

FOURTH ANNUAL UNDERGRADUATE RESEARCH

# *Symposium & Celebration*

MONDAY, MARCH 26<sup>TH</sup>, 2007

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## Schedule of Events

### REGISTRATION

Check in and registration for Symposium participants will be at 10:00 AM on March 26 in the Gallery of the Shepherd Union Building

### SCHEDULE

#### 11:00 AM – 4:00 PM

Posters available to view Gallery

#### 11:15 AM – 12:45 PM

Oral Presentations Shepherd Union Building

#### 12:45 – 1:15 PM

Break with Refreshments Gallery

#### 1:15 – 3:00 PM

Oral Presentations Shepherd Union Building

#### 2:00 – 2:30

Performing Arts Presentations Gallery

#### 3:00 – 4:00 PM

Poster Session Gallery  
(Presenters available at posters for Q&A)



On behalf of the entire Weber State University community, welcome to our Fourth Annual Undergraduate Research Symposium.

Weber State has traditionally been recognized as providing a learning environment that gives students the opportunity to excel both in and out of the classroom. The nearly 100 research and creative projects being highlighted during this symposium are representative of what can be accomplished through scholarly collaboration between WSU faculty and students outside the traditional classroom environment.

This kind of collaborative effort provides real-world experience for faculty and students; enhances the body of knowledge in their associated academic disciplines; and reflects credit on this university, its faculty and students. By attending or participating in this symposium, you are contributing to that process by helping Weber State applaud these exemplary faculty-student achievements.

Thanks for your support of our undergraduate research initiative.

A handwritten signature in black ink that reads "F. Ann Millner". The signature is written in a cursive, flowing style.

F. Ann Millner  
President



As Provost, it is my pleasure to welcome you to Weber State University's 2007 Symposium and Celebration of Undergraduate Research. I am pleased by the growing interest in undergraduate research at WSU. I am equally impressed by the quality of the research that our students are doing. I want to extend a special thanks to our faculty. Faculty mentors are critical to the success of our students' undergraduate research projects. I appreciate the time and effort our faculty have devoted to our students' projects. Finally, I thank Scott Wright, StephAnn Knotts, Emily Stanger and John Cavitt for their work on this symposium.

A handwritten signature in black ink that reads "Michael Vaughan". The signature is written in a cursive, flowing style.

Michael Vaughan  
Provost



Welcome to the Fourth Annual Weber State University Undergraduate Research Symposium!

As you look through the list of topics that are covered in both oral and poster presentations, I think you will agree with me that there is an incredible depth and quality of undergraduate research undertaken here at the university. Many of the students participating in this conference will go on to present their research at other conferences, such as the National Conference for Undergraduate Research (NCUR), or conferences that are specific to their major discipline.

Undergraduate research provides many unique opportunities for both the student and faculty mentor. A large portion of undergraduate education is based on leading students down a relatively narrow track. Involvement in a research project allows a student to step off of the track and explore outside the boundaries of a classroom. Undergraduate research also allows a student to work one on one with a faculty mentor in ways that are not available in the classroom.

Whether you are a student, a mentor, or someone interested in the undergraduate research efforts at Weber State University, I do hope that you enjoy this year's symposium. I encourage you to take the opportunity to talk to the student presenters and ask them about their research and the experience that they had along the way.

Scott Wright  
Interim Director of Undergraduate Research

### The Undergraduate Research Task Force

Carol Biddle	Development	Pene'e Stewart	Education
Fran Butler	Teacher Education	Susan Matt	History
Ken Cuddeback	Telecomm & Bus. Ed.	Chris Millard	Sponsored Projects
John Cavitt	Zoology	Robert Mondri	Honors
Jeff Davis	Business Administration	Kathy Payne	Library
Lauren Fowler	ex officio CUR Councilor	Carl Porter	Support Services
Isabel Asensio	Foreign Languages	Kathy Sitzman	Nursing
Dan Magda	Applied Science & Tech.	Van Tinkham	Performing Arts
Jim Hutchins	Health Sciences	Cori Tadehara	Social Work
Colin Inglefield	Physics	Scott Wright	Clinical Lab. Sciences

**Shepherd Union Building  
Oral Presentations Room Schedule**

	347	348	352
11:15 AM	<p><b>Samantha Hansen</b></p> <p>The Biological Effects of Shift Work: A Correlation between General Health Markers and Cortisol Production in Law Enforcement Personnel</p>	<p><b>Amiko Uchida, Karalee Lemmon, Josh McFarland, Brent Cooper, Franz Goller</b></p> <p>Structure and Function of Syringeal Muscles in European Starlings</p>	<p><b>Victoria Mecham, Trevor Taylor</b></p> <p>Gender Differences Among College Students and Life Stressors</p>
11:30 AM	<p><b>Sydni Belliston, Michaelene Kippen</b></p> <p>The Impact of Podcasting on Learning</p>	<p><b>Angela Barnes</b></p> <p>Association of Brine Shrimp Eggs (<i>Artemia</i>) and Microorganisms isolated from the Great Salt Lake</p>	<p><b>Beau James Burgess</b></p> <p>Photographing Folklore: Ogden's Underworld</p>
11:45 AM	<p><b>Gregory Burton, Brett Gledhill, Ray Trimble</b></p> <p>The Effects of the Bordatella Pertussis Toxin on Glycosylated Hemoglobin Levels</p>	<p><b>Michael Malmrose</b></p> <p>Detection of Tertiary Companions to Eclipsing Binary Stars</p>	<p><b>Jestina Clayton</b></p> <p>Sierra Leone: A Case Study of Civil War and International Jurisprudence</p>
12:00 PM	<p><b>Cheré Clawson, Julie Kakazu, R.J. Sparkman, Elisa Stephenson</b></p> <p>Comparison of Four Conventional Pre-Transfusion Methods to Detect Unexpected Antibodies</p>	<p><b>Lani Shepard</b></p> <p>Hold 'Em or Fold 'Em? Hindlimb Flight Posture in Birds</p>	<p><b>Elizabeth Heath</b></p> <p>Vietnamese American College Students in Utah: Finding Place</p>
12:15 PM	<p><b>Kevin Crandall, Vida Schumacher, Kathy Cox</b></p> <p>Epidemiology of community and hospital-associated Methicillin-Resistant Staphylococcus aureus in Salt Lake City, Utah</p>	<p><b>Christian L. Larsen</b></p> <p>Selenium Toxicity Affects on Brine Shrimp Artemia</p>	<p><b>Janessa Knotts</b></p> <p>Hispanic Experiences at Weber State University</p>
12:30 PM	<p><b>R. Drew Durtschi</b></p> <p>Fungal Effects and the Cytokines Involved with Chronic Rhinosinusitis</p>	<p><b>Jacob Cain</b></p> <p>Parallel Processing to Solve Scientific Problems</p>	<p><b>Janice LeFevre</b></p> <p>Dr. Briant Stringham Jr.: Progressive Physician</p>
12:45 PM 1:00 PM	<b>BREAK</b>		

**Shepherd Union Building  
Oral Presentations Room Schedule**

	<b>347</b>	<b>348</b>	<b>352</b>
<b>1:15 PM</b>	<p><b>Jalene Hale, Jenny Jones</b></p> <p>Computer-Mediated Communications among Dental Hygiene Students</p>	<p><b>Leslie Patterson</b></p> <p>Survey of the Hypersaline Fungi of the Great Salt Lake</p>	<p><b>Lori Loesch</b></p> <p>Citizens and Believers: LDS Women in World War II</p>
<b>1:30 PM</b>	<p><b>Sarah Hansen, Marie Ballif</b></p> <p>The Effect and use of Pilot Tubes on Various Coagulation Studies</p>	<p><b>Doug Fay, Jake Collier, Derick Seach</b></p> <p>Circuit Design Pro Micro-controller Expansion Kit</p>	<p><b>Lori Lundell</b></p> <p>"Maybe you can help me.": Negotiating Masculinity in Feminine Space.</p>
<b>1:45 PM</b>	<p><b>Kathryn Allen, Sheryl Panter</b></p> <p>Periodontal Disease and Canines</p>	<p><b>Juan Miranda</b></p> <p>El Legado de los Eventos de Ernesto "Che" Guevara a las Futuras Generaciones</p>	<p><b>Heidi Orchard</b></p> <p>Life After OSS</p>
<b>2:00 PM</b>	<p><b>Michael McQuilkin, Alex Lund, Wyatt Palmer</b></p> <p>Comparative Study of Antimicrobial Susceptibility of Uncomplicated Urinary Tract Infections</p>	<p><b>Deborah Ramsay</b></p> <p>Sports Illustrated: Muting the Gender Contender</p>	<p><b>Ronald Partridge, Jason Mouritsen, Carrie Moreno</b></p> <p>Sex &amp; Gender Differences in Learning Styles</p>
<b>2:15 PM</b>	<p><b>Leah M. Daily, Trina A. Riley, Tyler D. Roe</b></p> <p>Comparison of FDA Approved Antibiotics to Non-Prescription Mexican Antibiotics</p>	<p><b>Hyrum Rappleye</b></p> <p>Genderlect in Coach-to-Athlete Communication</p>	<p><b>Caleb Wilson</b></p> <p>Time of Day Effects on Mental Stress-Related Sympathetic Nervous System Activation in Shift Workers</p>
<b>2:30 PM</b>	<p><b>Michelle Houghton, Tatiana Riley, Bonnie Stevens</b></p> <p>Utilizing Mixed-Reality Technology to Teach Techniques for Local Anesthesia</p>	<p><b>Mandy Seeley</b></p> <p>Cultivation Theory Supports the Effects of Negative News on Society</p>	<p><b>Issac Goeckeritz</b></p> <p>Ogden: Junction City of the West – A Documentary Film</p>
<b>2:45 PM</b>	<p><b>Majak Jonn, Nathan Fenn, Alisha Weiss</b></p> <p>Effects of Stress on Platelet Function</p>		<p><b>Ronald Partridge, Lori Lundell, Elly Alvarado, Kari Yurth</b></p> <p>Did You Teach Them to Say Thank You?</p>

## Shepherd Union Building Gallery Poster Displays

- Display 1: Nathan Bills, Bradley Floyd, Stephen Jenkins**  
Developing a Beowulf Compute Cluster for CEET Applications
- Display 2: Brett Boman**  
When is it Okay to Lie? An Examination of Seinfeld Using Interpersonal Deception Theory
- Display 3: Logan Bowen**  
Human Relations Theory and Improving Graduation Rates at WSU
- Display 4: Melody Brocious**  
Costume Design for "The Utter Glory of Morrissey Hall"
- Display 5: Chuck Thorne**  
Genderlect and Conflict in Negotiation: He Said, She Said
- Display 6: Doug Chase**  
Concrete Casting and Silicone Molds
- Display 7: Matt Deamer**  
Cultivation Theory and Video Game Violence
- Display 8: Matt Deamer**  
The Critical Perspective and WSU Union Building Renovation
- Display 9: Heidi Johnson**  
When Social Penetration Theory DOES NOT Work: The Make-up Artist and Client
- Display 10: Derryl Hill**  
Guilty by Media Over-Exposure: Three Professional Athletes' Case Studies
- Display 11: Kassidi Kunz**  
The Role of Academic Advisement in the Process of Organizational Assimilation at Weber State University
- Display 12: Chelsy Lloyd**  
The Critical Theory of Communication and Salaried Employees Unpaid Overtime Work
- Display 13: Kathryn A Martinez**  
Makeup, Effects and Hair Design of *Macbeth*
- Display 14: Seung Won Mun**  
Financial Aid: Where Has All the Money Gone?
- Display 15: Bradley Peterson**  
Viewing Rising Tuition Costs at WSU Through the Critical Lens
- Display 16: Melanie Ryerse**  
Wildcat Pride: The Weber State University Logo as a Cultural Artifact
- Display 17: Shawna Dudis**  
Campus Parking – What Is It Worth To You?: A Willingness-to-Pay Survey of Weber State University
- Display 18: Kris Hatch, Tiffany Foerster**  
Assessment Practices of Utah Public School Physical Education Teachers
- Display 19: Jessica Rees**  
Employee Wellness Programs: An Analysis of Current Research and Implications for the Future
- Display 20: Aaron Harper, Van Aston**  
Effects of Serum Index Values on Immunologically Based Testing

## Shepherd Union Building Gallery Poster Displays

- Display 21: Candice Norris, Ashley Pengelly, Stephanie Stokes**  
Access to Care: We Have the Resources, Why Aren't We Filling the Need?
- Display 22: Lindsey Parcell, Joelle Carlile, Jennifer Bowen**  
Emotional Intelligence and Success in Dental Hygiene Student Clinical Practice
- Display 23: Zeynep C. Treuherz**  
Increase of Diabetes Mellitus (Type II) in Children: Consequences for the Physical Educator
- Display 24: Brady Powell**  
The Effect of Dietary Fish Oil Supplementation on Lactic Acid Production Following High Intensity Exercise Performance
- Display 25: Miriam Bernardo, Karli Oberg, Kristen Froerer**  
Inhibition of Common Spoilage Fungi by Lactic Acid Bacteria
- Display 26: Kevin Bowcutt, Brigham Burton, Dan Cox**  
Isolation and Characterization of Halophilic, Chitin-utilizing Bacteria from the Great Salt Lake
- Display 27: Pete Buzianis**  
Controlling Magnetic Field Intrusion in Rubidium Trapping
- Display 28: Trealyn Christensen**  
Embedded PIC Microcontroller Programming for Large-scale Electronic Circuit Evaluation
- Display 29: Christian Edwards**  
Diet and Foraging Behavior of Shorebirds: Developing a Water Quality Standard for the Great Salt Lake, Utah
- Display 30: Richard Emerson**  
Petrology of the Cretaceous Straight Cliffs-Wahweap Formations Transition, Southern Utah
- Display 31: David Freestone, Ben Willis, Ben Baird, John Gittins**  
The Ability of *Enterococcus* Species to Survive in the Great Salt Lake
- Display 32: Mike Gamble**  
Breeding Ecology and Nest Site Selection of Long-billed Curlew
- Display 33: Lucas K. Hall**  
The Effects of Cheatgrass (*Bromus tectorum*) on Deer Mouse (*Peromyscus maniculatus*) Relative Abundance on Antelope Island State Park, Utah
- Display 34: Justin Hillier**  
Detecting Abandoned Mines and Caves through Geospatial Analysis
- Display 35: Devin Lindstrom**  
The Presence of *Enterococcus* in the Northern Arm of the Great Salt Lake
- Display 36: Giles Manning**  
Laser Detection of Rubidium Hyperfine Atomic Transitions
- Display 37: Stanton Nielson**  
A Survey of Craters in Martian High Latitudes
- Display 38: Brian Oney**  
Genetic Variation in Natural Populations of the Great Salt Lake Brine Fly, *E. cinerea*
- Display 39: Spencer Parkin**  
Numerically Maximizing the Area of Unit-diameter 2n-gons.
- Display 40: Leslie Patterson, Kirk Uden, Sonya Welsh**  
An Elevational Comparison of Morpho-Species Lichen Distribution On Gamble's Oak *Quercus gambelii*

## Shepherd Union Building Gallery Poster Displays

- Display 41: Spencer Rumsey**  
Trapping Efficacy and the Effects of Habitat Alteration on Reptile Fauna in Sage Brush Habitat
- Display 42: Chase Sessions, Jennika Scadden**  
Phosphate use of Halophilic Microorganisms
- Display 43: Michael Simpson**  
Observations With A New Radio Telescope at Weber State University
- Display 44: Kevin Smith**  
Modifying a Wavemeter for Rapid Measurement of Laser Wavelength
- Display 45: Kyle Stone**  
Unusual Brood Parasitism Record at Bear River Migratory Bird Refuge, Utah
- Display 46: Anthony Uriona**  
Petrology of Moroni Formation, Central Utah
- Display 47: Shane Bench, Shoko Kikugawa, Rick Walker**  
The Effect of Situational Factors on Rational Judgments: A Dual Process Theory Account
- Display 48: Jennifer Bott**  
Utah Sings Out: The Folk Music Revival (1950s - 1960s)
- Display 49: James Griffiths**  
The Effects of Multiple Group Memberships on Discrimination and the Possible Role of Cultural and Contextual Norms
- Display 50: Monica Guzman, TJ Black**  
Caregivers' Behaviors and Attitudes Regarding their Children's Learning in Children's Museums.
- Display 51: Beau Burgess, Corrie Gomez, Elizabeth Heath, Janessa Knotts, Heidi Orchard**  
Worth Your Salt
- Display 52: Kristena M. Kons**  
The Influence of Light Therapy on Percieved and Cognitive Fatigue During Rapidly Rotating Shiftwork Schedules
- Display 53: Lori Lundell**  
"It's a Crappy Routine": An Evaluation of Shift Workers' Time Management According to Marital Status and Gender
- Display 54: Kristine Wilkerson**  
Illusory Correlations and Stereotype Formation: Influences of Infrequent Behaviors on Stereotypes of Homosexual Males

**Shepherd Union Building Gallery  
Performing Arts Presentations**

Tong (Miranda) Wu  
Rachmaninoff's Piano Concerto No.2  
Piano Performance

Heidi Evans  
"The Beauty Is..."  
Vocal Performance

*Performances will begin at 2:00 PM in the Gallery.*



*Learning through research and discovery*

# *College of Applied Science & Technology*

Never regard study as duty, but as the enviable opportunity to learn to know the liberating influence of beauty in the realm of the spirit for your own personal joy and to profit the community to which your later work belongs.

Albert Einstein



## Developing a Beowulf Compute Cluster for CEET Applications Poster Display

Nathan Bills, Bradley Floyd, Stephen Jenkins (Jeffrey Ward)  
Computer and Electronics Engineering Technology  
*Weber State University Undergraduate Research Scholarship*

Complex numerical analysis problems in science and engineering require tremendous computer resources. An economical alternative to supercomputers is a “Beowulf Compute Cluster” built from commodity microcomputers and open source software. We researched and built two 4-node compute clusters. One cluster is built from older components contributed by the CEET department, and will be available for class labs in the department. The other cluster is built of some of the latest components available to try to achieve the highest level of performance possible, it will be available for running research simulation programs in the college. The results of various benchmarks on the two systems in different configurations will be detailed in our presentation.

## Circuit Design Pro Micro-controller Expansion Kit Oral Presentation

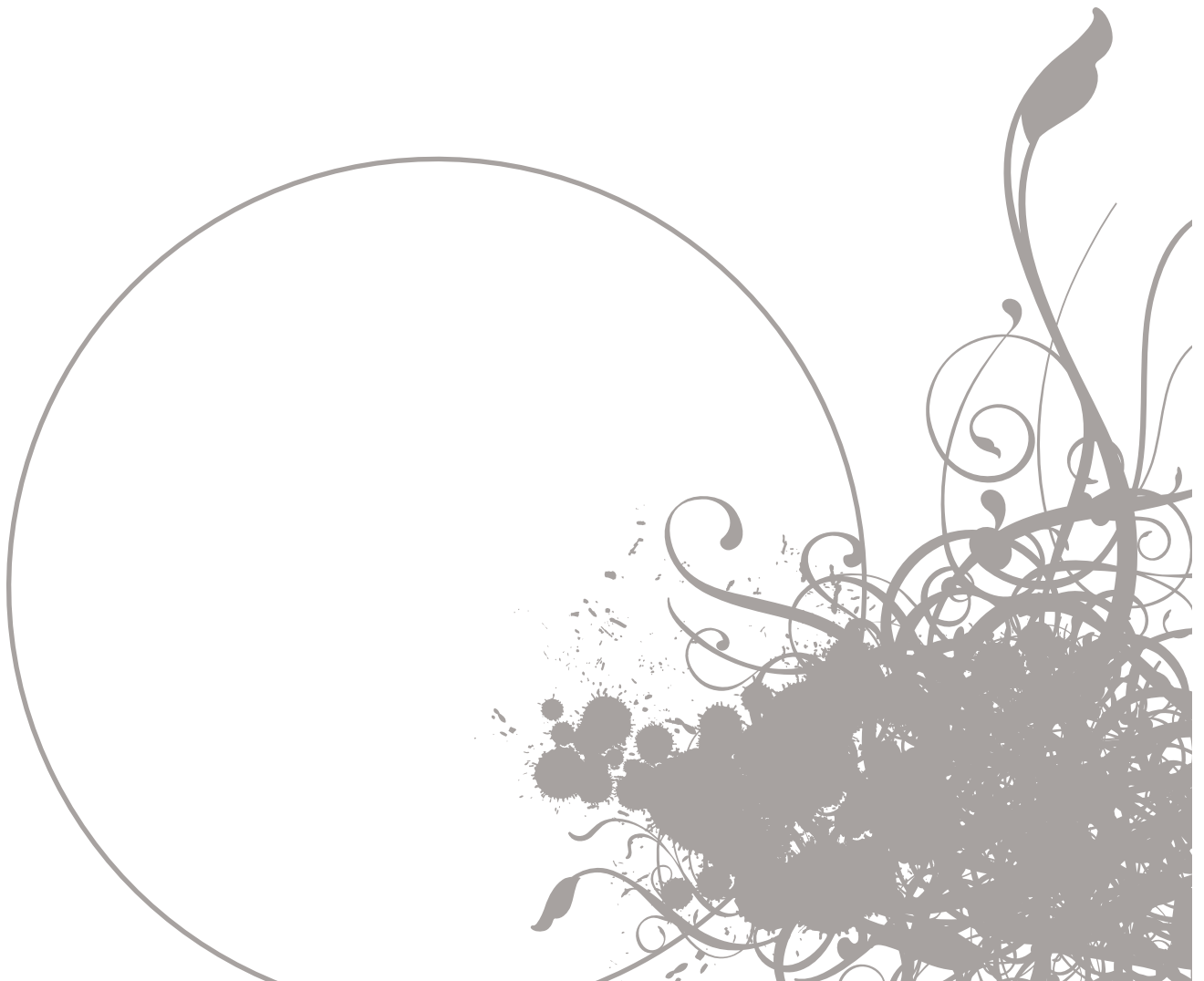
Doug Fay, Jake Collier, Derick Seach (Julie McCulley)  
Computer & Electronics Engineering Technology  
*Denkers Undergraduate Research Scholarship*

Technology is always changing and it won't wait for anyone. Everyone needs to keep researching new technology so that you don't get left behind. Our project was to research and design a micro-controller that is an add-on to the existing OrchEd Circuit Design Pro Trainer. A micro-controller is a small computer that is task specific, has a small amount of memory, and a couple of input/outputs ports. This device is the central focus for any low power design. The new component plugs directly into the breadboard of the trainer and provides the ability to use the micro-controller in combination with the existing functions of the trainer. This research and design project will allow entry level students to learn the basics of programmable devices and digital electronics. We researched several different micro-controllers and learned about their systems and capabilities. We chose the one which met the specifications of the project. Finally, we built and tested a prototype of the micro-controller. This micro-controller has four ports, a built in temperature sensor, 8kb flash memory and 512b RAM. We are also in the process of writing programs to use this micro-controller as a temperature logger and also to control a robot arm.

*College of Arts & Humanities*

Creativity can solve almost any problem. The creative act,  
the defeat of habit by originality, overcomes everything.

George Lois



## **When is it Okay to Lie? An Examination of *Seinfeld* Using Interpersonal Deception Theory**

### **Poster Display**

Brett Boman (Becky Johns)  
Communication

Lying can be a necessary evil to help make social situations bearable. This paper explores the situation comedy, *Seinfeld*, as a classic example of the use of Interpersonal Deception Theory. In particular, the characters of George and Kramer are examined for their lying behavior in the series and their justifications for doing so. Is it okay to lie in relationships? When and how much? George and Kramer give us clues to American communication culture.

## **Human Relations Theory and Improving Graduation Rates at WSU**

### **Poster Display**

Logan Bowen (Becky Johns)  
Communication

Concentrating on the human relationships between the students and the WSU administration, faculty and staff can increase graduation rates. This paper explores the reasons WSU students drop out before graduation and what it would take to retain them or bring them back to finish. The conclusion of this study suggests there are three concrete, definitive solutions to this puzzling question and that all of them are to be found in Human Relations Theories of organizational life.

## **Costume Design for “The Utter Glory of Morrissey Hall” Poster Display**

Melody Brocious (Catherine Zublin)  
Performing Arts

*Undergraduate Research Travel Grant Recipient*

In fall of 2006, I was able to be part of the design team for the production “The Utter Glory of Morrissey Hall.” I worked as costume designer with director Jim Christian and scenic designer JD Madsen in a collaborative process bringing this musical to life.

As costume designer for “The Utter Glory of Morrissey Hall,” I was able to attend the Kennedy Center American College Theater Festival, Region VIII, in Cedar City this year. As a design and theater student, I was able to discuss my work with professionals in this area, and also learn from other students’ work. My designs earned an Honorable Mention out of the costume designers in our region.

## **Concrete Casting and Silicone Molds Poster Display**

Doug Chase (Clay Furches)  
Visual Arts

*Eccles Undergraduate Research Scholarship*

As part of my research, I attended a workshop hosted by architect and artist Fu-tung Cheng. Cheng is the author of “Concrete Countertops” and “Concrete at Home”. At the workshop I gained valuable insight into mold building and design. I learned the specifics of how to create a workable concrete mix as well as gaining industry secrets on the best curing methods. I also experimented with different aggregates, pigments and inlays as a means of creating new results. The most challenging part of my project was modeling clay to create an accurate architectural reproduction. Researching molds as a process to create large concrete sculpture has proven to be an inexpensive alternative to carving into stone.

## **Cultivation Theory and Video Game Violence Poster Display**

**Matt Deamer (Becky Johns)**  
Communication

It has been argued that video games have a violent, negative effect on people. Using the latest research on this topic, this paper explores these arguments and demonstrates how Gerbner's Cultivation Theory can partially explain the effect or non-effect of video games on players.

## **The Critical Perspective and WSU Union Building Renovation Poster Display**

**Matt Deamer (Becky Johns)**  
Communication

The most striking physical feature of Weber State's campus presently is the major renovation of the Union Building begun last spring and scheduled to continue for three more years. From the perspective of the critical lens, we may argue that this renovation may be too costly for WSU students and ultimately undesirable. How was this decision made? How many students were involved in the decision-making? What efforts were made to communicate to the present WSU student body and future studentbody the ultimate cost of these renovations?

## **The Beauty Is... Musical Performance**

Heidi Evans (James Christian)  
Musical Theatre and English

I have studied the Musical *A Light In The Piazza*. I did an historical analysis of a song from the musical, called “The Beauty Is” for a criticisms of literature class. I took my research further when I fully developed the paper and the historical analysis on my own. I then took the time to lean the music and prepared to perform it.

## **Guilty by Media Over-Exposure: Three Professional Athletes’ Case Studies Poster Display**

Derryl Hill (Becky Johns)  
Communication

Critical Media Theory helps us to recognize the false realities that are created by the media. In the case studies presented in this paper of Ryan Leaf, Kobe Bryant and Barry Bonds, we see how over-exposure and poor media coverage have effected these individuals their careers and how people view professional athletes. In particular, when you hear ‘Barry Bonds’ you think of steroid use. The media has referenced the two so that, regardless of reality or guilt, the sign and signified become one the viewing public’s mind.

## **When Social Penetration Theory DOES NOT Work: The Make-up Artist and Client Poster Display**

Heidi Johnson (Becky Johns)  
Communication

Clients sitting in a make-up artist's chair tend to exhibit a willingness to self-disclose deep, personal information far in excess of that found in other similar social relationships. This paper addresses the unique case of the make-up artist and client as an application of Social Penetration Theory. Conclusions drawn from this study include that communication in this unique service-client relationship follows an unpredictable pattern that both embraces and rejects application to Social Penetration Theory. True intimacy between the two interactants is never fully developed because of sporadic and nonreciprocal social penetration.

## **The Role of Academic Advisement in the Process of Organizational Assimilation at Weber State University Poster Display**

Kassidi Kunz (Becky Johns)  
Communication

Using the theory of Organizational Assimilation, this paper proposes that college students 1) need advisors to help "make sense" of their college experience, and 2) to bridge the gap between the university and the incoming student. How successful is academic advising at WSU? How could it be improved by attention to the tenets of Organizational Assimilation Theory?

## **The Critical Theory of Communication and Salaried Employees Unpaid Overtime Work Poster Display**

Chelsy Lloyd (Becky Johns)  
Communication

Salaried employees are working more hours than they are being paid for because of managerial pressure and corporate culture. This paper explores this phenomenon and situates it within Stanley Deetz' Critical Theory of Communication. This paper explores the recent development in corporate America of a willingness by employees to give loyalty without much (if anything) in return. The question remains: Is this ethical and humane?

## **Makeup, Effects and Hair Design of *Macbeth* Poster Display**

Kathryn A Martinez (Catherine Zublin)  
Theatre Arts

*Undergraduate Research Travel Grant Recipient  
Regional First Place Winner for Hair & Make-Up Design  
at the Region VIII Kennedy Center American College  
Theatre Festival*

*Macbeth* by William Shakespeare is the story of the bloody rise, undermining and fatal downfall of a man deluded by a suspect prophecy of three weird women and a greedy mate.

Due to the enormous amount of quick changes many actors playing multiple roles could not change makeup during the show. This allowed costume layer changes to enhance the illusion of a different character, yet every opportunity to enhance individuals were taken advantage of.

Because no two people are exactly alike, each actor received an individual makeup design for their specific character(s) utilizing a makeup plot taken from their head-shot. Trained in reading and application of the makeup, they then receive a head-shot in the final makeup or "character shot." The actors use these two prints to assist them in being consistent during the run of the show.

Men - Rugged, unkempt, matured by battle.

Women - Soft and feminine.

Weird Women - strange, deformed, representational of the effects of war on the civilian population.

With 29 characters depicted by 19 actors: 1 child, 5 women and 13 men, I was able to enhance individual characters by altering makeup and effects within a performance time of approximately one hour thirty minutes.

**El Legado de los Eventos de Ernesto  
"Che" Guevara a las Futuras  
Generaciones  
Oral Presentation**

Juan Miranda (Alicia Giralt)  
Foreign Languages

*WSUSA Undergraduate Research Fellowship*

Many persons have read or been exposed to Ernesto "Che" Guevara's figure and his role in the politics of Latin America, but few know that Ernesto Guevara was an excellent writer. In spite of the fact that his writings have not received the attention that they deserved, his excellent histories and diaries have left a legacy in the people. It is up to us to correct the course in which there are criticized. The manuscripts, humanitarian actions and publications of the gentleman Ernesto Guevara deserve our attention and consideration. Che Guevara was a humanitarian revolutionary that changed the course of the world, imposing his actions in a set political structure.

**Financial Aid: Where Has All the Money  
Gone?  
Poster Display**

Seung Won Mun (Becky Johns)  
Communication

Financial aid is the basis of survival for most students at WSU as well as at other universities. However, contrary to popular belief, financial aid is not available to all students. Students who have exceeded a certain number of credit hours in their pursuit of "excellence in education" find they are blocked from further aid. Critical Approach in Organizations Theory helps to explain why this is and how we might be able to change it.

## Viewing Rising Tuition Costs at WSU Through the Critical Lens Poster Display

Bradley Peterson (Becky Johns)  
Communication

This paper postulates that rising tuition costs at Weber State University stem from hidden powers of cultures, ideology, communication, politics, and hegemony. These deeply imbedded and hidden powers essentially cause our tuition increases and at the same time, work to keep students from speaking out against them. This paper explores the recent tuition increases at WSU from a critical organizational perspective. In line with this perspective, this paper seeks to make these hidden powers and influence visible and thus to empower students as organizational members.

## *Sports Illustrated*: Muting the Gender Contender Oral Presentation

Deborah Ramsay (Susan Hafen)  
Communication

*Sports Illustrated (SI)* is America's premier sports magazine. *Sports Illustrated's* mission statement promotes *SI* as "fuel[ing] the reader's passion by allowing him or her to experience the richness, complexity and emotion of sports on their own terms" (*Sports Illustrated Sales & Marketing Information*, 2006). Despite *SI's* claim of allowing women to experience sports on their own terms, female teams and women athletes have yet to receive the same type of coverage in *SI* as male athletes. Cheris Kramarae's (1981) Muted Group Theory explains this difference in media portrayals based on the division of labor of male dominance in the public sphere in the American society, including sports. Past studies (Reid and Soley 1979; Bishop 2003) have shown that *SI* covers fewer women's athletics than men's athletics. My study showed that since 2003, *SI's* coverage has decreased even further. A second finding is that portrayals of women athletes are sexualized and their athletic skills are trivialized. *Sports Illustrated* both reflects and constructs male dominance in sports. Muted Group Theory serves to challenge this silencing of women and to give voice to women's experiences, in this case in the world of sports.

## **Genderlect in Coach-to-Athlete Communication Oral Presentation**

Hyrum Rappleye (Susan Hafen)  
Communications

Athletic coaches, whether male or female, may have their own coaching style, but they often need to change the way they speak to male versus female athletes. Tannen's (1990) Genderlect theory addresses gender communication differences, which can be applied to coach to athlete communication. In this paper I apply Tannen's 5 tenets to the experiences of eleven athletes, both men and women, as they describe how gender communication differences have affected them. I also use my own experiences both as a male coach and athlete working with gender differences. This paper presents common differences that have been explored elsewhere in gender communication (Blair, 2000; Burke, 2005) but have not been applied specifically to the coach-athlete relationship: (1) report versus rapport talk, (2) story telling, (3) listening, (4) asking questions, and (5) conflict. The purpose of this study is aligned with Genderlect theory: "Understanding genderlects makes it possible to change - to try speaking differently - when you want to. But even if no one changes, understanding genderlect improves relationships" (Tannen, 1990, p. 297). The coach may improve their communication success with each individual athlete by understanding these communication styles.

## **Wildcat Pride: The Weber State University Logo as a Cultural Artifact Poster Display**

Melanie Ryserse (Becky Johns)  
Communication

In the field of semiotics and signs, we understand that a brand, identification marker or logo is a symbolic and temporal representation of the organization and its members. This paper looks at how the WSU logo (the Flaming W) meets or does not meet this benchmark of organizational logo.

## **Cultivation Theory Supports the Effects of Negative News on Society** **Oral Presentation**

Mandy Seeley (Becky Johns)  
Communications

*2007 NCUR Participant*

Much has been said about what issues may have spurred the nation to vote into power anti-Bush democrats. However, little has been said about the media coverage of Bush, the Iraqi War and its effects on the voting. This research paper demonstrates that the public opinion of President Bush has largely been shaped by what people see in broadcast news and that the high volume of negative news directed towards Bush and the war may have swayed Americans' opinions more than any salient issues, information or ideology.

Much psychological research demonstrates how negativity can affect people's ideas, feelings and opinions. George Gerbner's research draws a link between violent games and movies with violence. My research utilizes George Gerbner's Cultivation Theory to understand the phenomenon of televised negative news and resulting perceptions about the world in which we live. My intent in this project is to demonstrate that a disproportionately large number of negative news stories affect people's perceptions, resulting in a distorted image of the world. My hope is to educate American citizens about this phenomenon and to encourage those who produce broadcast news to rethink programming content in order to reduce the likelihood of unrealistic negative thinking.

## **Genderlect and Conflict in Negotiation: He Said, She Said** **Poster Display**

Chuck Thorne (Becky Johns)  
Communication

This paper seeks to apply Genderlect Theory (Julia Wood and Deborah Tannen) to case studies of organizational negotiation. The central research question for this study: Do men and women negotiate differently? The conclusion of this study involving a number of male and female formal organizational negotiation cases suggests that women tend to accommodate in the face of conflict for the sake of the relationship more than men do. This can put women in the working world at a disadvantage and deserves more attention and study.

## Rachmaninoff's Piano Concerto No.2 Musical Performance

Tong (Miranda) Wu (Yu-Jane Yang)  
Performing Arts

*Undergraduate Research Travel Grant Recipient*

Rachmaninoff's second piano concerto is one of the most famous piano concertos. It is in c minor. I will perform the first movement--Moderato. Before the introduction of the main theme, the concerto begins with a series of slow steeple bell-like tollings, a subtle eight bar chord progression marked poco a poco crescendo steadily rocking against a solo contrabass F. This unique introduction immediately establishes to the listener the underlying spirit of Russian Nationalism definitive of musical styles during the Late Romantic Era. The chords continue to grow with tension until eventually bursting into a torrent of rhythmic piano accompaniment to the main theme, which is primarily composed of triplets that are sometimes 9, 8, 7, or 6 eighth notes per half-note. One of the unusual features of Rachmaninoff's second piano concerto is the notable lack of focus on the soloist during the first movement. After the bell tollings, the main theme is introduced by the strings, clarinet, and sometimes bassoons and dramatic horns which continue to carry the melody until the piano breaks off into its first solo statement. The movement comes to a climax with the piano playing a dramatic theme which is contrapuntal to the main melody, which again appears in the strings. After a shorter mellow section, in which the lyrical theme is repeated, the piano makes a quick crescendo in a two-on-three rhythm into a dark ending in C Minor.

*John B. Goddard*  
*School of Business & Economics*

Originality to the mind is as necessary as food to the body.

Nnamdi Azikiwe



## **Campus Parking – What Is It Worth To You?: A Willingness-to-Pay Survey of Weber State University Poster Presentation**

Shawna Dudis (Salvador Martinez, John Mbaku)  
Economics

*Weber State University Undergraduate Research  
Scholarship*

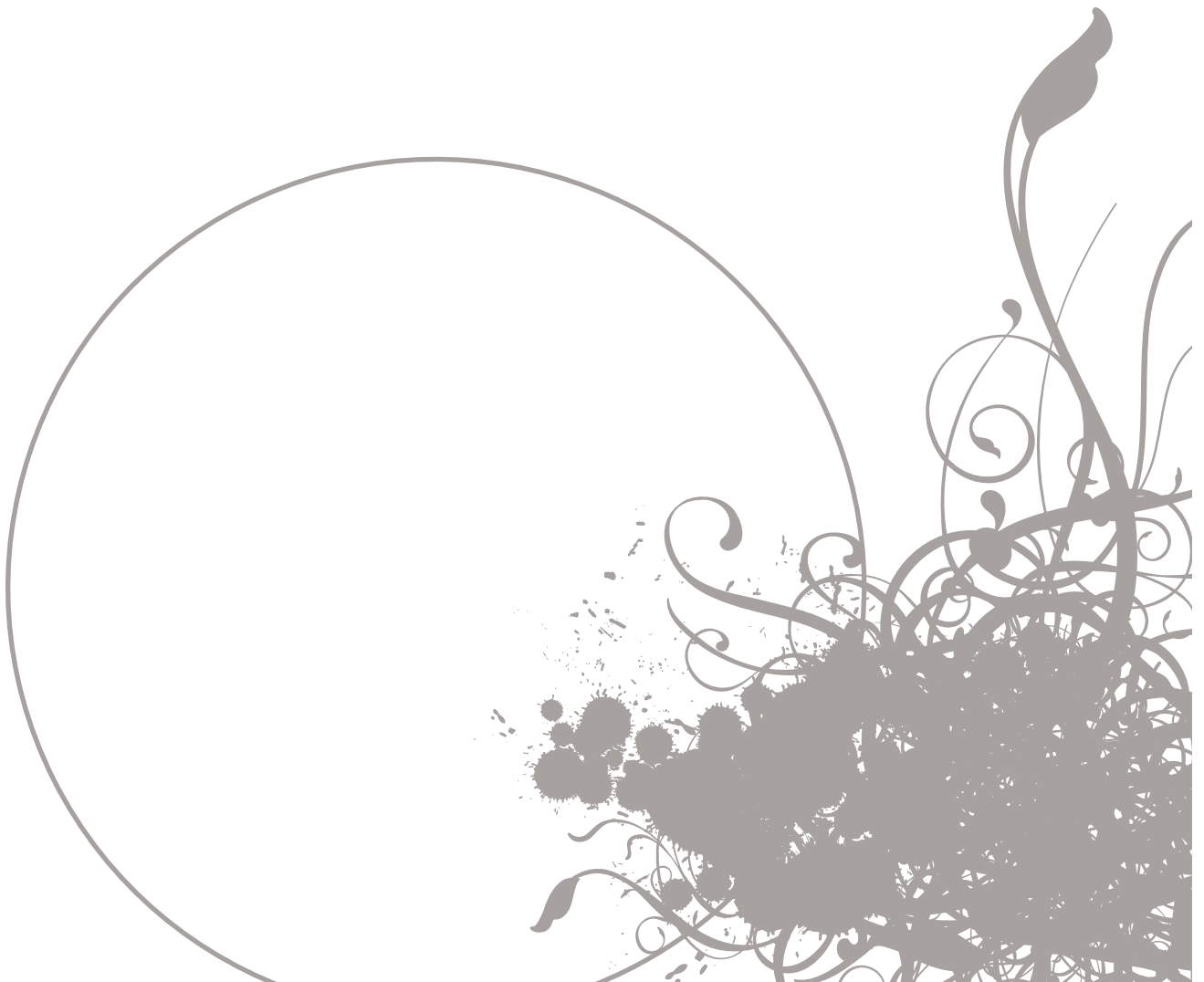
This research provides an examination of the parking congestion plaguing university campuses across the nation with specific focus given to the current state of parking at Weber State University. The purpose of the research was to determine student willingness to pay for additional, reserved parking spaces at the site of the former McKay-Dee Hospital. A split-survey was administered to students at five sites across the campus with random willingness-to-pay values. Analysis of the surveys consisted of the use of a binary-logit regression in order to determine the willingness to pay values for student purchases. Weber State students who indicated future plans to purchase parking passes returned both the highest aggregated willingness-to-pay amount and statistically significant results, particularly when a pedestrian bridge over Harrison Boulevard was included in the offer.

*Jerry and Vicki Moyes*

*College of Education*

Anyone who stops learning is old, whether at 20 or 80. Anyone who keeps learning stays young.

Henry Ford



## **The Biological Effects of Shift Work: A Correlation between General Health Markers and Cortisol Production in Law Enforcement Personnel**

### **Oral Presentation**

Samantha Hansen (Rodney Hansen, Joan Thompson)  
Health Promotions and Human Performance

The purpose of this project was to determine if there was a difference in the biological adaptability of night shift workers versus day shift workers, as well as if there was a difference between their relative health. Biological adaptability was measured through salivary cortisol, while the health of participants was measured with various biological markers. The average systolic blood pressure for those participants who were working the night shift at the time of this study was slightly elevated when compared to those participants working the day shift, and the same trend was found with the fasting blood glucose levels. Although there were slight differences between the two shifts in regards to those two measurements, those differences were not statistically significant. Overall, this research did not support data shown in previous research.

## **Assessment Practices of Utah Public School Physical Education Teachers**

### **Poster Display**

Kris Hatch, Tiffany Foerster (Daniel Balderson)  
Health Promotion and Human Performance

The assessment of student learning is an important topic for public school teachers. As with other content specific areas, there has been a call for physical education teachers to be held accountable for the learning that takes place in their classroom (Lund & Kirk, 2002). Research shows that the majority of physical education teachers base grades on things irrelevant to class objectives such as participation, effort, showers, and dressing down rather than performance based tests that measure skill, game-play, and content knowledge (Morrow, Jackson, Dish, & Mood, 2005). A study of physical education teachers was done to determine if current grading practices in our local Utah area are in agreement with what the research indicates. A survey was administered to 20 middle and high school physical education teachers in the local area and they were asked questions related to their grading emphasis, barriers to assessment, and the use of technology in grading. Demographic information such as gender, teaching experience, and coaching responsibilities were also collected. Results show that Utah physical education teachers follow national trends in assessment practices. Results also show that women tend to grade more on performance and that coaches tend to grade more on participation and effort.

## **Employee Wellness Programs: An Analysis of Current Research and Implications for the Future Poster Display**

Jessica Rees (Daniel Balderson)  
Health Promotion and Human Performance

Health promotion programs, also known as Wellness Programs, are becoming commonplace in American companies. A health promotion program is a program that businesses incorporate to promote and maintain their employee's health. (Thomson, 2005). Americans spend an extremely large amount of money in Health Care services (Jandeska & Zapach, 2003). Offering health promotion programs to employees can provide the company with a number of benefits. This research investigated the current state of health promotion programs in America, highlighting the benefits of these programs and the positive effect they are having. In analyzing the current research specific benefits were found, such as: decreased health care cost, increase of worker productivity, reduction in worker absenteeism, and employee loyalty (Sullivan, 2000). Further investigation showed that a strong correlation exists between companies that spend money on implementing employee wellness programs and a decrease in the cost of the companies' overall health care spending (Health Management Research Center, 2000). This poster presentation will highlight the research in this area and offer conclusions as to the importance of health promotion programs for the vitality of our American future.

## **Increase of Diabetes Mellitus (Type II) in Children: Consequences for the Physical Educator Poster Display**

Zeynep C. Treuherz (Daniel Balderson)  
Health Promotion and Human Performance

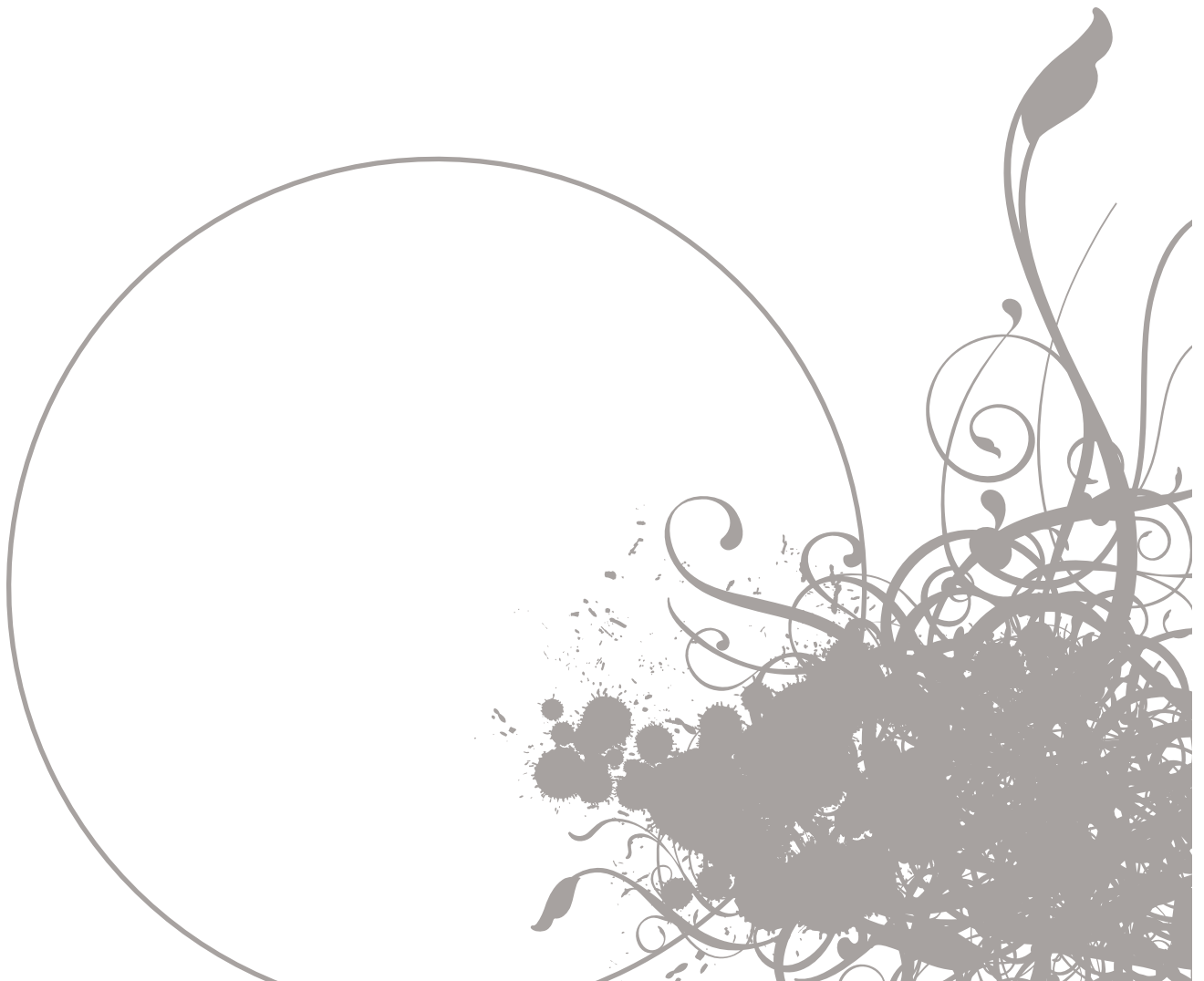
60% of our nation is either overweight or obese (Center for Disease Control and Prevention, 2006). Unhealthy weight is the leading contributor to the disease known as Diabetes Mellitus type II (DMII). Formerly classified as mature onset, DMII is now appearing with increasing frequency in children (National Institute of Health, 2005). The long term negative effects of this disease are apparent and include increasing health care expenses and a decline in quality of life. Currently 10 million U.S. children (Center for Disease Control, 2006) are affected by this disease and the number of diabetics globally is expected to grow over 200% by 2030. DMII is a metabolic disorder where the pancreas' insulin production initially is resistant and then advances to not being able to match the glucose intake needed as a fuel in the body. It is a highly preventable and reversible disease. This poster presentation will summarize the current research in this area, offer suggestions as to what physical educators need know about this problem, and also offer strategies to prevent this condition in children and youth. Physical Educators are undoubtedly going to be on the frontlines fighting this problem. Promoting a healthy lifestyle is paramount to the health and vitality of our young people.



*Dumke College of Health Professions*

Cultivation to the mind is as necessary as food to the body.

Marcus Tullius Cicero



## **Periodontal Disease and Canines Oral Presentation**

Kathryn Allen and Sheryl Panter (Kami Hanson)  
Dental Hygiene

Periodontal disease can affect people as well as animals. The results of periodontal disease can lead to many adverse effects. This disease can be prevented in both populations, with the proper education. In effect, pet owners can play a preventative role in the health of their canine with adequate knowledge and awareness of oral disease. The purpose of this study was to address canine periodontal disease as a problem. The guiding research questions were: What is the prevalence of periodontal disease in canines over 12 months of age? And, what is the level of knowledge by pet owners for oral hygiene pet care? It is expected that 50% of canines studied will suffer from generalized mild to moderate periodontal disease. The research design involves a one-time survey of a convenience sample of ten veterinary offices located in Ogden and Cache Valley, Utah. The data collected will be nominal and will be evaluated using descriptive statistics. A six-question survey was distributed by hand to each veterinarian office; completion of the survey indicated implied consent. The data has been collected for this research and is now being analyzed for presentation by March 26, 2007.

## **The Impact of Podcasting on Learning Oral Presentation**

Sydni Belliston and Michaelene Kippen (Kami Hanson)  
Dental Hygiene

Educational tactics have been geared around reading, writing, and in class lectures. Emerging technologies offer new ways of learning that previously has not been available. Podcasting is one of these technological advances that can be integrated into conventional styles of schooling and teaching. Students can listen and view lectures while traveling, jogging, or working out. This will enable students who view traditional learning styles as ineffective to be edified by a more satisfactory approach. The purpose of conducting this research was to demonstrate the educational benefits of podcasting in the advanced academic performance and amplified potential for student innovation as podcasting becomes more accessible. It was hypothesize that podcasting will have a positive impact on academic performance and enable students to utilize MP3's as an educational tool. This project is a work in progress as data is being collected mid-semester 2007 and will be ready to present by March 26, 2007. The research design included a control and experimental group using a convenience sample of 30 senior, undergraduate dental hygiene students.

## **The Effects of the Bordatella Pertussis Toxin on Glycosylated Hemoglobin Levels Oral Presentation**

Gregory Burton, Brett Gledhill, Ray Trimble (Travis Price)  
Clinical Laboratory Sciences

*Eccles Undergraduate Research Scholarship*

Type II Diabetes is one of the most significant medical issues today. Although there are many contributing factors for its development, one that is often overlooked is a decreased sensitivity to the body's natural insulin. Recent studies have shown that a toxin produced by the bacterium *Bordatella pertussis* has a direct effect on insulin levels sensitivity, and in turn, glucose levels in animal models. Glucose and insulin levels are subject to many short term influences and do not provide a clear way to evaluate the effect of this toxin over an extended period. A test, known as glycosylated hemoglobin or hemoglobin A1C, is an effective way to monitor the effects of fluctuating glucose and insulin levels over extended periods of time. This research is designed to look at the effects of the *Bordatella pertussis* toxin on glycosylated hemoglobin levels in rats. This information will show the toxin's potential to resensitize an individual who may have become desensitized to insulin. The beta islet cells of the pancreas secrete insulin in response to glucose. We will be indirectly tracking the effects of the toxin on the beta islet cells by measuring the glycosylated hemoglobin levels in the rats blood. Our approach will be to establish a normal baseline for glycosylated hemoglobin, (Hgb A1C) performed by high pressure liquid chromatography, in both a control and test group. We will inject the test group, subcutaneously in the abdominal region, with the pertussis toxin once a week and obtain a post sensitization sample every four weeks to assess any differences in Hgb A1C and ascertain any existing relationship between these levels and the toxin (2). The control group will be injected with an equivalent amount of saline solution, subcutaneously in the abdominal region, to simulate the stress caused by toxin injections on the test group. We expect to see a lower glycosylated hemoglobin level over the course of the research due to the toxin.

## **Comparison of Four Conventional Pre-Transfusion Methods to Detect Unexpected Antibodies Oral Presentation**

Chéré Clawson, Julie Kakazu, R.J. Sparkman, Elisa Stephenson (William Zundel)  
Clinical Laboratory Science

Transfusion services have a variety of tests to allow them to detect clinically significant, unexpected antibodies in patient's serum which have the potential for causing hemolytic transfusion reactions (HTR). An HTR can occur during or following a red blood cell transfusion resulting in compromised patient health or death. Historically, this testing has been done using test tube methods in which enhancement media such as Polyethylene Glycol or Low Ionic Strength Solution is added to patient serum to detect unexpected antibodies. Automated methods for testing these antibodies have evolved recently. Although newer methods are simpler and faster it is critical that these methods maintain, if not improve, the sensitivity and specificity of more traditional tube methods. It has been suggested that the newer methods are not as specific for detecting certain antibodies. In this research project patient samples with anti-K and E which are common clinically significant, unexpected antibodies, will be used to compare two semi-automated systems: the gel columns, and the solid phase platform, and two manual test tube methods. It is expected that the newer methods will be less specific. This information can then be used to encourage transfusion services to use tests with the greatest sensitivity and specificity.

## **Epidemiology of Community and Hospital-associated Methicillin-Resistant Staphylococcus aureus in Salt Lake City, Utah**

### **Oral Presentation**

Kevin Crandall, Vida Schumacher, Kathy Cox  
(Travis Price)  
Clinical Laboratory Science

Staphylococcus aureus is one of the most frequently isolated species of bacteria in the clinical laboratory and is implicated in a wide variety of infections ranging from skin infections to pneumonia. Since the advent of antibiotics, some strains of *S. aureus* have developed resistance to penicillin and more recently methicillin. These resistant strains are known as Methicillin-resistant *S. aureus* (MRSA). The mechanism of methicillin resistance is mediated by a chromosomally incorporated resistance gene referred to as *mec A*. The *mec A* gene is sub classified into Staphylococcal Cassette Chromosome *mec* (SCC*mec*) types I, II, III, IV, and V. Another unique identifier of MRSA is the Panton-Valentine Leukocidin gene (PVL) which has recently been linked to Community Acquired Methicillin-resistant *S. aureus* (CA-MRSA). SCC *mec* types II and IV as well as PVL gene have been identified in hospital acquired MRSA infections. Our goal in this research was to identify the increasing prevalence of community acquired strains of MRSA in hospitalized patients. We identified the presence of SCC*mec* types II, IV, and the PVL gene in MRSA strains collected from 2002 and 2005 in the Salt Lake City region. The laboratory analysis involved Polymerase Chain Reaction (PCR) amplification of the SCC*mec* cassette types using current hospital procedures. We worked with 104 bacterial specimens collected from inpatient sources with known MRSA infections. Preliminary results showed an increase prevalence of community-associated type IV SCC*mec* gene in hospital setting.

## **Comparison of FDA Approved Antibiotics to Non-Prescription Mexican Antibiotics Oral Presentation**

Leah M. Daily, Trina A. Riley, Tyler D. Roe (Scott Wright)  
Clinical Laboratory Sciences

*Weber State University Undergraduate Research Scholarship*  
*2007 NCUR Participant*

It has become common practice for Americans to cross the border into Mexico to obtain prescription medications without a prescription. This practice is potentially dangerous because the drugs being purchased across the border are not regulated. There is no guarantee that what the consumer is purchasing is what they think it is. The aim of this research is to determine the bactericidal level of Mexican antimicrobials as compared to their FDA regulated counterparts. Two commonly prescribed antimicrobials, amoxicillin and ciprofloxacin, will be obtained from at least ten different sources, to include farmacias in Mexico and several online Mexican pharmacies. Using the minimum bactericidal concentration (MBC) method, the potency of the Mexican antimicrobials will be compared to FDA regulated drugs from the U.S., obtained via a research prescription from Weber State University's Health Clinic. These antimicrobials will be tested against two common pathogens, *Escherichia coli* and *Staphylococcus aureus*; organisms that are often implicated in skin and urinary tract infections. This research aims to determine if the antimicrobial effects of the drugs in vitro are essentially the same compared to U.S. drugs, or are the Mexican antimicrobials more effective or less effective at inhibiting bacterial growth.

## **Fungal Effects and the Cytokines Involved with Chronic Rhinosinusitis**

### **Oral Presentation**

R. Drew Durtschi (Scott Wright)  
Clinical Laboratory Sciences

*WSUSA Undergraduate Research Fellowship*

Chronic rhinosinusitis (CRS) affects up to 16% of the population in the United States and has a significant economic impact in both direct and indirect costs. CRS is defined as a chronic inflammatory disease of the nasal and associated mucosa that persists for greater than three months. It results in symptoms that include nasal congestion, difficulty breathing, and in some patients, a decreased sense of smell. Despite the prevalence of CRS, the etiology of this condition remains unknown. Various theories include biofilms, superantigens, bone inflammation, and the theory of this study, fungal stimulation. Any of these factors, either singly or in combination, may be the disease trigger.

The CRS “fungal theory” states that the chronic inflammation is increased by peripheral blood mononuclear cells (PBMC) which are attracted to the fungus. PBMC from CRS patients, but not controls, have been found to react to fungal antigens in vitro. The sample group of these investigations involved patients that largely originated in the Midwest. However, CRS is also prevalent in arid climates. This study seeks to determine whether PBMC stimulated with fungal antigens contribute to the pathogenesis in CRS from patients in humid and dry climates.

## **The Effect and Use of Pilot Tubes on Various Coagulation Studies**

### **Oral Presentation**

Sarah Hansen and Marie Ballif (Yasmen Simonian)  
Clinical Laboratory Sciences

The Clinical and Laboratory Standards Institute (CLSI) guidelines indicate that there is a need to draw a pilot or a discard tube before drawing blood samples for special coagulation testing. Routine coagulation tests such as Prothrombin Time (PT) and Activated Partial Thromboplastin Time (aPTT) do not require pilot tubes. When obtaining blood samples for specialized coagulation tests, a pilot tube must be drawn. The objective of this study is to determine if there is a need for a pilot tube for the following special coagulation procedures. Factor Assays for common factors (VIII, IX and X), Antithrombin, Fibrinogen, D-Dimer, and Proteins C and S. This study suggests that special coagulation testing can be performed on the first tube drawn, thus eliminating the need for pilot tubes. For this study, an experienced phlebotomist obtained two tubes containing sodium citrated blood samples on thirty healthy volunteers. Each tube was tested for Fibrinogen, D-Dimer, Protein C and S, Antithrombin and Factor assays VIII, IX, and X. Depending on the assay, a 5-10% difference in results between the two tubes would be considered significant.

## **Computer-Mediated Communications among Dental Hygiene Students Oral Presentation**

Jalene Hale and Jenny Jones (Kami Hanson)  
Dental Hygiene

Society has recently been bombarded with new vocabulary such as blogs, vlogs, podcasts and wikis. These new words are actually descriptors of technologies that enable communication with the use of computers. As a composite group these technologies are referred to as Computer-Mediated Communication (CMC). CMC offers innovative ways to teach and learn. The purpose of this study was to identify if Computer-Mediated Communication (CMC) impacts students' learning. The guiding research questions were: 1) Does video podcasting increase student understanding of learning concepts? 2) Does a video blog generate an increased peer-to-peer interaction & learning over a blog? 3) Does the Dental Hygiene Student website portal increase peer-to-peer interaction? It was hypothesized that CMC will positively impact students' learning. This research is a work in progress, data is being collecting and analyzed and will be ready to present by March 26, 2007. The research design was a non-experimental one-group analysis on the usage of modes of Computer-Mediated Communication tools. Nominal and ordinal data is being collected via research participant survey and qualitative analysis. Inferential and descriptive statistics will be used as well as a qualitative narrative. Four types of CMC will be evaluated: podcast, blogs, vlogs and website/student portal site.

## **Effects of Serum Index Values on Immunologically Based Testing Poster Display**

Aaron Harper and Van Aston (Bill Zundel)  
Clinical Laboratory Sciences

The main objective of this research is to establish whether or not the serum index values of lipemia and hemolysis directly affect certain immunological assay types. The assays chosen are Thyroid Stimulating Hormone, Total T3, Total T4, SHBG, Testosterone and Immunoglobulin E. These assays are either competitive or sandwich style assays, all of which were performed on the Roche E170 analyzer. Additional research includes analysis of Osteocalcin degradation in hemolyzed samples over a period of several hours. Insulin will be run in parallel because it has been proven that hemolysis degrades this analyte in a predictable pattern.

## **Utilizing Mixed-Reality Technology to Teach Techniques for Local Anesthesia Oral Presentation**

Michelle Houghton, Tatiana Riley and Bonnie Stevens  
(Kami Hanson)  
Dental Hygiene

Learning the techniques for administering local anesthesia for dental procedures is a complex conceptual process that requires the consideration of anatomical, spatial and dimensional acuity. The traditional method of instruction and assessment is with the use of human subjects for repetitive practice. With the advancements in immersive technologies and specifically mixed-reality, an alternative to the use of human subjects as practice is possible and theoretically holds many advantages over traditional forms of instruction. The purpose of this research, implemented Spring 2007, was to investigate the potential of learning techniques for administering local anesthesia utilizing mixed-reality technology. The goal was that learners would experience the iterative cycle of multiple sensory explorations of 3D objects rendered in virtual space. This session will cover research methods and specific findings as well as present the technology utilized for this project.

## **Effects of Stress on Platelet Function Oral Presentation**

Majak Jonn, Nathan Fenn and Alisha Weiss  
(Kara Hansen-Suchy)  
Clinical Laboratory Sciences

*2007 NCUR Participant*

In this study we will compare the effect of temporary stress stimulation on the effect of platelet function. Subjects will be fifty volunteers, composed of college aged students (18-30 years), presumably less affected by atherosclerosis, heart disease, and other disorders that predispose platelet interaction. Because certain drugs affect platelet function, volunteers must be pre-screened for use and removed from the study, if on those medications. To begin, subjects will have a blood sample and vital signs taken, and complete questionnaires. These will be used as baseline samples. A modification of the Trier Social Stress Test (TSST) will then be used in order to induce stress in the subjects. The modified TSST will be fifteen minutes in length and is composed of three tests assessing mock student performance. We will again take all participants' vital signs and draw blood immediately after the TSST as well as question the perceived level of stress. Platelet function studies will be performed on a PFA-100™, located at McKay-Dee Hospital within four hours of collection. Our goal in performing this research is to prove that there will be a detectable increase in platelet activity after a stress stimulation session as compared to baseline levels.

## **Comparative Study of Antimicrobial Susceptibility of Uncomplicated Urinary Tract Infections**

### **Oral Presentation**

Michael McQuilkin, Alex, Lund and Wyatt Palmer  
(Travis Price)  
Clinical Laboratory Science

*Phyllis Crosby Gardner Undergraduate Research Scholarship*

Urinary tract infections (UTI) cause millions of clinical visits every year in the United States. The organisms causing these infections typically respond well to the wide range of antibiotics most commonly prescribed as treatment. Recently however, there has been an alarming increase in the occurrence of bacterial resistance to these aforementioned drugs. This resistance causes a number of issues for patients and health care professionals ranging from problems with antibiotic dosage to patient hospitalization. While national trends in antimicrobial susceptibility are tracked and made available to physicians, often the actual patterns of resistance vary by local. This study looks at the antimicrobial susceptibility of organisms isolated from patients with known UTI's in Northern Utah. The isolated bacteria have been subjected to the three most commonly prescribed antibiotics. The aforementioned antimicrobials were chosen specifically due to popularity of prescription and unique characteristics which make accurate medicament vital. The favored antibiotic is at the borderline resistance pattern of inadvisable use (20% as advised by the Infectious Disease Society of America). This information will and has allowed physicians to more effectively treat UTI's while controlling the growing problem of antimicrobial resistance.

## **Access to Care: We Have the Resources, Why Aren't We Filling the Need?**

### **Poster Display**

Candice Norris, Ashley Pengelly and Stephanie Stokes  
(Kami Hanson)  
Dental Hygiene

Many people living in assisted living homes, physical rehabilitation facilities, or nursing homes, referred to as "alternate care settings," lack the proper access to dental care. In these settings, the employees are expected to help residents with brushing and flossing; however, this does not always happen. The nurses are not licensed to remove calculus from teeth; there is no way to remove it without a licensed dentist or dental hygienist. The purpose of this study was to identify the level of interest among Utah's dental hygiene students in working in alternate care settings. It was hypothesized that there would be at least 50% support among dental hygiene students in Utah for practicing in alternate care settings. The guiding research questions for this study were: 1. What percent of dental hygiene students would be willing to work in the alternate care environment? 2. What are the motivating factors for work in the alternate care setting? 3. What percent of dental hygiene students would prefer to work in the alternate care setting, private practice, or both?

## **Emotional Intelligence and Success in Dental Hygiene Student Clinical Practice Poster Display**

Lindsey Parcell, Joelle Carlile and Jennifer Bowen (Kami  
Hanson)  
Dental Hygiene

*Undergraduate Research Travel Grant Recipient*

The purpose of this research was to investigate the impact of emotional intelligence (EI) on the clinical performance of dental hygiene students in patient treatment. Thirty dental hygiene students participated in this research Fall 2006. Methods for data collection included: individual EI scores, qualitative evaluations of student performance, and clinical performance scores per patient. Each student was evaluated in two different clinical settings (WSU's dental hygiene clinic and the VA hospital's dental clinic). Students served as their own control. Methods for data analysis will include repeated measures ANOVA, as students will be compared against their own performance each week in each clinical setting. An analysis of qualitative (rubric) data will be performed as well as correlational analysis of student success in patient treatment and their EI score. This project is a work in progress, data has been collected but the analysis of data has not yet been completed.



*College of Science*

The outcome of any serious research can only be to make  
two questions grow where only one grew before.

Thorstein Veblen



## **Parallel Processing to Solve Scientific Problems**

### **Oral Presentation**

Jacob Cain (John Armstrong)  
Physics

*Eccles Undergraduate Research Scholarship*

Due to the complexity of some scientific problems and the limitations in power of a single computer, parallel computers are required to solve certain problems. I will provide an overview of parallel computing applications, showcase the development of Weber's first campus-wide Mac cluster, and present results from a monte-carlo simulation of stellar orbits written in Java. This program allows graphical manipulation of multiple star systems to explore specific cases, and parameter sets can be sent to one of the campus' distributed computing clusters to search for stable orbits.

## **Diet and Foraging Behavior of Shorebirds: Developing a Water Quality Standard for the Great Salt Lake, Utah**

### **Poster Display**

Christian Edwards (John Cavitt)  
Zoology

*Undergraduate Research Travel Grant*

The Great Salt Lake, located in northern Utah, provides crucial breeding habitat for a large number of shorebird species. In fact, over 5,000,000 birds visit the Great Salt Lake annually. Large populations of brine shrimp and brine flies, plus many other invertebrates, offer ample food sources and make the lake an ideal breeding spot for many shorebirds. However, more than 100 years of mining have contaminated the Salt Lake Valley aquifer and have left the Great Salt Lake with high levels of selenium. In order to obtain information concerning the contamination levels, we have studied the diet and foraging habits of two species of shorebirds found regularly within the Great Salt Lake region. The American Avocet (*Recurvirostra americana*) and Black-necked Stilt (*Himantopus mexicanus*) overlap in breeding and foraging sites throughout much of the Great Salt Lake. We hope that by collecting and examining these birds, and their gut contents, we will be able to more fully understand the condition of the Great Salt Lake and develop an effective water quality plan for its future.

## Trapping Efficacy and the Effects of Habitat Alteration on Reptile Fauna in Sage Brush Habitat Poster Display

Spencer Rumsey (John Cavitt)  
Zoology

*Weber State University Undergraduate Research Scholarship*

Habitat alteration can significantly affect wildlife in the area. This study looks at the effects of aeration treatments on reptiles on desert land and livestock. It also compares several trapping methods for their effectiveness in a sage brush habitat. Over the trapping period, from June to August of 2005, I caught a total of 13 specimens constituting two species. The most common was the sagebrush lizard, *Sceloporus graciosus*, and the other lizard that I caught was a horned lizard, *Phrynosoma hernandesi*.

I compared three methods of reptile capture: funnel traps, pit falls, and cover boards. Pit fall traps proved to be the most effective at catching lizards with 0.69 captures per man-hour of set up, and cover boards proved to be the least effective of the three. The traps were set up on three plots untreated, treated 2005, and treated 2006. The number of captures per plot was compared using a chi square test. The results show a significant difference between the 2005 treatment and the other two plots. The 2005 treatment had significantly more lizards than the other two plots; however, due to the low number of captures the true significance is hard to determine.

## An Elevational Comparison of Morpho-Species Lichen Distribution On Gamble's Oak *Quercus gambelii* Poster Display

Leslie Patterson, Kirk Uden, and Sonya Welsh  
(Barbara Wachocki)  
Botany

Lichens are sensitive to changes in their local environment. Our study looked for a shift in lichen dominance as well as overall cover due to elevational changes on *Quercus gambelii* on the foothills behind Weber State University. Data was collected using the Daubenmire method. The results were inconclusive, showing no change in dominance and a negligible change in cover.

## Association of Brine Shrimp Eggs (*Artemia*) and Microorganisms Isolated from the Great Salt Lake

### Oral Presentation

Angela Barnes (Karen Nakaoka)  
Microbiology

*Enterococcus* species inhabit the intestinal tract of animals and can survive outside of their host, depending on the environmental conditions. They are also potentially pathogenic as well. As part of an ongoing study of the presence of *Enterococcus* species in the Great Salt Lake, their possible association with brine shrimp eggs (*Artemia*) was investigated since others have noted the association of certain pathogens with zooplankton. Samples of brine shrimp eggs and water were collected and analyzed using membrane filtration and growth on the selective and differential agar, m-*Enterococcus*. Gram reaction, colony and microscopic morphology, hydrolysis of esculin in bile esculin azide agar, as well as negative catalase tests support the finding of *Enterococcus* organisms that were most often associated with water from the Great Salt Lake but seldom physically associated with the brine shrimp eggs. Organisms other than *Enterococcus* were found in water and on the eggs which resembled *Enterococcus* in all these ways noted except for microscopic morphology. In addition, the association of the microorganisms with eggs after various treatments was studied. Precise identification of these varied species and their association with brine shrimp eggs is being attempted.

## Breeding Ecology and Nest Site Selection of Long-billed Curlew

### Poster Display

Mike Gamble (John Cavitt)  
Zoology  
Denkers Undergraduate Research Scholarship

Many shorebirds depend on the Great Salt Lake (GSL) habitat as a place to brood their young. In fact, the GSL is identified as the most important inland shorebird site in North America. The GSL also provides habitats for wildlife and livestock. Livestock can influence the type of wildlife present in a given area by removing ground cover such as grasses, forbs, and shrubs. Removal of this cover could modify nest site selection behaviors in the breeding ecology and nest-site selection of Long-billed Curlews (*Numenius americanus*). Curlews in the Great Salt Lake ecosystem were studied during spring and summer 2006. We determined that the mean frequency of mating pair on grazed land was 6.94 (sd = 1.46), and the mean vegetation height was 1.62 cm (sd = 0.15). A significant increase in vegetation density and mating pair frequency was found on grazed land, ( $t(6) = -3.496, p < 0.05$ ). The mean frequency of mating pair on undisturbed land was 6.12 (sd = 0.72), and the mean vegetation height was 3.95 dm (sd = 0.99). No significant difference was found between vegetation densities and mating pair frequency on undisturbed land, ( $t(6) = 2.390, p > 0.05$ ). Surprisingly, none of the nests that we monitored were predated (n=10).

## Numerically Maximizing the Area of Unit-diameter $2n$ -gons Poster Display

Spencer Parkin (Afshin Ghoreishi)  
Mathematics

Numerical evidence of the optimum configuration of the diameter graphs of unit diameter  $2n$ -gons are presented based upon the recent result of what the structure of the optimum diameter graph is. This evidence was generated by a new computer program written to numerically optimize the area of these  $2n$ -gons in terms of a simple parameterization of the diameter graph orientation. Based upon this evidence, conjectures are made about the geometry of this class of polygons.

## Inhibition of Common Spoilage Fungi by Lactic Acid Bacteria Poster Display

Miriam Bernardo, Karli Oberg and Kristen Froerer (Craig Oberg)  
Microbiology

Fungal spoilage of perishable foods, including dairy products, is a significant problem with few remedies since any compound utilized must be safe for human consumption. Lactic acid bacteria (LAB) can inhibit some microorganisms by producing organic acids, peroxidases, or bacteriocins. LAB strains were screened for fungal inhibition against *Penicillium*, *Aspergillus*, and *Rhizopus* using the agar flip method. A large colony from each of 25 LAB (*Lactococcus*, *Lactobacillus*, *Streptococcus*, and *Leuconostoc*) was inoculated into the center of a MRS agar plate. Following 24 h or 72 h, the agar was aseptically flipped over and the test fungus swabbed on the exposed surface. Plates were incubated at 25° C with inhibition monitored over 72 h. Nineteen of twenty-five LAB tested showed inhibition against multiple fungal strains. *Aspergillus* was the most resistant while *Penicillium* was the most susceptible. All *Leuconostoc* strains showed inhibition, perhaps because they are heterofermentative and produce a variety of organic acids. A number of *Lactobacillus* species, particularly *L. helveticus*, were inhibitory. Very few homofermentative *Lactococcus* and *Streptococcus* strains were inhibitory. LAB that inhibit spoilage fungi may have application, either incorporated in a product like cheese or sprayed on a product, to increase the shelf life of perishable foods.

## **Isolation and Characterization of Halophilic, Chitin-utilizing Bacteria from the Great Salt Lake Poster Display**

Kevin Bowcutt, Brigham Burton, and Dan Cox  
(Michele Zwolinski and Craig Oberg)  
Microbiology

*Weber State University Undergraduate Research  
Scholarship*

The Great Salt Lake's south arm contains a large biomass of brine flies and shrimp whose husks and exoskeletons are composed of chitin, a recalcitrant carbon source. Isolation procedures were used to find halophilic microorganisms capable of degrading chitin. Samples obtained from Bridger Bay off Antelope Island were inoculated into enrichment media selective for chitinolytic halobacteria. Enrichment flasks were incubated at 22°C in a shaker for three weeks. A selective chitin agar was then developed to ensure that the chitin flakes would stay near the surface of the agar by allowing a layer of minimal halophilic agar to solidify, adding chitin flakes to the agar surface, and then pouring a thin layer of agar on top of the chitin. Sixteen different isolates capable of growing on chitin were obtained from the enrichment cultures. Most isolates were obtained from exoskeleton debris with the majority Gram-negative rods or cocci. Nearly half displayed some pigmentation. Isolates are being typed by using 16S rRNA and a chitinase assay is currently under development to quantify this activity among the isolates. The chitinase activity of these halophilic microorganisms could be utilized in insecticide and biodegradation applications.

## **Controlling Magnetic Field Intrusion in Rubidium Trapping Poster Display**

Pete Buzianis (John Sohl)  
Physics

*Phyllis Crosby Gardner Undergraduate Research  
Scholarship*

Magnetic shielding can be implemented to block external magnetic fields from disturbing electronic components inside the shielded area, but what about protecting external components by shielding the source of the magnetic fields? The shielding material produces this effect due to its high permeability. When properly annealed, the atomic structure of the material is in alignment throughout the structure. When the shielding is subjected to a magnetic field, the atomic alignment creates a canceling field. From CO-NETIC magnetic shielding material, we have constructed an ion pump magnet housing to reduce fields in our atom trap. Protecting the trapping cell from the magnetic fields created by the ion pump magnet is vital to the success of the experiment. The fields from the magnet are currently shifting the trapping zone out of the available range. With this housing, we hope to gain better alignment between our trapping beam and the quadrupole magnetic field of the Anti-Helmholtz coils. Accomplishing this should result in a region for atom trapping to occur.

## **Embedded PIC Microcontroller Programming for Large-scale Electronic Circuit Evaluation Poster Display**

Trealyn Christensen (John Sohl)  
Physics

*Denkers Undergraduate Research Scholarship*

One problem with testing 10,000 to 100,000 circuit boards is that for such a large-scale evaluation the board under test is a moving target—it may be redesigned during production, the test parameters may change, or the test site may be remote. This forces the evaluation process to change every time something with the electronic circuit is altered. Thus when engineering a quality assurance board there are three solutions to this issue: (1) Build a custom printed circuit board with every change in the electronic circuit. (2) Use a computer program and data acquisition card to read the information from the electronic circuit. (3) Implement an appropriately programmed embedded PIC microcontroller. I will compare these three methods and discuss why I choose an embedded PIC microcontroller for an actual large-scale electronic circuit evaluation project.

## **Petrology of the Cretaceous Straight Cliffs-Wahweap Formations Transition, Southern Utah Poster Display**

Richard Emerson (Jeff Eaton)  
Geoscience

Five stratigraphic sections were measured and 68 petrographic samples were collected in the upper part of the Straight Cliffs Formation (John Henry and Drip Tank members) and the lower part of the overlying Wahweap Formation on the margins of the Paunsaugunt Plateau including Bryce Canyon National Park (BCNP). These sections and petrographic samples were then compared to samples taken from two measured sections near the type section of the Drip Tank Member of the Straight Cliffs Formation on the Kaiparowits Plateau. Petrographic results show that the lithics in the Drip Tank Member are dominated by chert (>95%) and that the Wahweap lithics are dominated by carbonates (>85%). The chert to carbonate ratio observed within the top 5 meters of the Drip Tank varies widely, consistent with previous work indicating a change in provenance from the Mongollon Highlands to the Sevier orogenic belt marked by the mixing of sediment types. These observations were then applied to a section located approximately 15 km west of BCNP in Hillsdale Canyon along the western margin of the Paunsaugunt Plateau. This section consists of a series of conglomerates rather than the single cliff forming conglomerate that marks the top of the Drip Tank Member elsewhere and as such, the boundary between the Straight Cliffs and Wahweap formations in this area has been problematic. This study suggests that petrography can be used to distinguish the Wahweap conglomerates from and Straight Cliffs conglomerates based on the lithic content. The Drip Tank Member of the Straight Cliffs Formation in Hillsdale Canyon can be tentatively assigned a thickness of 74 m, consistent with the 40-132 m thicknesses seen on the eastern margins of the plateau.

## **The Ability of *Enterococcus* Species to Survive in the Great Salt Lake Poster Display**

David Freestone, Ben Willis, Ben Baird and John Giffins  
(Karen Nakaoka)  
Microbiology

Previous studies noted that *Enterococcus* species were present in the Great Salt Lake (GSL). While members of this genus are normal flora of animal intestines they can cause human disease. Because of this and their ability to survive adverse conditions, such as high salt content, we studied factors that might influence the survival of *Enterococcus* in the GSL throughout a year. The numbers of *Enterococcus* were determined by filtration of water samples, taken six inches below the surface of water at a marina on the GSL. The filters were placed onto m-*Enterococcus* agar, incubated and examined for the presence of red colonies. Evidence that isolates were *Enterococcus* were growth and hydrolysis of esculin on bile esculin agar, appropriate gram stain and catalase reactions. Comparison of the number of *Enterococcus* with total dissolved solids, pH, conductivity, temperature of the water and air are still in progress. In vitro experiments indicated that a GSL *Enterococcus* isolate and a known *Enterococcus faecalis* strain survived better at 4° C than at 25° C.

## **The Effects of Cheatgrass (*Bromus Tectorum*) on Deer Mouse (*Peromyscus Maniculatus*) Relative Abundance on Antelope Island State Park, Utah Poster Display**

Lucas K. Hall (Samuel I. Zeveloff)  
Zoology

*Phyllis Crosby Gardner Undergraduate Research  
Scholarship*

Non-indigenous invasive species can have detrimental effects on native ecosystems. Cheatgrass (*Bromus tectorum*), an introduced plant species, has successfully invaded much of the Intermountain West and has been implicated in native biodiversity loss. This study addressed the potential effects that cheatgrass may impose on local deer mouse (*Peromyscus maniculatus*) populations on Antelope Island State Park, Davis County, Utah. Seven study sites were established in different cheatgrass densities and deer mice were trapped over two four-night surveys using Sherman live traps. Site specific relative abundances were statistically compared using linear regression to verify if there was a relationship between cheatgrass densities and relative abundances. A significant negative correlation was found between cheatgrass and relative abundances, suggesting that it adversely affects deer mice on Antelope Island State Park.

## Detecting Abandoned Mines and Caves through Geospatial Analysis Poster Display

Justin Hillier (Michael Hernandez)  
Geosciences

*Denkers Undergraduate Research Scholarship*

There are an estimated 20,000 abandoned mine shafts throughout the state of Utah, many of which are hazardous and forgotten. The need to know the exact location of these mines is crucial in preventing accidents and responding to the occasional emergency involving curious explorers. Geospatial technology provides robust methods that could be applied to the location and mapping of abandoned mine shafts and cave openings. In the two study areas of the Ogden Bench and Farmington Canyon, previously known mine-openings were visited, studied, and marked with GPS to use as training sites in the search for unknown openings and surface disturbances unique to mines. By using imagery from Landsat, Aster, NAIP, Quickbird and Lidar data, a set of criteria was developed to recognize high probability areas where mine and cave openings are likely to be found. Testing the criteria in image analysis and GIS software will show the degree and accuracy to which the search for mine-openings can be carried out effectively with a geospatial approach. The results are expected to show that higher resolution imagery can effectively locate mines along the Wasatch front despite the challenges of surrounding vegetation and typically horizontal openings into the side of mountains.

## Selenium Toxicity Affects on Brine Shrimp *Artemia* Oral Presentation

Christian L. Larsen (Nicole Okazaki)  
Zoology

*Eccles Undergraduate Research Scholarship*

The Great Salt Lake is a lentic body of water putting it at risk for toxicity from many heavy metals, which it receives from fresh water rivers and industrial smelting and refining runoff. There is currently no standard for selenium levels in the Great Salt Lake, and recent collection reports have been varied from area, depth, and time, leaving little determination as to normal levels. In an experiment to determine toxic levels of selenium, we found Survivability is altered from selenium levels as much as of 0.01 g/l ( $10^{-5}$ ) and become completely lethal by  $10^{-2}$  g/l. A significant mortality effect is seen in *Artemia* larvae exposed to selenium concentration of 0.1 g/l ( $10^{-4}$ ) or greater ( $G=7.23$ ,  $df=4$ ,  $p<0.05$ ). The increased salinity prevented any discernable patterns of selenium toxicity across saline levels. Brine shrimp would likely have to be raised in the higher saline concentrations in order to prevent death by sudden salinity changes. The results of the bioaccumulated selenium in brine shrimp showed significance for algae raised on low levels of algae ( $G=16.41$ ,  $df=9$ ,  $p<0.05$ , one-tailed).

## The Presence of *Enterococcus* in the Northern Arm of the Great Salt Lake Poster Display

Devin Lindstrom (Karen Nakaoka, Michele Zwolinski)  
Microbiology

Since the bacterial genus *Enterococcus* normally inhabits animal intestinal tracts, its presence indicates fecal contamination, making their presence in our waterways a concern. Even more problematic is the fact that under certain conditions they can cause human disease. Because *Enterococcus* is hardy under adverse environmental conditions, including high salt concentrations, many have studied their persistence in marine environments. However, there are few studies about their presence in salt lakes. This study was undertaken to determine the presence of *Enterococcus* in the higher salinity water of the northern arm of the Great Salt Lake. Bacterial samples were acquired by filtration and selective growth on m-*Enterococcus* agar. Gram stains, microscopic and colony morphology, negative catalase tests, as well as growth and hydrolysis of esculin in bile esculin azide agar, support the finding of *Enterococcus* in water of up to 31% total dissolved solids. Bead beater DNA extractions of the potential *Enterococcus* samples were performed for sequencing and comparative identification.

## Detection of Tertiary Companions to Eclipsing Binary Stars Oral Presentation

Michael Malmrose (Stacy Palen)  
Physics

*Denkers Undergraduate Research Scholarship*

We have developed a new method for searching for tertiary companions to eclipsing binary stars found in the MaCHO database. We report the first substantive detections of companions in this survey. These companions are most likely stellar in nature, yet prove the concept of using this method to search for planets in other galaxies.

## **Laser Detection of Rubidium Hyperfine Atomic Transitions Poster Display**

Giles Manning (John Sohl)  
Physics

Optical spectroscopy has been used for many years to study the energy transitions of materials and in some cases determine the elemental make-up of a sample material. One of the limiting features of this type of spectroscopy is an effect known as Doppler Broadening, which causes the radiation emission peak detected from the sample to be wider than expected. A technique called Doppler-free saturation absorption reveals hyperfine structure within the Doppler broadened emission peak that gives more insight into atomic energy transitions. Using this technique, it would be possible to identify specific atoms in a sample material. The problem is accurate identification of the spectral lines. To resolve this problem we have added a calibration system that will allow us to accurately measure line spacing and thus identify the associated atomic transition.

## **A Survey of Craters in Martian High Latitudes Poster Display**

Stanton Nielson (John Armstrong)  
Physics

*Weber State University Undergraduate Research  
Scholarship*

Initial research and data acquisition provided resources from the United States Geological Survey's data set of Mars laser altimetry and thermal emission spectroscopy imagery, derived from NASA MOLA and TES satellite data. MOLA data provided baseline data from which elevation data derived from 60 degrees to 90 degrees north latitude.

Spatial analysis mapped contour elevations at 50 meter intervals for further visual analysis. Preliminary survey of northern latitudes produced fifteen crater samples in excess of 10 kilometer rim diameters and craters exhibiting asymmetrical morphologies. Approximated crater centers derived from crater rim measurement extrapolation. From this crater sample, seven craters exhibited depositional morphologies correlating to erosive processes, identified with interior depositional peaks. Coupling point data approximating crater centers and depositional peaks, latitude and longitude measurements derived azimuth values reflecting depositional vectors. Aside from two aberrations, six craters exhibited depositional trends of east, southeast, and southwest depositional vectors, correlating to seasonal polar ice advance and to a lesser extent, net westerly winds. My most recent observations indicated a high visual probability of polar ice advances as principal causes of crater erosion.

## Genetic Variation in Natural Populations of the Great Salt Lake Brine Fly, *E. cinerea* Poster Display

Brian Oney (Jonathan Clark)  
Zoology

*Eccles Undergraduate Research Scholarship*

The Great Salt Lake (GSL) Ecosystem represents one of the largest bird refuges in North America and includes the largest lake west of the Mississippi river, with a total surface area of 4,400 square kilometers. Several species of brine flies (Family Ephydriidae) are an important component of this harsh and beautiful lake. It is estimated that the brine flies annually remove 90 million kg of organic matter from the benthos of the GSL. In addition, they are a principle food source for millions of birds associated with this ecosystem. This study utilized DNA amplification and sequencing techniques to examine genetic variability within the internal transcribed spacer-1 (ITS-1) region of the brine fly, *Ephydra cinerea*. Because it is a non-coding DNA sequence, the ITS-1 region is highly variable and provides a useful measure for intra-species genetic comparisons. The tested hypothesis is that the extent of ITS-1 sequence variation among flies isolated from geographically separated populations, exceeds that of flies from the same population. DNA was isolated from flies collected from four regions of the GSL, and the ITS-1 regions were amplified and sequenced. From sequence comparisons, the extent of genetic similarity among individuals was examined by comparing the percent nucleotide similarity.

## Survey of the Hypersaline Fungi of the Great Salt Lake Oral Presentation

Leslie Patterson (Ron Deckert)  
Botany

*Weber State Undergraduate Research Scholarship*

Fungi are important in the breakdown and recycling of nutrients and thus comprise a critical part of a system's ecology. The Great Salt Lake (GSL) is a challenging environment for many organisms, including fungi and bacteria. I conducted a survey of the decomposing fungi within the GSL and three of its freshwater tributaries. Samples were collected using separate decomposition bags containing leaves, hardwood, and softwood pieces that were submerged at fresh and salt water sites for one month. Naturally deposited, submerged twigs were also collected from the northern part of the GSL and analyzed for fungal growth. The samples were plated on potato dextrose agar of varying salinities. Freshwater fungal bags showed a greater colonization rate than the saline bags which showed little or no fungal growth. Hypersaline fungi samples were obtained from twigs found in the northern Great Salt Lake. Hypersaline samples were plated on saline concentrations from 1% to 30%. Fungi were isolated on agar salinities up to 15%, with the greatest number of isolates at 3-5%. A total of 236 freshwater and 187 saltwater isolates were obtained for the second phase of the project.

## Phosphate use of Halophilic Microorganisms Poster Display

Chase Sessions and Jennika Scadden  
(Michelle Zwolinski, Craig Oberg)  
Microbiology

Phosphorus (P) is an important nutrient for microorganisms. Most organisms require phosphorous in the inorganic form, phosphate ( $PO_4^{3-}$ ). The Great Salt Lake (GSL) has high levels of  $PO_4^{3-}$ , but its availability to the microorganisms is limited due to precipitation with calcium and magnesium. We collected water and sediment samples at the South end (approximately 8% saline) and the North end (approximately 22% saline) of the lake and inoculated media to isolate organisms. Isolates were characterized by their 16S ribosomal RNA gene sequence, their Gram stain, and their ability to grow on organic (o-phosphorlethanolamine, 1-aminoethylphosphonic acid, or o-phospho-DL-serine) or inorganic ( $KH_2PO_4$ , or  $H_3PO_4$ ) phosphate sources. Most of the isolates from the North arm were closely related to the halophilic genera *Salicola*, *Halomonas*, or *Marinobacter*. Isolates from the South arm were related to the marine organism *Salinivibrio costicola*. We were not able to sequence some organisms using Bacterial primers, these organisms may belong to the domain Archaea. The morphology from the Gram stained organisms were diverse and included interesting structures including endospores. Some colonies consisted of more than one type of organism. Alternative pathways will be explored to explain how these microorganisms use different phosphate sources from the GSL.

## Hold 'Em or Fold 'Em? Hindlimb Flight Posture in Birds Oral Session

Lani Shepard (Ron A. Meyers)  
Zoology

*Phyllis Crosby Gardner Undergraduate Research Scholarship*  
*Undergraduate Research Travel Grant Recipient*

While flying, birds hold their legs in one of two different ways: either in an extended position with the legs trailing behind the body or in a flexed position with the legs tucked under the body. To address why a particular posture is used we first studied which posture is adopted by various flying species. We performed an extensive search of literature and image libraries, and also photographed captive species in flight for analysis of limb posture. Groups such as shorebirds, raptors, parrots, and pigeons use the extended posture, whereas woodpeckers and songbirds use the flexed posture. The data suggest that limb posture is taxonomically distinct and that variation within a taxonomic group may not occur. We offer four hypotheses to explain variation in limb posture. First, hindlimb posture may relate to limb size. Second, it may be behaviorally based. Third, it may be aerodynamically significant. Lastly, posture may be an historical constraint and not adaptive. No single hypothesis may explain limb posture for all bird groups, nor are these hypotheses mutually exclusive. Although there is little documentation on the subject, the hindlimb posture of birds is likely more important than the amount of prior study would indicate.

## **Observations with a New Radio Telescope at Weber State University Poster Display**

Michael Simpson (Stacy Palen)  
Physics

*Phyllis Crosby Gardner Undergraduate Research  
Scholarship*

We have constructed a radio telescope at Weber State University that observes neutral hydrogen in the Universe. We have observed the Milky Way and the Sun with this new instrument. We have determined that the disk of the Milky Way is composed of at least four components, of which two can be used to determine the rotation rate of the Galaxy.

## **Modifying a Wavemeter for Rapid Measurement of Laser Wavelength Poster Display**

Kevin Smith (John Sohl)  
Physics

*Weber State University Undergraduate Research  
Scholarship*

Many experiments in atomic physics require tunable lasers and with the introduction of inexpensive diode lasers, whether through purchase or building your own in the lab, many of these experiments can now be done in undergraduate laboratories. In such experiments it is required to tune the diode laser to the wavelength of interest. This could be achieved using various devices that are out of the price range of undergraduate research grants however, the parts to build one are not. The wavemeter is a high precision instrument that accurately measures the unknown wavelength of a laser to six significant figures. My research has been to modify a published design and build an affordable wavemeter that will give us the resolution that we need to characterize the diode laser used in our atomic physics lab, and to be able to make the measurement in less than 5 seconds.

## Unusual Brood Parasitism Record at Bear River Migratory Bird Refuge, Utah Poster Display

Kyle Stone (John Cavitt)  
Zoology

Brood parasitism is a behavior in which a female lays an egg or eggs in the nest of another female. All subsequent parental care (e.g. incubation, brooding, feeding) is then left to the new host parents. Here we report an unusual case of brood parasitism by a Redhead (*Aythya americana*) on an American Avocet (*Recurvirostra americana*) at the Bear River Migratory Bird Refuge (BRMBR) near Brigham City, Utah. These observations were made as part of a long-term study on the productivity of waterbirds breeding within the Great Salt Lake Ecosystem. A brief review of the literature suggests that this may be the first recorded case of a Redhead parasitizing an American Avocet nest.

## Structure and Function of Syrinxal Muscles in European Starlings Oral Presentation

Amiko Uchida, Karalee Lemmon, Josh McFarland, Brent Cooper and Franz Goller (Ron Meyers)  
Zoology

*Denkers Undergraduate Research Scholarship  
Undergraduate Research Travel Grant Recipient*

The avian vocal organ, the syrinx, houses 4 pairs of intrinsic muscles (ventral and dorsal tracheobronchialis, vTB/dTB; ventral and dorsal syringealis, vS/dS). EMG recordings from these muscles in singing European Starlings (*Sturnus vulgaris*) showed activity bursts that correlate with amplitude modulation rates of up to 170 Hz, suggesting these muscles directly control airflow gating and acoustic parameters. Muscle histochemistry was used to characterize and quantify muscle fiber composition and diameter. A small fiber type (mean diam 14-20  $\mu\text{m}$  for the 4 muscles) comprised roughly 30% of the muscles and reacted like fast oxidative fibers with ATPase and antifast antibody reactions. A larger fiber type (mean diam 31-38  $\mu\text{m}$  for the 4 muscles) comprised about 70% of the muscles and had intermediate reactions to acidic and alkaline preincubations and lower oxidative capacity. It reacted negatively to antislowl and antifast antibodies. The unusual staining and EMG data support the view that these fibers possess superfast myosin. Similar patterns of fiber types and sizes were also found in species from three other songbird families, indicating that the presence of superfast fibers is likely a common trait of the oscine syrinx. Supported by NIH grant # DC004390 and WSU.

## **Petrology of Moroni Formation, Central Utah**

### **Poster Display**

Anthony Uriona (Jeffrey Eaton)  
Geosciences

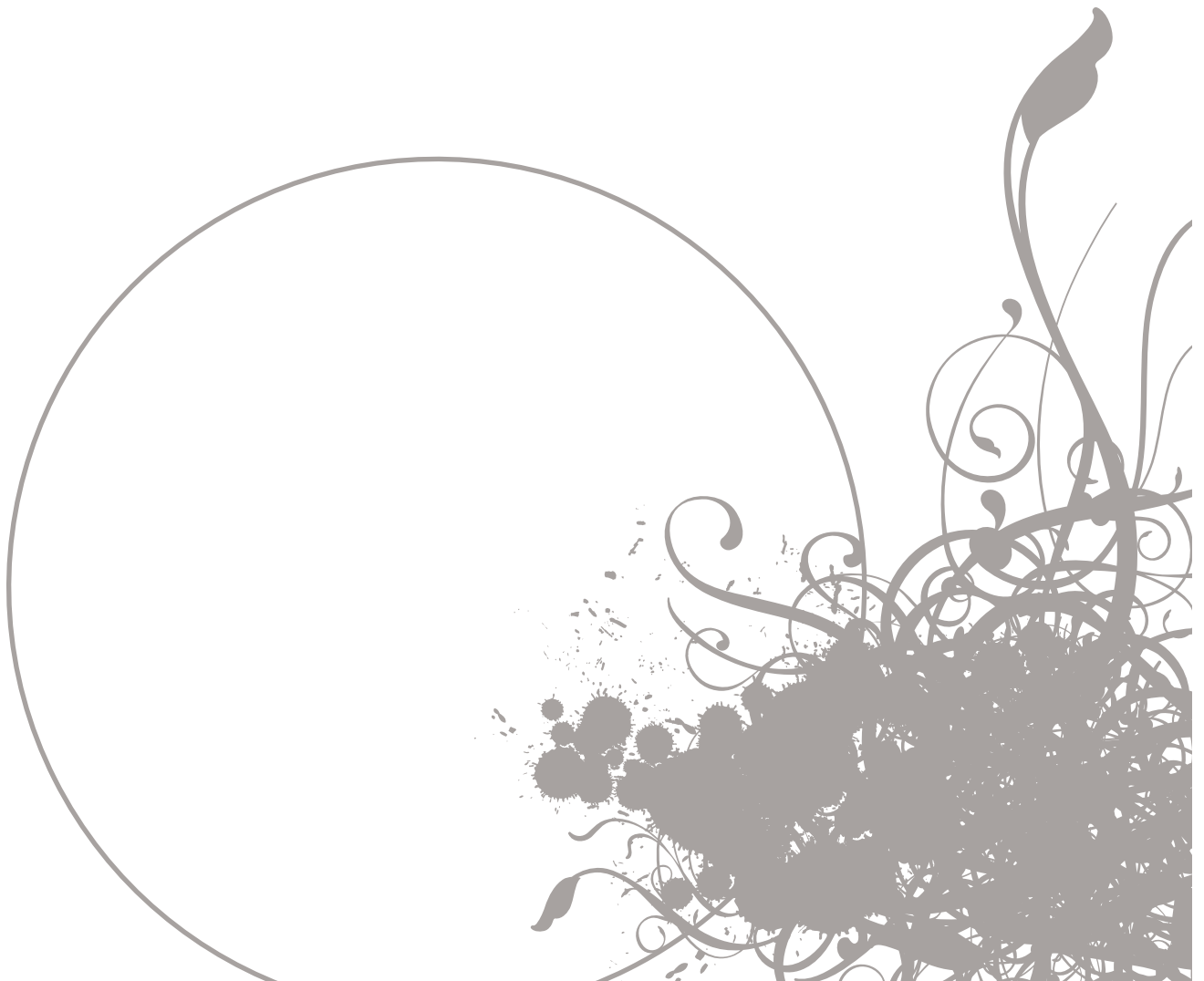
*Weber State University Undergraduate Research  
Scholarship*

The Oligocene Moroni Formation of central Utah, consists primarily of volcanoclastic sediments. A previous study of the Moroni Formation was conducted by Albrecht (2001), who studied the formation just north of Moroni. My research was carried out in Salt Creek Canyon (SCC), about 4 miles east of Nephi, which has excellent and unstudied exposures. The research involved comparing the petrology of the volcanoclastic rocks exposed within SCC with the petrology of samples taken near Albrecht's study area. The exposures in SCC consist primarily of dark to light gray-greenish pyroclastic ash-flow deposits with conglomerates of densely welded tuff and andesite clasts ranging in size from pebble to boulder. Petrographic analysis of samples taken in Albrecht's area differ greatly in appearance and composition compared to the samples taken from SCC. The samples from Albrecht's area are much cleaner sandstones that contain much more quartz and carbonate minerals. The samples from SCC contain very little quartz or carbonates and are abundant in weathered ash. This may suggest the samples taken in SCC are closer to the volcanic source. Due to the inability to access the locations described in Albrecht's thesis, it is uncertain whether the compositional differences reflect actual petrofacies or sampling limitations.

*College of Social & Behavioral Sciences*

One of the principal objects of theoretical research in any department of knowledge is to find the point of view from which the subject appears in its greatest simplicity.

J.W. Gibbs



## **The Effect of Situational Factors on Rational Judgments: A Dual Process Theory Account Poster Display**

Shane Bench, Shoko Kikugawa and Rick Walker  
(Eric Amsel)  
Psychology

To assess the Dual Process Theory claim that situational factors influence rational judgments, over 200 participants completed the ratio-bias task. In the task, participants were presented with two equal gambles (1/10 vs. 10/100) and judged (Ratio-Bias Judgment) whether to choose between them or express no preference. Participants also evaluated (Ratio-Bias Evaluation) whether selecting each individual response option on the task (preference for 1/10, 10/100, and no preference) involved a reflective, mathematically sound, and well reasoned analysis of the situation. Participants were randomly assigned to one of 4 conditions which varied two variable each with two levels. One variable was the Response Perspective in which participants were to respond on the task from their own (Self Perspective) or a logical person's (Logical Perspective) vantage. The other variable was Consensus Information which varied reports of others' performance on the task. The reports stated that either most others expressed no preference for either gamble on the task (Negative Consensus) or that most others expressed a preference for one gamble or the other (Positive Consensus). Based on previous research, it was expected that there would be a main effect of Consensus and Perspective conditions on participants' Ratio-bias judgments but not on their Ratio-bias evaluations. Specifically, it was predicted that more participants would give rational no preference judgments in the Positive Consensus and Logical Perspective conditions. Data analysis will also examine whether there are interaction effects between the variables. Such interaction effects may shed light into how multiple situational factors affect rational judgments and evaluations. The results will be interpreted in light of a growing amount of literature suggesting that antagonistic analytic and experiential cognitive processes are involved in evaluating information and making decisions.

## **Utah Sings Out: The Folk Music Revival (1950s - 1960s) Poster Display**

Jennifer Bott (Kathryn MacKay)  
History

*Weber State University Undergraduate Research  
Scholarship*

In this project I addressed two main questions. I wanted to know how the folk music revival of the 1950s and 1960s was expressed in Utah and how the musicians in Utah connected to the national movement. I researched archives and reviewed local newspaper and magazine articles in order to understand the public perception of the folk revival in Utah. I also conducted interviews with revival musicians in order to document their experiences and their sense of the era. I have concluded that the local folk music revival closely reflected that of the national movement.

## **Photographing Folklore: Ogden's Underworld**

### **Oral Presentation**

Beau James Burgess (Kathryn L. MacKay)  
History

*Eccles Undergraduate Research Scholarship*

"Two-Bit Street," Ogden, Utah is not only a collection of buildings, but a space, a view, an atmosphere, a persona--a cultural landscape. Throughout the history of Ogden, from early railroad days, through the roaring 20's of jazz and drinking, and the war years of troop trains, 25th street has been a crossroads. Nearly completely demolished, it is now being revitalized--a place both transcending time and reflecting it. Urban legends about the street continue to flourish. Stories about gambling, bootlegging, prostitution, and murder--all interconnected to rumors about underground tunnels and lingering ghosts. This project has been about researching folklore archives and newspaper records, collecting additional stories, and photographing sites. I have uncovered "lost" images, documented the "lack" of evidence, and re-photographed historic locations. In the process I have become interested in the interactions between oral, visual, and artifactual ways of knowing.

## **Worth Your Salt**

### **Poster Display**

Beau Burgess, Corrie Gomez, Elizabeth Heath, Janessa Knotts and Heidi Orchard (Kathryn L. MacKay)  
History

*Denkers Undergraduate Research Scholarship*

This poster will present the research for a new exhibit "Worth Your Salt" to be constructed at the WSU Museum of Natural Science. Our challenge is to create an informative and imaginative exhibit focused on something so common as salt and so abundant in this area. We will take a multi-faceted approach by researching the history, science, traditions and myths, as well as the recreational uses of salt from the Great Salt Lake. The exhibit will emphasize the impact of salt from the Great Salt Lake on the peoples and economies of Northern Utah.

## Sierra Leone: A Case Study of Civil War and International Jurisprudence Oral Presentation

Jestina Clayton (Nancy Haanstad)  
Political Science and Philosophy

The Special Court for Sierra Leone was created in response to one of the bloodiest civil wars in history. Many armed factions, made up of both local and foreign troops, committed heinous crimes – including rape, torture, abduction, and murder, against Sierra Leoneans.

Fuelled by greed and supported by diamonds, the civil war lasted for 11 years and left in its wake vengeful civilians whose lives had been turned upside-down by the senseless war. Several peace deals later saw the end of the war; the Disarmament, Demobilization and Reintegration (DDR) of ex-combatants; the formation of the Truth and Reconciliation Commission; and the Special Court.

Set up jointly by the Sierra Leonean government and United Nations Security Council resolution 1315, the Special Court for Sierra Leone (SCSL) is mandated to try leaders of the three major warring factions for crimes committed since November 30, 1996. These crimes violated the Geneva Conventions for the Protection of War Victims and Additional Protocol II, and the laws of Sierra Leone.

## Ogden: Junction City of the West – A Documentary Film Oral Presentation

Issac Goeckeritz (Gene Sessions)  
History

*Weber State University Undergraduate Research Scholarship*

“The railroad is going to make a great change in affairs here, and our people should moderate their expectations and prepare themselves for the alteration which appears inevitable.” — The Deseret News, May 21st 1869

Settled by Mormon pioneers, the city was nothing more than a quiet agricultural outpost for years. But, looming on the horizon, change was steaming at high speed. Two companies, the Union Pacific in the East, and the Central Pacific in the West defied the laws of economics, physics, and common sense in their rush to complete the Transcontinental Railroad. Suddenly, all the influence from America’s major metropolitan areas would be accessible in just a seven day railroad trip, and what began as a quaint farming community would soon morph into one of the West’s most cosmopolitan cities.

Upon arrival, travelers were greeted with the finest of everything during their brief layovers. While their luggage changed carriers, they could walk down the infamous 25th street, lined with shops, clubs and other varieties of businesses. But the brief entertainment the town brought to its visitors was nothing compared to its notorious hidden world. Alcohol was abundant, even through the prohibition era, illegal gambling thrived, and prostitution was not forced underground until the 1950s.

Over the years it would come to be a world in and of itself, a city transformed by the millions of passengers streaming across its rail lines and on their way to somewhere else. In a time when steam was king and the passenger rail car brought the world to its doorstep, it was said that, “You can’t go anywhere without going through Ogden.”

## **The Effects of Multiple Group Memberships on Discrimination and the Possible Role of Cultural and Contextual Norms**

### **Poster Display**

James Griffiths (Azenett Garza)  
Psychology

Research investigating whether individuals who are members of multiple minority groups perceive more discrimination than those who are members of only one minority group have generally found that being a member of two minority groups has different effects depending on the type of groups being compared (Migdal, Hestone, & Mullen, 1998). In this study, ethnicity (White American vs. Mexican American) and sexual orientation (homosexual vs. heterosexual) were manipulated. One hundred participants were told they would evaluate applications of individuals applying for a Psychology tutor position. After reviewing the candidate's application information, participants were asked to evaluate the candidate that they reviewed. Results suggest that contrary to predictions, participants would pay the most to an applicant that was Latino and Homosexual and least to one that was White and Homosexual. Participants also reported being more likely to seek help from a heterosexual than a homosexual applicant. These results suggest that context and type of membership play important roles in discrimination. In this case, having an in-group member (White) violate an important cultural norm (being Heterosexual), caused more discrimination than being a member of an ethnic minority group (being Latino) who was also violating the cultural norm regarding sexual orientation.

## **Caregivers' Behaviors and Attitudes Regarding their Children's Learning in Children's Museums**

### **Poster Display**

Monica Guzman and TJ Black (Eric Amsel)  
Psychology

Caregivers visiting a local children's museum were categorized as either Engaged or Disengaged in interactions with their child. They were also asked about the nature and extent of their museum activities with their children. Engaged caregivers spent more time in active learning activities with their child, which was associated with higher ratings of learning. The implications of the results for future research will be discussed.

## **Vietnamese American College Students in Utah: Finding Place Oral Presentation**

Elizabeth Heath (Kathryn MacKay)  
History

*Phyllis Crosby Gardner Undergraduate Research  
Scholarship*

This presentation will be a social history of Vietnamese American students in Utah. The presence of Vietnamese American student organizations suggests a determination to maintain their culture into the second and third generation of refugee-immigrants. My research is based on interviews of college students who are members of the University of Utah Vietnamese American Student Association, the Salt Lake Community College Asian Student Association, and the Asian/Pacific Island Student Association at Weber State.

## **Hispanic Experiences at Weber State University Oral Presentation**

Janessa Knotts (Kathryn MacKay)  
History

*Eccles Undergraduate Research Scholarship*

As Ogden grows in diversity so does Weber State University. In the past years more Hispanics have moved into the area and as a result an increasing number of them have registered at Weber State University. These students have learned English, made it through the public education school system, and are now seeking further education at WSU. Their increase has been recognized by campus organizations such as the Services for Multicultural Students and the WSU Hispanic Area Council. The latter has especially helped these young adults identify and shape who they are. Each student has unique experiences, one way to research and document these experiences is through oral history interviews. Answers to specific, thought provoking questions have varied with each interviewee. These interviews add to the limited scholarship of Hispanics in Utah.

## The Influence of Light Therapy on Perceived and Cognitive Fatigue During Rapidly Rotating Shiftwork Schedules Poster Display

Kristena M. Kons (Lauren Fowler)  
Psychology

*WSUSA Undergraduate Research Fellowship*  
*NSF-REU Fellowship*  
*2007 CUR Posters on the Hill Participant*  
*2007 NCUR Participant*

Occupational human errors are often the result of fatigued shift workers with desynchronized rhythms. Researchers have found that exposure to bright light resynchronizes circadian melatonin rhythms, reducing the amount of fatigue during shiftwork. This study was designed to assess the immediate effects of exposure to light therapy on reducing perceived and cognitive fatigue. Thirteen military air traffic and weapon controllers working rapidly rotating shiftwork schedules served as participants. The Stanford Sleepiness Scale (SSS) and a computerized cognitive task developed by the military (SynWin) were used to measure perceived and cognitive fatigue. Data were collected once at the beginning of the morning/day shifts and once at the end of the swing shift sequentially before and after the administration of the light treatment. The SSS and SynWin data were analyzed with a 2 x 2 (shift x light therapy) repeated measures MANOVA. Difference scores were used to condense the means of the pre-test/post-test data. The administration of light treatment resulted in an increased performance in SynWin scores for participants working the morning/day shifts, but no significant effect was found in the swing shift. Participants who had the light treatment reported having lower subjective sleepiness in the swing shift than in the morning/day shifts. The present findings demonstrate the feasibility of using an inexpensive and portable light therapy device to decrease fatigue related errors for personnel working rapidly rotating shift work schedules.

## Dr. Briant Stringham Jr.: Progressive Physician Oral Presentation

Janice LeFevre (Stan Layton)  
History

*Weber State University Undergraduate Research Scholarship*

In the late 1800s and early 1900s many United States physicians promoted social change and progressive issues, thereby improving the health of their communities. I examined the influence of Dr. Briant Stringham Jr. on Davis County, Utah during his medical practice from 1892 until 1927. I read Dr. Stringham's letters, interviewed his descendents, scoured local histories and biographies, delved into city and university archives, and read every issue of the *Davis County Clipper* that covered his lifetime. I discovered that Dr. Stringham served on the State Board of Medical Examiners, on local city health boards, and was a catalyst for the creation of the Davis County Board of Health. In these positions, he had a profound influence on the health of Utah and Davis County citizens—both in the prevention and treatment of diseases. In his leadership capacities, he helped write sanitation ordinances, administered vaccines, organized medical societies, and ensured that Utah doctors were well qualified.

## **Citizens and Believers: LDS Women in World War II**

### **Oral Presentation**

Lori Loesch (Kathryn L. MacKay)  
History

*Eccles Undergraduate Research Scholarship*

I propose to analyze the messages during World War II directed towards Utah LDS women as citizens of the United States and those directed towards them as religious adherents. Were the national messages which encouraged women to support the war effort by taking jobs in war-related industries reinforced by the LDS messages or were they muted by the latter to conform to LDS opposition to women working outside their homes? Women in Utah responded to the national call for workers in about the same percentage as women nationally.

## **“It’s a Crappy Routine”: An Evaluation of Shift Workers’ Time Management According to Marital Status and Gender**

### **Poster Display**

Lori Lundell (Autumn Behringer)  
Sociology

*NSF-REU Fellowship*  
*Undergraduate Research Travel Grant Recipient*  
*2007 NCUR Participant*

While some sociological research has explored the ways in which gender impacts the amount of time men and women devote to paid and unpaid work, a broader analysis of the relationship between gender and time has yet to be conducted. Our study investigates how gender intersects with work to produce differences in both the conceptualization of time as well as time prioritization. Due to the unique time pressures and constraints experienced by shift workers we focused our study on this previously under explored group within the population. We recruited thirty shift workers for semi-structured interviews that explored the way they thought about and used time. This study creates a framework of analysis that will be useful for future, more systematic studies, while exploring the qualitative differences in how informants conceptualize their time management while participating in shift work. Interview transcripts were coded to analyze the similarities and differences in how informants thought about their private and professional lives. Analysis reveals that gender interacts with marital status to produce significant differences in time management. In addition to these findings, the data also suggest gender differences are more prevalent for married than unmarried individuals.

## **“Maybe You Can Help Me.”: Negotiating Masculinity in Feminine Space.**

### **Oral Presentation**

Lori Lundell (Marjukka Ollilainen)  
Sociology

2007 NCUR Participant

This study explores how men negotiate their own public display of masculinity while in a space that is highly feminine. More attention has been paid to women's negotiation of their gendered behavior as they enter into the public spaces of men, than men's negotiation of their gendered behavior as they enter into the public spaces of women. This research took place in two local beauty supply stores where the researcher observed the extent to which masculine behaviors line up with gender stereotypes. The information gathered was recorded quantitatively using a research tool, as well as recorded qualitatively using more specific notes taken of observations. This study creates a framework of analysis that will be useful for future, more systematic studies, while exploring the qualitative differences in how men “do gender”, according to the theoretical perspective of West and Zimmerman(1987), in feminine space. This study will discuss to what extent these behaviors will line up with gender stereotypes. Analysis reveals many men do fit the stereotypes, and that many interesting masculine behaviors are performed by the majority of men in order to maintain masculinity while in feminine space

## **Life After OSS**

### **Oral Presentation**

Heidi Orchard (Dr. Kathryn MacKay)  
History

In my first year of college, I read a book about the OSS (Elizabeth P. McIntosh, *The Women of the OSS: Sisterhood of Spies*, 1998) and was fascinated. I have continued to read OSS scholarship and now want to research deeper into this topic. From 1942 to 1945, the United States Office of Strategic Services (OSS) had hundreds of men and women working throughout the world in a secret combat against the Axis powers. Most historians agree that the OSS made little difference in the outcome of the war. The most important OSS contributions were not espionage, or covert operations, or support to resistance movements that never seriously contested Axis control of Europe or Asia during World War II. Rather, the OSS demonstrated that a centralized intelligence agency was a vital component of American foreign policy and military affairs – a realization that resulted in the creation of the Central Intelligence Agency in September 1947.

Today, many Americans are suspicious of intelligence operations and even fear that the government is spying on American citizens themselves. The Central Intelligence Agency, the descendent of the OSS, is plagued with scandal and controversy. However, the OSS is remembered as a needed and even noble operation. I am curious about the motivations and experiences of those individuals who became OSS members and what happened to them after their OSS service. My goal is to conduct personal interviews with OSS veterans and focus on their understanding of the effects of their experiences on the rest of their lives.

## **Did You Teach Them To Say Thank You? Oral Presentation**

Ronald W. Partridge, Lori Lundell, Elly Alvarado and Kari Yurth (Brenda Kowalewski)  
Sociology

This research is part of an ongoing longitudinal study that is evaluating the effect of a youth development program called Youth Impact on a group of youth who attend the program. In this particular phase of the study, the effectiveness of a social skills curriculum called Skillstreaming is the focus. During this phase of the research this study set out to answer two questions: 1) Would the participants who went through the Skillstreaming curriculum significantly improve their social skills from time one to time two?; and 2) Would the participants who went through the curriculum have better social skills than those who were not taught the curriculum? Skillstreaming is a curriculum that has been designed to effectively teach different aspects of social interaction. In this study, the curriculum is taught in a youth development program serving a wide age range of youth who are 9 to 18 years of age. These participants were assigned to either a control group (N=35) or an experimental group (N=35). The results of this study will aid in the overall evaluation of the Youth Impact program.

## **Sex & Gender Differences in Learning Styles Oral Presentation**

Ronald Partridge, Jason Mouritsen and Carrie Moreno (Todd Baird)  
Psychology

This study looked at how sex, gender identity, and learning strategies influence academic outcome. N = 54 (27 Males & 27 Females) were randomly assigned to two groups. Two types of learning strategies were used in this project: direct & indirect learning. Direct learning is the strategy most often utilized in universities. With direct learning, a professor controls the learning process. Indirect learning is typical of an online class. In indirect learning the student is responsible for the learning process. Each group received the same material either in text form (indirect learning) or presentation form directed by a professor at Weber State University (direct learning). Each group spent 30 minutes in either the class that was direct learning or indirect learning and then each participant completed the same 15 question exam to measure which learning strategy was more effective. Each participant also completed the Bem Sex Role Inventory that measures gender identity, and we also asked each participant to indicate their sex on this survey. The data was analyzed to look for main effects and interaction effects, and it was found that the direct learning strategy was a significantly more effective way to learn.

## **Illusory Correlations and Stereotype Formation: Influences of Infrequent Behaviors on Stereotypes of Homosexual Males**

### **Poster Display**

Kristine Wilkerson (Azenett Garza)  
Psychology

*Denkers Undergraduate Research Scholarship*

Stereotypes have been suggested to serve many functions. They shape how people perceive and treat others. Research is essential to understand how to decrease their negative influence. One hypothesis to study stereotypes is illusory correlations. This states that people tend to associate two infrequently occurring events in their memory, regardless of their actual relationship. Two experiments were conducted, where participants read statements about the behaviors of majority and minority groups. The majority and minority groups were randomly assigned as heterosexual or homosexual males. In Experiment 1, 67% of behaviors were positive, and 33% negative. For Experiment 2, this percentage was reversed. After reading the statements, participants performed a behavior assignment task. Preliminary results show that participants' behavior assignment varied depending on the manipulation. In Experiment 1, when homosexuals were the majority group, participants were more accurate in assigning negative behaviors to homosexuals. Whether the behaviors were stereotypic of homosexuals had no influence on this. Results from this condition also showed that participants were least accurate when it came to assigning negative behaviors stereotypic of heterosexuals to the heterosexual minority group. Further analysis will investigate how the manipulations influence responses, and if participants' attitudes toward homosexuals affects how participants assign behaviors.

## **Time of Day Effects on Mental Stress-Related Sympathetic Nervous System Activation in Shift Workers**

### **Oral Presentation**

Caleb Wilson (Lauren Fowler)  
Psychology

*NSF-REU Fellowship*  
*2007 NCUR Participant*

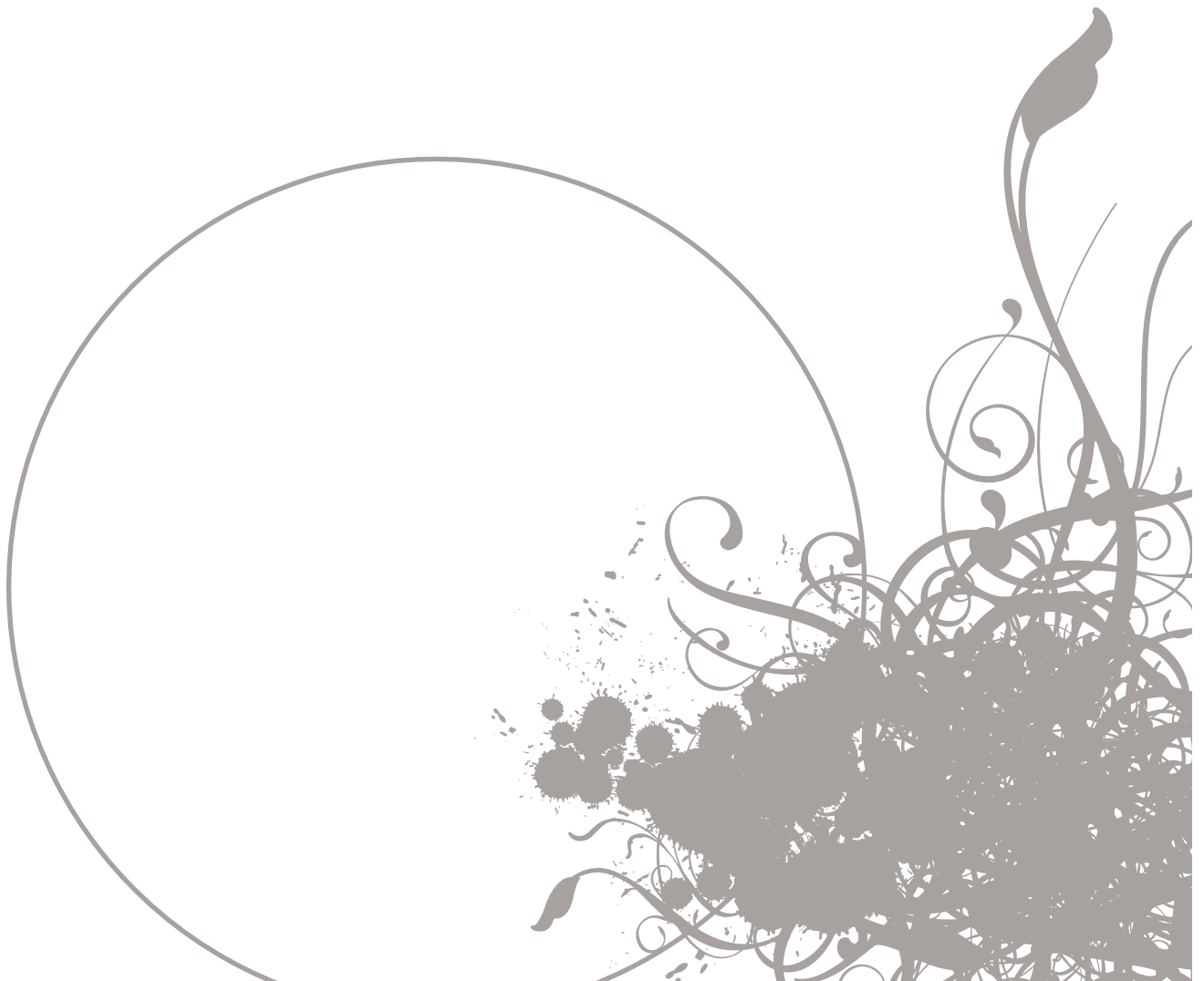
This study investigated differences in the body's physiological stress responses to performing mental tasks during day and evening shifts in military shift workers. United States Air Force air traffic control personnel that switch rapidly between a day shift and a swing shift participated in the study. Each participant was tested during each of their shifts by performing cognitive tasks that required them to filter information and respond quickly and accurately. Continuous data for heart rate and galvanic skin response were gathered during each testing period. These data were analyzed as indicators of sympathetic nervous system arousal. Heart rate data showed higher maximum values at night than during the day. Galvanic skin response data displayed the same trend of higher maximum values at night. However, cognitive performance showed no significant difference between day and swing shifts. The higher maximum values of stress indicators at night show that completion of the tasks during the swing shift resulted in higher stress levels. The major implication of this finding is that while task performance did not differ, stress from task performance was enhanced at night. These differences in sympathetic stress levels would help account for greater fatigue during night and swing shifts.



## *Interdisciplinary Studies*

But it's not just learning things that's important. It's learning what to do with what you learn and learning why you learn things at all that matters.

Norton Juster



## **Gender Differences among College Students and Life Stressors**

### **Oral Presentation**

Victoria Mecham and Trevor Taylor (Theresa Kay)  
Counseling and Psychological Services Center and  
Department of Psychology

When looking at the general population in the United States, women are two times more likely to suffer from depression than men. Based on an analysis of the Holmes-Rahe life stress inventory and the use of the National Depression Screening Day (NDS) screening assessment we hypothesize in a college setting males will score higher on each assessment. This is derived as males have increased awareness concerning environmental stressors, in order to obtain financial security.

## **The Effect of Dietary Fish Oil Supplementation on Lactic Acid Production Following High Intensity Exercise Performance**

### **Poster Display**

Brady Powell (Rodney Hansen, Tim Ruden, Molly Smith)  
Health Promotion and Human Performance  
*WSUSA Undergraduate Research Fellowship*

This study examined the effect of dietary fish oil supplementation on lactic acid production after high intensity exercise in competitive runners. Twelve human subjects (7 males and 5 females) who run a minimum of 20 miles per week were randomly divided into two equal groups. The experimental group took 1800 mg of fish oil daily for four weeks while the control group took a low dose (200 IU/day) Vitamin E placebo for four weeks. Each subject performed a VO<sub>2</sub> max test once prior to supplementation, and once after the four-week supplementation period. Blood samples were obtained prior to max test for hematocrit, cholesterol, glucose, and lactate. Glucose and lactate were also measured immediately after each VO<sub>2</sub> max test, and at five minutes and ten minutes post VO<sub>2</sub> max. An ANOVA was used to compare all results ( $\alpha = 0.05$ ). There was no significant difference between or within group difference in cholesterol, hematocrit, or glucose. There was a significant difference by trial in VO<sub>2</sub> max for both groups, in that they both showed significant improvement. There was a significant treatment by trial interaction for lactate when lactate was calculated as the area under the curve corrected to each subject's initial basal lactate concentration (AUC<sub>B</sub>) where the experimental group had 31% lower lactate values after supplementation when compared to the control group. This data suggests that fish oil may have an affect on lactic acid production and/or removal from the blood and fish oil supplementation may have an ergogenic affect during high intensity exercise.







