometimes misrepresented in older historical scholarship and popular cultural beliefs about the past. This thesis opens the discussion about wealthy, elite women slavers in the Age of Atlantic Empires, who both solely and in collaboration with men, created a foundation for more participatory women slavers of later periods.

*Student:* Christina Vogel

*Faculty Mentors:* Trudy Thomas-Smith (Chemistry & Biochemistry), Keith Schillo (Biology)

#### **The Occurrence and Fate of Endocrine Disrupting Compounds (EDCs) in Selected Water Samples**

Biologically relevant concentrations of selected endocrine disrupting compounds (EDCs) in natural waters continue to be a growing environmental concern. The presence of EDCs in these waters results from wastewater facilities and agricultural application of animal wastes. Previous studies show the presence of nanomolar concentrations of steroid hormones (e.g. 17-beta-estradiol) in fresh waters. Nevertheless, these concentrations remain potent, obtaining gynogenic alterations specifically in male fish species. Considering the need to detect the low concentrations as mentioned above, sensitive and robust analytical methods are needed for the determination of the presence of 17-beta-estradiol in natural waters. The majority of workers employ liquid chromatography-mass spectrometry (LC-MS) for this purpose; however, LC-MS is not readily accessible. Instead, water samples collected from various locations and sources are analyzed using Ultra-violet Spectroscopy and High Performance-Liquid Chromatography. Understanding the fate of 17-beta-estradiol (and other EDCs) should encourage the use of procedures needed to filter these environmentally and biologically harmful compounds from natural waters and public water supplies.

*Student:* Christina Vogel

*Faculty Mentors:* Keith Schillo (Biology), Trudy Thomas-Smith (Chemistry & Biochemistry)

#### **The Effects of Endocrine Disrupting Compounds (EDCs) on Mammalian Tissue**

Recent studies revealed adverse effects of endocrine disrupting compounds (EDCs) on marine organisms. These results raise the possibility that such compounds exert negative effects on the health of terrestrial animals. Because these compounds interfere with development and reproduction, they may be responsible for declines in some populations of wildlife, as well as reproductive problems in livestock and humans. One way of assessing the extent to which a compound might exert such effects is to assess its biological activity. We recently identified a substance in local water samples that may have estrogenic activity. Our current study seeks to test the hypothesis that this unknown substance produces biological effects similar to that of naturally occurring estrogens. We will accomplish this by employing the use of the uterotrophic bioassay. Briefly, the test involves assessing the effects of repeated injections of an unknown substance on growth of the uteri in sexually immature mice. If the unknown has estrogenic activity, then daily injections of this substance over a three-day period will increase uterine growth compared to untreated animals. The biological potency of this substance will be estimated by comparing the magnitude of its effects to those of known amounts of estradiol, the most major estrogen produced by mammals.

*Students:* Nicholas Walion, Laurie Ann Wick

*Faculty Mentor:* Rebecca Harrington (Office of Health Education)

#### **Technology and Relationship Patterns in Young Adults**

A survey was developed to measure the attitudes and perceptions among students at SUNY Oneonta regarding technology usage and relationship history. The goal was to obtain a better understanding of romantic relationships in a culture that is so dependent on technology, and in which the term "hook-up" carries new meaning. Survey items examined students' attitudes, perceptions, and opinions regarding socially appropriate behavior within this digital communication.

**Student:** Erin Wemple

**Faculty Mentor:** Timothy Hayes (Center for Economic & Community Development)

#### **Local Alignment with the United Way Worldwide**

The United Way Worldwide focuses on problems with health, education and income. The United Way of Delaware & Otsego Counties is an affiliate of United Way Worldwide. This project determined how aspects of the larger organization's brand were being matched by the local United Way. We found points of parity and points of difference between the two organizations. Data was gathered to ensure that the goals the larger organization would translate to the local level's needs. In conclusion, the issues identified by the larger organization were present in varying forms and degrees locally, such that continued alignment of the organizations was possible.

**Students:** Danielle Willsey, Michael O'Rourke, Lisa Laraque, Umrhan Habal

**Faculty Mentor:** Florian Reyda (Biology/Biological Field Station)

#### **Investigation of Pathology Caused by Thorny-Headed Worms that Parasitize Otsego Lake Fishes**

During a survey of fish parasites in Otsego Lake (Cooperstown, New York) conducted between 2008 and 2011 by a SUNY Oneonta professor and numerous SUNY Oneonta undergraduate students at the Biological Field Station in Cooperstown, damage to the fish intestines infected by acanthocephalans was observed on many occasions. A histological investigation was undertaken at the cellular level to better understand the damage done by acanthocephalans in Yellow perch. Yellow perch collected by local fishermen were dissected, and infected intestines were isolated and preserved. Portions of the intestinal wall to which acanthocephalans were still attached were then removed in order to be sectioned with a microtome. Eight-micron-thick sections were obtained with a microtome and were subsequently placed on slides and stained after a graded ethanol series. Prepared slides were then examined with a compound light microscope. Sections of infected intestines were compared to uninfected intestines to examine the damage at the cellular level, if any, caused by the acanthocephalans.

**Students:** Danielle Willsey, Michael O'Rourke, Lisa Laraque, Umrhan Habal, Katherine Lawrence, Megan Loucks, Luke Soposki, Lynnea Mallen, Nicholas Mazziotta

**Faculty Mentor:** Florian Reyda (Biology/Biological Field Station)

#### **Helminth Diversity in Fishes from Otsego Lake, New York**

A survey of the helminth parasites of the fishes of Otsego Lake and nearby water bodies in Otsego County, New York was undertaken from September 2008 to the present in order to characterize species diversity. Otsego Lake, an oligotrophic finger lake, is part of the Mid-Atlantic drainage basin. It serves as the headwaters of the Susquehanna River, which drains into the Chesapeake Bay. Fish were collected by hook and line, seine, or by gill net during fall, winter, spring and summer. Over five hundred individual fish representing nine species were necropsied for helminths. These included: *Micropterus salmoides* (Largemouth bass), *Ambloplites rupestris* (Rock bass), *Lepomis macrochirus* (Bluegill), *Lepomis gibbosus* (Pumpkinseed), *Lepomis auritus* (Redbreast sunfish), *Perca flavescens* (Yellow perch), *Esox niger* (Chain pickerel), *Catostomus commersoni* (Common White sucker), and *Ictalurus nebulosus* (Brown bullhead). Multiple species of metazoan parasites were encountered, including nematodes (e.g., *Spinitectis*, *Philometra*), digeneans (e.g., *Clinostomum*, *Crepidostomum* and *Azygia*), cestodes (e.g., *Proteocephalus*), and acanthocephalans (e.g., *Leptorhynchoides thecatus* and *Neoechinorhynchus*). Although it may seem contrary to intuition, the occurrence of a diversity of helminths in the fish examined in this study is suggestive of a healthy ecosystem.

## OTHER DISPLAYS

### **2010 Student-Facilitated Research at the Biological Field Station**

**Faculty Mentors:** Willard N. Harman, Matthew Albright, Paul Lord, Holly Waterfield (Biological Field Station), Donna Vogler (Biology), Florian Reyda (Biology/Biological Field Station)

Twenty-three undergraduate students directly participated in research activities in 2010 at the Biological Field Station (BFS) in Cooperstown. Ten students held summer research internships during which they conducted field and lab research in applied aquatic ecology, wetland ecology, parasitology, wastewater treatment, and other environmental/field biology disciplines. Eleven students participated in Independent Studies with Dr. Florian Reyda, contributing to his ongoing study of fish parasites in and around Otsego Lake. Students involved as BFS research interns and student research assistants contributed technical reports of their projects to the BFS Annual Report, which is made available online (<http://www.oneonta.edu/academics/biofld/>) and in hardcopy each spring.

**Students:** Stefan Armstrong, Taylor Beasley, Michael Bergman, Kathryn Cavanaugh, Matt Del Bazo, Chelsea Kois, Solomon Maricle, Nicholas Mazziotta, Brianna Olsen, Shane Putnam, Patricia Rees, Eric Siedner, Tyler Smith, Luke Soposki, Christopher Swider, Crystal Wiles, Danielle Willsey (SUNY Oneonta); Carter Bailey (SUNY ESF); Henry Bauer (Cooperstown High School); Bradley Bowers (SUNY Cobleskill); Cleo Szmygiel (University of Connecticut)

### **The Fund for Science & Technology: A Successful Campaign to Raise Funds for the STEM (Science, Technology, Engineering and Math) Disciplines at SUNY Oneonta**

*Visions↔Solutions:* *The Fund for Science and Technology* kicked off in fall 2007 as the College's first fundraising effort to focus on a cluster of academic disciplines. The Fund set out to raise \$4 million for student scholarships in the STEM disciplines, to increase funding for research and scholarly activity, and to enhance scientific literacy for all SUNY Oneonta students. Under the leadership of Campaign Co-chairs Janet Perna (SUNY Oneonta class of 1970) and Dr. William Pietrafesa (recently retired professor and chair of the Biology Department), The Fund far exceeded its goal, raising over \$5 million in gifts and grants by the conclusion of the campaign in December of 2010. This display will present various data regarding The Fund, including grants awarded by department/program, growth in available STEM student scholarships, restricted vs. unrestricted funds raised, and more. Visit <http://www.oneonta.edu/advancement/donors/v-s/> for more information.

# **SUNY ONEONTA**

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