

THIRD ANNUAL UNDERGRADUATE RESEARCH
Symposium & Celebration

Monday, March 27, 2006

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Welcome to the Third Annual *Undergraduate Research Symposium and Celebration!* Please join me in this university-wide celebration of research, scholarship and creative activity. As you review this program, you will note the many student projects in a variety of academic disciplines. Today, students will have the opportunity to showcase their scholarship efforts through oral and poster presentations. I believe that research, scholarship and teaching go hand-in-hand and provide one of the very best learning environments for our students. Through the efforts of our dedicated faculty, Weber State University is developing into one of Utah's institutions of choice for students who want to engage in the process of discovery. As an institution, we are grateful to our students and faculty for making this another outstanding year of scholarly accomplishment at Weber State University.

A handwritten signature in cursive script that reads "F. Ann Millner".

F. Ann Millner
President



As Provost, it is my pleasure to welcome you to Weber State University's 2006 Symposium and Celebration of Undergraduate Research. I am pleased to see the growing interest in undergraduate research at WSU. I am also impressed by the quality of work that our students are doing. It is notable that for the second consecutive year one of our WSU undergraduates has been selected for the Poster on the Hill program in Washington D.C. Across the nation only 60 students are selected for this prestigious program. I want to extend a special thanks to our faculty. Supervision of undergraduate research projects requires a special effort on the part of the faculty, and I appreciate the time and effort our faculty have devoted to our students' projects. Finally, I applaud John Cavitt for his leadership of our Undergraduate Research program and his work on this event.

A handwritten signature in cursive script that reads "Michael Vaughan".

Michael Vaughan
Provost



On behalf of the Office of Undergraduate Research and the Undergraduate Research Task Force, welcome to Weber State University's Third Annual *Undergraduate Research Symposium and Celebration*. This symposium celebrates both the scholarly, creative and research accomplishments of our students as well as the unique relationship between students and their faculty mentors. Faculty-student collaboration in the research process provides an opportunity for personal and professional growth that few other activities afford. Together, through active research agendas and creative endeavors, our students and faculty explore the boundaries of their disciplines and expand our realm of knowledge. This partnership enhances the potential of our students to think independently, creatively, and critically. Discovery through research encourages a sense of relevance and excitement in the classroom as new knowledge is applied to society, industry, education and beyond.

These presentations are evidence that the pursuit of knowledge and creative expression are an integral part of the campus culture at Weber State University. Please join me in celebrating the accomplishments of our students and their mentors. We hope that this symposium will inspire others to continue this form of profound learning and intellectual engagement.

John F. Cavitt, Director
Office of Undergraduate Research

The Undergraduate Research Task Force

Carol Biddle	Development	Susan Matt	History
Fran Butler	Teacher Education	Chris Millard	Sponsored Projects
Ken Cuddeback	Telecomm & Bus. Ed.	Robert Mondri	Honors
Jeff Davis	Business Administration	Kathy Payne	Stewart Library
Lauren Fowler	ex officio CUR Councilor	Carl Porter	Support Services
Alicia Giralt	Foreign Languages	Paul Schvaneveldt	Child & Fam. Studies
Therese Grijavla	Economics	Kathy Sitzman	Nursing
Jim Hutchins	Associate Provost	Van Tinkham	Performing Arts
Colin Inglefield	Physics	Cori Tadehara	Social Work
Daniel Magda	Mechanical Eng. Tech.	Scott Wright	Clinical Lab. Sciences

Weber State University Undergraduate Research Symposium & Celebration

REGISTRATION

Check in and registration for Symposium attendees will begin at 11:00 AM on March 27, outside the Ballroom in the Shepherd Union Building.

SCHEDULE

12:00 – 5:00 PM

Posters available to view – Ballroom

12:30 – 1:45 PM

Oral Presentations – Shepherd Union Building

1:45 – 2:15 PM

Break – Refreshments served in the Ballroom

2:15 – 3:45 PM

Oral Presentations – Shepherd Union Building

4:00 – 4:10 PM

President’s Address – Ballroom

4:15 – 5:00

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

Weber State University Undergraduate Research Symposium & Celebration

Oral Presentation Session Moderators

ARTS & HUMANITIES

Judy Elsley
Professor of English
BIS Coordinator

HEALTH PROFESSIONS

Craig Gundy
Associate Dean of Health Professions
Professor of Health Sciences

Scott Wright
Associate Professor of Clinical
Laboratory Sciences

SCIENCE

Sam Zeveloff
Presidential Distinguished Professor of
Zoology
Chair of Zoology

Craig Oberg
Presidential Distinguished Professor
of Microbiology
Chair of Microbiology

SOCIAL & BEHAVIORAL SCIENCES

Gene Sessions
Presidential Distinguished Professor of History
Chair of History

Shepherd Union Building Session 1 Room Schedule

	325	338	340	347
12:30	<p>Eli Jones</p> <p>The Goldilocks Rule Book: An Inter-contextual Guide to Positive and Negative Communication</p>	<p>Justin Rhees, DaNette Bushman, Megan Maciel</p> <p>Tracking Strains of Methicillin Resistant Staphylococcus aureus (MRSA) through SCCmec Typing</p>	<p>Taylor Oberg, Evan Call</p> <p>Effect of Heat on Epithelial Cell Viability</p>	<p>Aaron McKay</p> <p>Baldrige Award Winners and Social Responsibility: Trends and Comparisons</p>
12:45	<p>Jason Staley</p> <p>Your Sex-Life Revealed: An Investigation of Self-Disclosure Among Clients and Their Hairstylists</p>	<p>Mary Ann Jones, Brittany Nelsen, Melissa Rees, Heidi Wilson</p> <p>Clinical Verses Statistical Significance of Coronal Polishing: Does It Matter?</p>	<p>Joshua McFarland</p> <p>Anatomy and Histochemistry of Hindlimb Flight Posture in Shorebirds</p>	<p>R. Nate Rhees</p> <p>Significance of Battle of Mogadishu, Somalia on Current Military Policy and Strategy</p>
1:00	<p>Manuel Saine</p> <p>Roberto Arlt</p>	<p>Natasha McRae, Linda Sethongkang</p> <p>Comparison Study of Gel Method vs. the Traditional Tube Method in Detecting Anti-Kell Antibody</p>	<p>Brigitte Beyer</p> <p>Phosphate Utilization in Halophilic Organisms of the Great Salt Lake</p>	<p>Danielle Stout</p> <p>Comparative Evils: A Look at the Soviet Gulag and Nazi Concentration Camps</p>
1:15	<p>Bryan Baron</p> <p>It's All about the Rhetorical Situation</p>	<p>Brian Anderson</p> <p>Prevalence of Escherichia coli O157:H7 in Free Range Cattle</p>	<p>Shaunna Anne Goldberry</p> <p>Comparison of Mycorrhizal Colonization Frequency of Bromus tectorum and Native Grass Species at Antelope Island State Park</p>	<p>Sabrina Enriquez</p> <p>Hill Aerospace Museum</p>
1:30	<p>Jason Dilworth</p> <p>Findings and Solutions to Designing Memorial Parks</p>	<p>Diana Cotner, Julie Dexter, Heather Guillot</p> <p>Comparison of C-Reactive Protein and Immature Granulocyte Count</p>	<p>Brice Lucas</p> <p>Fish Lake, Utah Fish Density Project</p>	<p>Eric Coleman</p> <p>Volunteer Tourism in Rural North India: The ROSE Experience</p>
1:45	BREAK			
2:00				

Shepherd Union Building Session 2 Room Schedule

	325	338	340	347
2:15	<p>Gerald Duclos</p> <p>Feminism in the Works of Catalina Clara Ramirez de Guzmán and Carolina Coronado</p>	<p>Marc Schmitt, Rhett Crapo</p> <p>The Relationship of Sex Hormones and Migraine Headaches in Men</p>	<p>Erik Oberg, Jeff Douglas</p> <p>Use of Essential Oil Components to Inhibit Fungi</p>	<p>David Eldredge</p> <p>Orgins of the Ghost Dance</p>
2:30	<p>Issac Goeckeritz</p> <p>Painting a City: The Life and Works of Blaine Richards</p>	<p>Callie Parry, Corey Bankhead, Jacob Barnhill</p> <p>Effects of Oral Contraceptives on the level of Protein C</p>	<p>Justin Harper</p> <p>Timing and Location of the Elastic Extracellular Matrix Protein, MAGP, in Zebrafish Embryos</p>	<p>Rebecca Mueller</p> <p>Marriage Laws and Customs Under the Religious Jursidiction of Heinrich Bullinger</p>
2:45		<p>Tiffany Smith, Masoud Rostamkhani, Garrett Anderson</p> <p>Association of TGF Polymorphisms with Severity of Hepatitis C Virus</p>	<p>Sarah Henry</p> <p>Bone Lead Levels of Individuals in the Salt Lake City Area</p>	<p>Jestina Val-Mudge</p> <p>Civic Education and Political Participation</p>
3:00		<p>Michael Campbell</p> <p>Measurment and Analysis of Trans Fat in Commercial Cooking Fats</p>	<p>Trealyn Christensen</p> <p>Unequal-Arm Michelson Interferometer for Laser Characterization and Atom Trapping</p>	<p>Beau James Burgess</p> <p>Hotel Bigelow/Ben Lomond: The History and Restoration of Ogden's Grand Dame</p>
3:15		<p>Mickel Blomquist</p> <p>Vitamins for Treating Bi Polar Disorder</p>		
3:30		<p>David Leavitt</p> <p>Students' Conception of being Rational and Intelligent on Reasoning Tasks</p>		
3:45		<p>Olivia Luce</p> <p>The Effects of Personal Responsibility Instruction on Student Social Behavior</p>		

- Display 1: Michael Willden**
Automated Suspension System for Obstacle Avoidance
- Display 2: James West**
Managing Quality in Health Care: An Assessment of Physician versus Staff Perspectives in a Northern Utah Medical Clinic
- Display 3: Amanda Herrick**
The Looking-Glass Phenomenon: The Impact of Looksism on College Students
- Display 4: Kelly Bingham**
Mass Media Mass Panic: A Form of Social Control
- Display 5: Elizabeth Brown**
The Influence of “Emo” Music on Self-Harm Behavior Among Northern Utah Adolescents
- Display 6: Paul Edward Clayton**
Making Theatre Relevant: Dramaturgy as Marketing
- Display 7: Joshua D. Madsen**
Biedermann and the Firebugs - Set Design
- Display 8: Ashley Davis**
Do Actions Really Speak Louder than Words: An Analysis of Radio Talent and Meaning
- Display 9: Lon Hatch**
Lies and Deceptions: Situation Comedies and the Displaying of Social Norms
- Display 10: Sydney Howell**
Communication with Parents and Parents-in-Laws: Relational Advantage or Disadvantage?
- Display 11: Robert Johnson**
Personal Electronic Devices in the Classroom: Distraction or Enhancement?
- Display 12: Camille Larkin**
Competition and Teamwork: Communication among and between Athletes
- Display 13: Lisa Mann**
Fifty Years and Disney Films: Value Changes?
- Display 14: Kathryn Martinez**
Costume Design for *Biedermann and the Firebugs*
- Display 15: Jessica Medelin**
The “Gayness” of Children’s Cartoons
- Display 16: Jennifer Mitton**
Coming Together: From Individuals to Couple
- Display 17: Cliff Wallgren**
Biedermann & the Firebugs
- Display 18: Cassidy Mellor**
National Council on Family Relations Association of Councils Affiliate Study
- Display 19: Marrian Lord**
Marital Patterns of Polygamy
- Display 20: Kristena M. Kons, Christine T. Mau**
Adolescent Self-Efficacy in India: Parental Influences
- Display 21: Misty Burnett, et al**
Relationship Breakups and Attitudes of Romance and Mate Selection
- Display 22: Samantha Sweet**
Acclimation to Heat During Fall Football Practice at Weber State University
- Display 23: Steven Toller, Wesley Snow**
Precipitation by Wetting-Drying Mechanisms Observed on Calcite and Gypsum Surfaces with Atomic Force Microscopy, Scanning Electron Microscopy and X-Ray Microscopy
- Display 24: Brett J. Barrett, et al**
Bacteriocin Production by Locally Isolated Strains of Flavobacterium
- Display 25: Jeff Douglas**
Elucidation of the Antimicrobial Activity of a Liquid Disinfectant Containing Cinnamaldehyde
- Display 26: Ron Proctor**
The Effectiveness of Scientific Visualization Techniques: Teaching the Lunar Cycle

Display 27: Lucas Hall, Nicole Pietsch
The Effects of Cheatgrass (*Bromus tectorum*) on the Relative Abundance of a Northern Utah Snake Community

Display 28: Phillip Gray
Comparative Physiology and Anatomy of Warm Bodied Sharks

Display 29: Steve Fellows, et al
Geospatial Analysis and Modeling of the Wyoming Salient of the Sevier Orogenic Belt

Display 30: Jared Hansen
Fructose

Display 31: Keri Kinghorn, et al
Rock Weathering Microorganisms: Exploring the Role of Silicate-Mobilizing Bacteria in the Silicon Cycle

Display 32: Spencer Parkin
The Fibonacci Numbers

Display 33: Rebekah Downard
The Effect of Energy Development on Sage Grouse in the Western United States

Display 34: Daniel Schmutz
Superfast Myosin Protein Isolation

Display 35: Christian Edwards, Karla Terkelson
Feeding Ecology and Diet of American Avocet and Black-necked Stilts at Great Salt Lake, Utah

Display 36: Trina Nixon
Nest Site Selection and Nesting Success of Snowy Plover at Great Salt Lake, Utah

Display 37: Cameron Thompson, Daniel Cox
Upper Cretaceous Stratigraphy, Paleontology and Petrology of Hillsdale Canyon southern Utah

Display 38: Kimball Kelsey
Basque Festivals and the Preservation of Identity

Display 39: Ryan Mortensen
The Effects of Social Norms on Anxiety

Display 40: Penelope Scow, Lindsey Montague
Depression: A Comparative Look at Prevalence among Psychology versus Non-Psychology Undergraduates

Display 41: Kristine Wilkerson
General Stereotypes of Males: Searching for an Illusory Correlation

Display 42: Heidi Law, et al
Addressing the Challenges of Virtual Reality Design and Development Faced by Dental Hygiene Students

Display 43: Ashley Wade, Melissa Leger
Building Virtual Conversations and Communities for Dental Hygiene

Display 44: Amanda Bull, et al
Sticks and Stones: A Collaborative Exchange Exploring Labeling and Stereotyping

Learning through research and discovery.

“Research is to see what everybody else has seen
and to think what nobody else has thought.”

Albert Szent-Gyorgyi, Nobel Laureate

Automated Suspension System for Obstacle Avoidance

Poster Display

**Michael Willden (William Clapp),
Computer Electronics Engineering Technology
WSUSA Undergraduate Research
Fellowship**

The project goal is to theoretically model and manufacture an electro-mechanical compressed air system, which will dynamically raise and lower a car. Ultrasonic and Radar sensors will be utilized in the design of a sensor network, which will provide data for a controller. This controller will operate on physics models and parameters, which must be formulated, to govern vehicular height in real time.

The car for this project will be available to view in the Breezeway of the Shepherd Union Building.

Dear Arts & Humanities Student Participants,

Congratulations for exhibiting/presenting/demonstrating your research and creativity at the Third Annual Undergraduate Research Symposium and Celebration. The wide variety of work shown by Arts & Humanities students effectively showcases the diversity of study in our college. By including your work in the symposium you help the campus to understand the significant role that research and creativity play in your undergraduate experience.

Students in the Arts and Humanities spend countless hour perfecting and applying coursework to their area of interest. Students in the arts and humanities get to (are not just required to do!)—

DRAW – Build – Paint – Print – Sculpt
 Read – WRITE – Speak – Listen – Think
 DANCE – Act – Sing – Perform
 Translate – EXPLORE – Interpret – Critique – Travel
 BROADCAST – Interview – Convince – Investigate
 LAUGH – Play – Learn

Thanks for sharing your work and passion with the WSU community.

Catherine Zublin
 Associate Dean and Professor
 College of Arts and Humanities

Dear Art & Humanities Student Researchers,

On behalf of the faculty in the College of Art & Humanities, it is a pleasure to congratulate on your involvement in undergraduate research at Weber State University. This involvement in research and creative activities indicates that you are not an average student, but one who strives for excellence and achieves it. Your work proves you are acquiring the skills necessary to communicate, create, evaluate, and think critically, all skills essential not only to our disciplines, but also to our world.

We are certain that your dedication to the Arts and Humanities will help you lead a successful and rewarding life filled with a deep understanding and appreciation of the human experience.

We are proud of your work and you should be too. Keep on excelling.

Sincerely,



Dr. Alicia Giralt
 Associate Professor
 College of Arts & Humanities

It's All about the Rhetorical Situation

Oral Presentation

Bryan Baron (Mark LeTourneau), English

The writing style of Jacob and Benjamin, authors from The Book of Mormon, differs dramatically. I hypothesize that each author uses language differently based on personal preferences and the rhetorical situation. To test the validity of this hypothesis I compare the stylistic options that each author employs in diction and syntax. Although Benjamin is a king, he uses the second person pronoun “you” frequently throughout his speech to create a feeling of unity and equality with his audience. The word “you” makes up almost 9% of his speech! The purpose of Jacob’s speech is to call his audience to repentance. He rarely uses “you” (1.7% of his speech) but uses the third person pronoun “he” instead to soften his criticism. With regards to syntax, I compare sentence structure, the number and type of sentences, and the parallelism that exists within and between sentences. Jacob’s speech is full of abstract ideas and he uses relative clauses to help explain these ideas. Benjamin’s speech is given at the coronation of his son and he has organized it into a beautiful, albeit sophisticated, structure of embedded noun clauses.

Mass Media Mass Panic: A Form of Social Control

Poster Display

Kelly Bingham (Becky Johns), Communications

The purpose of this study is to explore how fear is created by media producers and disseminators to produce mass panic as a form of social control. One particular incident, a murder in a small Canadian town, will be analyzed using rhetorical criticism techniques as a case study in fear-production. Bormann’s symbolic convergence theory and Gerbner’s cultivation theory both help illuminate this topic. Gerbner states, “Heavy exposure to mass media, namely television, creates and cultivates attitudes more consistent with a media-conjured version of reality than with what actual reality is,” (MCQuail, 100)

Conclusions from this study demonstrate how fear was constructed in the case study under consideration and what implications there may be for group manipulation and control based on fear-producing techniques.

The Influence of “Emo” Music on Self-Harm Behavior Among Northern Utah Adolescents

Poster Display

**Elizabeth Brown (Becky Johns),
Communications**

“Cutting,” or deliberately injuring one’s own skin, usually with a sharp implement, is an increasingly common form of self-harm in Northern Utah. While experts report self-abuse in 2-3% of the national population, a preliminary survey of more than 350 individuals attending Weber State University finds 13% of this population are “cutters” and preliminary estimates of junior high and high school attendees in the area suggest rates as high as 20-25%.

This paper argues that “cutters” find community and identity in the lyrics and performance of “Emo” punk rock music and that the incidences and intensity of “cutting” are amplified when “cutters” listen to such music. A rhetorical analysis of the lyrics of six of the most popular bands/performers of this music genre forms the basis of this argument and is augmented with an in-depth analysis of 26 interviews with active “cutters.”

Sticks and Stones: A Collaborative Exchange Exploring Labeling and Stereotyping

Visual Arts Display

**Amanda Bull, Christine Burton, Stevie Emerson, Miki Eto, Lisa Olsen, Lauren Rodriguez, Kevin Day, Jason Dilworth, Charles Francis, Trent Holt, Shinsuke Ito, David Johnson, Ryan Jones, Adam Price, Darin Teeple, Mark Tubbs, Marc Garner, Heidi Esplin, Scott Humphrey (Mark Biddle),
Visual Communications
Weber State University Undergraduate
Research Scholarship**

“Sticks and Stones” is a collaborative project that explores labeling and stereotyping. It involves graphic design students from WSU, Northeastern University, in Boston, the University of Alabama, and San Francisco State University.

This semester, participants from all four universities filled out an eight-question survey about their appearance, preferences, gender, and ethnic background. The results were randomly exchanged with students from different areas of the U.S. Each student was then asked to create a portrait of the one whose survey responses he or she received. Students were encouraged to incorporate stereotypes into the designs as they naturally arose, rather than suppressing them. When completed postcard portraits were distributed to each university for discussion everyone realized how easy it is to create an offensive statement even when one is not purposely trying to offend.

In the next phase, students were asked to design a portrait of themselves using map iconography as a visual metaphor. These were also exchanged with different university students who were asked to write “labels” based on each map’s contents. This March, students from all four universities will meet face-to-face in Los Angeles to discuss the labeling and begin a final “reaction” design summarizing the experience. Participants will also visit the Simon Wiesenthal Museum of Tolerance and an exhibit of the work of John Heartfield at the Getty Museum. Heartfield was a design activist who waged a single-handed war against Hitler.

Ultimately, through the exchange of creative work, simulation, and candid interaction this project confronts social intolerance, encourages socially responsible design, and challenges participants to reconsider the ramifications of their own closely guarded stereotypes.

Making Theatre Relevant: Dramaturgy as Marketing Poster Display

**Paul Edward Clayton (Caril Jennings),
Performing Arts**

During Fall Semester, 2005, the Theatre Department at Weber State University produced *Biedermann and the Firebugs* and *Six Degrees of Separation*, both plays that audiences at Weber State University may have found challenging or cryptic. One method employed to increase audience appreciation of these plays was the preparation of study guides (one for each play) that briefly laid out how the plays explored different topics and related to different disciplines.

The methods used to determine which topics to address and which elements of the plays to emphasize are explained, and the ways in which the study guides prepared audiences for more meaningful experiences at the theatre are explored. Also reported are the results of a new program combining the efforts of Introduction to Honors (HNRS 1110) classes with the Department of Performing Arts Marketing to create an online study guide for *Six Degrees of Separation*.

Do Actions Really Speak Louder than Words: An Analysis of Radio Talent and Meaning Poster Presentation

Ashley Davis (Becky Johns), Communications

Do actions speak louder than words or vice versa? Kenneth Burke's theory of Dramatism is used in this paper to show how radio personalities secure an audience base by what they say and how they say it.

Words themselves are in fact, actions, and a communicator (namely a radio personality) has the ability to identify with an audience and achieve communication and social goals to the same degree as an actor in a visual depiction or experience. How is this possible? This paper analyzes the job and performance of several radio talents/performers utilizing Burke's Pentadic analytic system. Specifically, the aspects of actions versus motions, understanding motives, the identification of act, agent, agency, scene, purpose and the guilt/redemption cycle of Burke's theory provide an understanding of the persuasive influence of a radio performer's art upon the audience.

Findings and Solutions to Designing Memorial Parks

Oral Presentation

**Jason Dilworth (Mark Biddle), Visual Arts
Eccles Undergraduate Research
Scholarship**

Part of being human is remembering those who came before us and the legacy they left behind. Through research and a camera lens I have visited several parks—ones commemorating Martin Luther King and others created by folk artist that tell a much different story. What does it take to create a place that will draw in participants and direct their thoughts—I intend to answer this question along with unveiling a design proposed for a Veterans Memorial in South Weber.

Feminism in the Works of Catalina Clara Ramírez de Guzmán and Carolina Coronado

Oral Presentation

**Gerald Duclos (Alicia Giralt), Foreign Languages & Literature
Weber State University Undergraduate
Research Scholarship**

Men have mostly dominated Spanish literature, however, many women have produced works. Feminine literature historically enjoys success during the author's life, but after her death is forgotten.

The works of Catalina and Carolina fit this pattern. Their works are not in the literary canon. They have only recently become subjects of academic studies and to the extent of my research have not been compared. This study shows that despite historical obscurity and other differences these women shared a feminine voice caused by a common social oppression. My presentation analyzes these similarities in their works.

Catalina lived in the seventeenth century and Carolina in the nineteenth. Catalina was of a noble family, and Carolina from a well-off, liberal family. Catalina lived in an obscure part of Spain and saw few advances in women's civil liberties. Carolina enjoyed a literary sisterhood, active participation in politics, and several social advances for women.

These differences can be seen in their works: Catalina deals with simple, daily subjects, such as asking her father to buy her a shirt. Coronado delves into much deeper subjects such as liberty and slavery. It is because of these differences that finding a common feminine voice is so remarkable.

Painting a City: The Life and Works of Blaine Richards – A Documentary Film
Oral Presentation

**Issac Goeckeritz (Timothy R. Conrad),
English**

At the peak of railroad travel, Ogden, Utah was one of the greatest railroad hubs in the United States. Its prospering businesses welcomed the city's travelers with hundreds of large painted billboards and signs. They were almost all the work of one man. In 1929 Blaine Richards started Richards Sign Company, and through his career he would do work for Coca-Cola, Farr's Ice Cream, Continental Bake, Cream of Weber and many other businesses. His signs were seen from baseball stadiums to stockyards, and much of it still exists on the sides of buildings and up and down city streets.

To write Blaine Richards' history I interviewed old employees, friends and family members, researched newspaper articles, family histories and autobiographical stories. With former employees I explored Ogden and surrounding cities to identify Richards' signs that are still in existence. I also created a list of Richards' former clients. I researched the WSU Special Collections, The National Archives, Utah State Historical Society, Union Station archives, Weber County Library and other sources to find photographs of Blaine's original work. Finally, the photographs, research and videotaped interviews were assembled into a 35 minute documentary film that I wrote, directed, filmed and edited.

Lies and Deceptions: Situation Comedies and the Displaying of Social Norms
Poster Display

Lon Hatch (Howard Noel), Communications

Focusing on the effects that television has on the behavior of its audience, the research focuses on the specific genre of television sitcoms and their portrayals of characters in the act of lying. The literature review focus on the inherent power television has on the social norms of a society. The act of lying or deceiving another is explored and lies are categorized as benevolent or malicious. A question is raised as to how audiences would react to characters they affiliate with in the act of lying. Would this increase the likelihood of the audience member to lie? Would audience members become more accepting of lies? In specific, 5 hypotheses are raised and tested.

An experiment was designed to test the hypotheses which involved a randomly selected audience answering a questionnaire after watching a series of six clips from sitcoms where main characters actively engaged in deceiving others.

One of the main focuses of this research was to demonstrate that people typically accept what they see on television as socially acceptable. Results from the research demonstrated that people saw the lies displayed as of little consequence and socially acceptable.

The Looking-Glass Phenomenon: The Impact of Looksism on College Students Poster Display

**Amanda Herrick (Becky Johns),
Communications**

Feelings of inadequacy, depression, overspending, debt, and round after round of plastic surgery—this study seeks to understand the role American entertainment plays in creating impossible comparisons of physical perfection achieved on the screen and in print but which are impossible for the average person. Weber State College students were surveyed and interviewed regarding their origins of beauty and physical perfection. Survey and interview questions are also centered on their feelings of adequacy or inadequacy in regard to these models of physical perfection. Conclusions, utilizing a theoretical framework of symbolic interactionism and H. Mead’s “The Looking-Glass Self,” draw a picture of the attitudes of college-age persons who derive at least part of their ideal self-concept from what they see in the mass media and the often ruinous outcomes of such images.

Communication with Parents and Parents-in-Laws: Relational Advantage or Disadvantage? Poster Display

**Sydney Howell (Becky Johns),
Communication**

Engaged and newlywed relationships are often marked with great stress and strife, sometimes even failing before they have really gotten a good start. This paper seeks to understand the relationship between a couple’s interactions with both sets of parents as a way of understanding where some of this stress may be coming from. This study is based on Altman and Taylor’s social penetration theory of self-disclosure which suggests that lasting relationships come from sharing different levels of self-disclosure at appropriate times.

This study uses Metaphor Analysis to analyze interviews between a number of newly married couples in order to answer the questions inherent above. Conclusions from this analysis provide hints; strategies and skills in communication which may help couples to make the transition from engaged to married a smoother one.

The Goldilocks Rule Book: An Inter-contextual Guide to Positive and Negative Communication

Oral Presentation

**Eli Jones (Becky Johns),
Communications**

John Gottman argues that a healthy marriage requires a ratio of five positive communication events to every one negative event. Does this ratio also exist in the context of the workplace? Extensive survey research was conducted among Weber State University employees and a ratio of 2:1 positive to negative communication events seems to be connected with a satisfying workplace. In order to find out why the ratios were so different, I conducted four in-depth interviews with individuals who were part of the original survey. I discovered that, contrary to my hypothesis, there is very little “leakage” from one context to the other. Rather, there appear to be different “rule books” operating in the workplace as opposed to marital relationships, and the rules found therein dictate the number and intimacy level of communication events found to be “acceptable” in the each context.

Personal Electronic Devices in the Classroom: Distraction or Enhancement?

Poster Display

**Robert Johnson (Becky Johns),
Communications**

Cell phones, iPods, podcasting, pagers, computers, and all kinds of electronic devices are increasingly becoming “personal necessities” in our society. Just as everywhere else, these devices follow students into the classroom. Instructors complain about the distraction; students argue that they are crucial and a personal need so therefore should be allowed in the classroom. This study consists of surveys of both instructors and teachers in a Utah high school and their responses to questions about personal electronic use, attitude toward and identification with. Conclusions from this data argue that students are linking these personal devices with personal need so strongly that separating them from the devices even for a short period of time may cause extreme anxiety. How should instructors (who also own and often have on them these devices in the classroom) respond to this growing phenomenon?

Competition and Teamwork: Communication among and between Athletes Poster Display

**Camille Larkin (Becky Johns),
Communication**

The nature of athletics in America, whether amateur or professional, is that teams are often short-term. Athletes compete against some players who, because of acquisitions, trades, pro team competitions, Olympics, later become their teammates. How do athletes make the adjustment from competitor to teammate? This paper seeks to answer this question using interviews from a number of hockey players who have switched teams and teammates. Using Bullis and Bach's Turning Points Theory, these interviews have been coded for important turning points and these points compared and contrasted. The conclusions of this study demonstrate how the fiercest of competitors can become the best team mates through an analysis of their "turning points" in their communication.

***Biedermann and the Firebugs* Set Design Poster Display**

**Joshua D. Madsen (Catherine Zublin, Van
Tinkham), Performing Arts**

This display is about:

- 1) Creating an abstract and yet believable atmosphere to act as a vehicle for the story-telling of an expressionistic theatrical production; which details the moral dilemma of human inaction and complacency.
- 2) The evolutionary process and impact of research and interdisciplinary collaboration on a theatrical design.
- 3) The science behind the art of theatrical productions
- 4) And an examination of the creative mind and its processes in assimilating information and then producing a work of art from those stimuli.

Fifty Years and Disney Films: Value Changes? Poster Display

**Lisa Mann (Becky Johns),
Communications**

The purpose of this study is to determine if and how cultural messages received by children from American entertainment have changed in the last fifty years. Whether for good or ill, children have been learning about what is right, good, and beautiful from watching Disney films. Honesty, love, family and the sanctity of human life are often themes of Disney films. I am using two methods of data collection. Using textual analysis, I have coded the different value messages in four Disney films (*Bambi*, 1960 and *Bambi*, 2006 and *The Parent Trap*, 1958 and *The Parent Trap*, 2002). A group of teenagers from Roy High School were shown pieces of these films and interviewed using focus group interviewing techniques. They were asked to identify the value messages they find in the films.

The results from both the coded value textual analysis and the focus group interview responses are compared and contrasted in this paper in order to answer the question: Have the value messages found in children's entertainment changed in the past fifty years.

Costume Design for *Biedermann and the Firebugs* Poster Display

**Kathryn Martinez (Catherine Zublin),
Performing Arts**

Biedermann and the Firebugs, by popular Swiss playwright Max Frisch, is a satire about complacency. Originally written in 1951 as a radio play in Europe, it was rewritten several times before being produced in America as an off-Broadway play in 1963.

The objective was to visually express the various aspects of inane emotions and pressures that the malevolent incendiary evokes.

Found suits were tweaked to bring up the bold lines of a designer look, while color and pattern were used to denote changing mental stability. Other costumes reflect a maintained color scheme and pattern change to show stability and emotional sympathy. Still others offered resistance to change by maintaining their color and pattern scheme throughout the play.

The effective use of line, pattern and color assisted the actors by reflecting their characters emotional states.

The “Gayness” of Children’s Cartoons Poster Display

**Medellin, Jesica (Becky Johns),
Communication**

The purpose of this study is to find out if children’s cartoons portray homosexual characters and how children react to them. The topic of homosexuality in children’s cartoons is important because entertainment and mass media are both a reflection of and a producer of what is acceptable and “normal” in our society. This study utilizes McComb and Shaw’s agenda setting theory as a framework for understanding this phenomena. Two aspects of this theory (agenda setting and framing) will be utilized as part of a content analysis of a number of children’s cartoons. Specifically, I have used interpretive thematization methods to demonstrate and conclude that children’s cartoons portray homosexual characters often as “heroes.” The implications of this content analysis are discussed in this paper.

Coming Together: From Individuals to Couple Poster Display

**Jennifer Mitton (Becky Johns),
Communication**

American marriages are tenuous things with divorce rates over fifty percent. This study seeks to understand how communication before and after marriage works to help individuals make the transition from two persons to one couple. Bormann’s Symbolic Convergence Theory was utilized to analyze the interview responses of four couples regarding their pre and post-marriage communication patterns. Conclusions drawn from this analysis demonstrate the strategies, insights and communication skills needed to have a successful transition and a healthy relationship.

Your Sex-Life Revealed: An Investigation of Self- Disclosure Among Clients and Their Hairstylists

Oral Presentation

**Jason LaMont Staley (Becky Johns),
Communications**

Your Sex-life Revealed is an investigation using an in-depth interview technique to understand why clients have a tendency to self-disclose to their hairstylists. The study consists of an interview of three professional hairstylists explaining and sharing their personal experiences and insights into self-disclosure. To date very little study has been done on this topic, and the findings are rather profound. Among a multitude of reasons why clients self-disclose three are prominent: First, stylists beg the information by asking and responding to questions in an encouraging manner. Second, both the client and the stylist are trapped in a situation they cannot escape, similar to a stranger-on-a-train. Third, the element of touch creates a comfortable and intimate environment where clients feel comfortable with self-disclosure.

Biedermann and the Firebugs

Poster Display

**Cliff Wallgren (Catherine Zublin),
Performing Arts**

Biedermann and the Firebugs by Max Frisch is a morality play without a moral. It takes place in the home of a wealthy business man and his wife. They receive a visit from a stranger who, with some fast talking, convinces them to allow him to stay in their attic. Everything seems well except for the outbreak of fires at night, which are attributed to and executed by so called fire bugs. It isn't until a dear friend of the stranger arrives that the business man and his wife start suspecting that their visitors might be the fire bugs.

As the design team discussed *Biedermann and the Firebugs* we felt strongly about creating the style of the show to be very incendiary and convey the look and feel of an industrial environment ready to go up in flames. We started out with a very complex central platform that would be transformed into the dining room. On each side of the central platform, a multi-level area resembling scaffolding would create the bedroom and attic areas. Chain link fencing would be used to create the walls and add to the visual environment. The back wall of the dining room was designed to be a functioning gauge that moved and lit up correspondingly to the increasing pressure building up with the dramatic action of the story. To enhance the industrial feel of the show, a dramatic lighting change including emergency warning beacons and a fog machine effect, would be used to help intensify the sense of building pressure and growing tension.

As the industrial theme was developed, the lighting design became a more theatrical part of our production. The use of large construction beam gobo washes were used to help create an industrial feel. These, combined with the use of small pools of golden light to simulate the look and mood of street lights, helped to create a very industrial feel for the chorus. Color-correcting tints were used in the face light to create the artificial atmosphere of interior lighting. Several deeply saturate color washes were used to help add depth, shadows and mood to each scene. With each new explosions manifesting all around, we wanted to create an environment that involves and surrounds the audience, leaving them feeling

that they too were involved in and experienced the same mayhem as the characters in the show did. The use of emergency warning beacons helped to create an authentic atmosphere, suggesting the presence of fire engines rushing off in response to the alarm calls.

As the show reaches its dramatic pinnacle, with all havoc breaking loose, the layered use of effect-wheels and Scene-Machines were used to create the effect of flames slowly starting to burn and spreading out to eventually encompass the entire theater. Strategically placed lights under the audience seating and additional effect-wheels helped to complete the audiences' sensation of being completely surrounded by the fire. Adding to the raging flames, a variety of strobe lights and additional warning beacons going off randomly all around the theater, were used to help enhance the feeling of disorientation and helplessness in the final moments of the show.

Dear Participants,

I would like to congratulate you on your willingness to participate in this conference on undergraduate research. The Goddard School of Business and Economics is committed to the application of theory and knowledge. Solving the fundamental problems of business and economics requires both innovation and critical thinking. Your ability to apply the ideas you have mastered to the new problems you have identified demonstrates the relevance of a professional education.

I am sure the research process has brought you both frustration and reward, and now is the time to enjoy your accomplishments. You have gone beyond reading about the discoveries of others and you have experienced the thrill of discovery yourself. Through your research you have demonstrated the highest form of learning, creating knowledge.

Sincerely,

A handwritten signature in black ink, appearing to read "Cliff Nowell". The signature is fluid and cursive, with the first name "Cliff" and last name "Nowell" clearly distinguishable.

Dr. Cliff Nowell
Department of Economics
John B. Goddard
School of Business & Economics

Baldrige Award Winners and Social Responsibility: Trends and Comparisons

Oral Presentation

**Aaron McKay (Shane Schvaneveldt),
Business Administration
Denkers Undergraduate Research
Scholarship**

Applicants for the Baldrige Award are required to identify how they address responsibilities to the public/society and how they practice its citizenship. This paper explores and characterizes the various ways that Baldrige winners have approached public/social responsibility in citizenship since the awards inception in 1988.

Managing Quality in Health Care: An Assessment of Physician versus Staff Perspectives in a Northern Utah Medical Clinic

Poster Display

**James West (Shane J. Schvaneveldt),
Business Administration**

Quality improvement in healthcare has become a topic of increasing interest among the healthcare profession and society at large. To learn more about the issues and realities of improving quality in healthcare, we conducted an investigation using a local medical clinic as a case study. The clinic is a medium-sized, physician-owned medical clinic located in Northern Utah. In our investigation, we surveyed both physician and staff employee perceptions of quality management in the clinic using an assessment questionnaire from the Malcolm Baldrige National Quality Award program. The Baldrige Award is an important vehicle for promoting quality management and improvement in healthcare with its establishment of an award category for health care organizations in 1998. The questionnaire assessed perceptions regarding seven major areas: leadership; strategic planning; customer and market focus; measurement, analysis and knowledge management; human resources focus; process management; and business results. Analysis of the questionnaire results revealed differences in perceptions between physicians and staff employees of the medical clinic regarding several issues. From this, the investigation identifies areas to focus on for development of quality improvement efforts at the clinic.

Dear College of Education
Student Researchers,

On behalf of the faculty in the Jerry and Vickie Moyes College of Education, please accept our enthusiastic congratulations on your involvement with undergraduate research at Weber State University. Your undergraduate research activity signifies that you are not just an ordinary college student. By participating in the research process, you have demonstrated your willingness to take on a challenging task. You have become an active learner, rather than a passive recipient of knowledge. The process of scientific discovery and the formulation of interesting and meaningful questions will be skills you will use throughout your entire life. Knowing how to critically approach an issue and systematically solving that problem, will serve you well in whichever path of life you pursue. You had the opportunity to work closely with a faculty member as a partner in learning, rather than being a passive recipient of knowledge. There are many components that make a university great, and perhaps the most important component is a student willing to take the challenge of learning seriously. Thank you for rising to this challenge and making Weber State University a truly great place for higher learning.

Sincerely,

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

Paul Schvaneveldt, Ph.D., CFLE
Child and Family Studies
Jerry and Vickie Moyes College of Education

Relationship Breakups and Attitudes of Romance and Mate Selection

Poster Display

Misty Burnett, Jacob Priest, Rachel Thompson, Anne Vogel (Paul Schvaneveldt), Child and Family Studies

This study examines the effects of breakups on attitudes of mate selection. A questionnaire was randomly distributed to 261 university students regarding past breakup history and attitudes toward Larson's Nine Unrealistic Beliefs of mate selection (1992). Age, gender, relationship status, the number of breakups and recentness of a breakup were all shown to affect one or more of these unrealistic beliefs. The study suggests that the more relationship experience an individual has the less likely he/she is to hold unrealistic beliefs when choosing a mate.

Adolescent Self-Efficacy in India: Parental Influences

Poster Display

Kristena M. Kons and Christine T. Mau (Paul Schvaneveldt), Child and Family Studies
2006 NCUR Participants

The purpose of this study is to examine the predictability of key dimensions of parental behaviors on self-efficacy of adolescents in the Indian culture. Culture plays a significant role in an adolescent's socialization. In collectivist societies such as India, group goals and maintaining relationships are important. Indian children are raised differently than those in an individualistic culture, such as in the United States. This research project examined a sample of 480 adolescents in India on their perception of the influence of maternal and paternal use of positive induction, monitoring, autonomy granting, punitiveness, permissiveness, and expectations of conformity to parents on self-efficacy. Parenting behaviors were assessed with the Parent Behavior Measure (PBM) and self-efficacy by a 15 items scale, reflecting the perception of competency and initiative. Self-administered questionnaires were administered in the school setting. Factor analysis identified common factor loadings and a multiple regression analysis indicated that greater parental punitiveness by mothers and fathers negatively predicted self-efficacy. Interestingly, parental permissiveness significantly predicted greater levels of self-efficacy in the Indian adolescents. This study yields an increased understanding of diverse social and developmental processes, to testing the variation of theory for findings across cultures.

Marital Patterns of Polygamy Poster Display

**Marrian Lord (Paul Schvaneveldt),
Child and Family Studies**

The practice of having more than one wife has been recorded as being practiced since biblical times when King Solomon and King David each had multiple wives. Modern examples of polygamy can be found in the early records of The of Jesus Christ of Latter Day Saints and was practiced until the late 1890's by the main stream church. Some did not agree with the decision to end the practice of polygamy and broke off from the mainstream LDS church. Currently, there are an estimated 50,000 polygamist in the Intermountain region. The purpose of the current project was to better understand the current practices and motivations for living in a polygamist lifestyle. Specifically, the research project examined the family dynamics and marital practices of polygamist families in the Wasatch Front area of Utah. Interviews and questionnaires were conducted with 54 past and present practicing polygamists. It was found that families living in polygamy are very satisfied with their family life and marriages. Major motivations for practicing polygamy stem in strong religious beliefs.

The Effects of Personal Responsibility Instruction on Student Social Behavior Oral Presentation

**Olivia Luce (Daniel Balderson), Health
Promotion and Human Performance
2006 NCUR Participant**

Teaching students social values has long been associated with K-12 education (Solomon, Watson, Delucchi, Schaps, 1988). With the rise of anti social behavior among children and youth in schools (Volkh & Snell, 1998) many are re-focusing their attention on implementing and empirically documenting social skill programs (Balderson & Sharpe, 2005). The context of physical education, due to its naturally interactive and conflict oriented environment may be an ideal setting for social skill development. Although widely used but with little research support (Hellison & Walsh, 2002), the personal responsibility model encourages students to apply positive social behavior through group discussion, goal setting and reflection (Hellison, 2003). This research examined the effects of the personal responsibility intervention on individual and class wide levels of positive and anti social behavior. Three students were purposefully selected from three classes based on high amounts of previous anti social behavior. Data were collected through a multiple baseline, behavior analytic design. A post test only, control group design was also selected to determine the effects of the intervention on the classes as a whole. Results show that the intervention was successful in increasing levels of positive social behavior on an individual and class wide basis.

National Council on Family Relations Association of Councils Affiliate Study

Poster Display

**Cassidy Mellor (Paul Schvaneveldt),
Child and Family Studies
Weber State University Undergraduate
Research Scholarship**

The National Council on Family Relations (NCFR) is the professional organization for those involved in the academic field of Family Studies. In addition to the national council, there are various state, regional, and student councils that are affiliated with NCFR; an example of a student affiliate is Weber State University's Child and Family Studies Student Association. I produced an online survey that was accessible to all affiliate council members across the country. Using the survey I examined why members join family studies councils and what members see as the primary benefit of council membership. Networking and leadership opportunities were the main reasons for joining an affiliate council as well as the most important member benefit. I had hypothesized that networking would be considered a major benefit but I did not expect leadership opportunities to be considered a primary benefit. I presented these results during the National Council on Family Relations national conference. Based on the results of this study I suggested that council leaders focus on providing Networking opportunities for its members. In addition to Networking they should also provide adequate opportunity to serve in leadership positions, participate in conferences, obtain CFLE information, and produce a council newsletter.

Acclimation to Heat During Fall Football Practice at Weber State University

Poster Display

Samantha Sweet (Valerie Herzog, Molly Smith, David Berry, Rod Hansen, and Tim Ruden), Health Promotions and Human Performance

The National Collegiate Athletic Association (NCAA) has made an attempt to reduce heat illness and injury to players during fall football practice by regulating practice time. The purpose of this study was to examine the effects on markers of dehydration and heat illness during one a day (D1) practices compared to two a day (D2) practices. Twenty five football players from the Weber State University team volunteered to participate. Body weight, hematocrit, hemoglobin and core temperature was measured before and after practice. Each practice type (D1 and D2) was sampled two different times. There were no significant differences in cell volume or blood volume. Post practice body weight was significantly lower than pre practice (220.7 + 39.7 lb. vs. 223.6 + 40.4 lb., n=13) and body weight was also significantly lower during the second day of each practice type (221.1 + 39.5 lb. vs. 223.2 + 40.6 lb., n=13). Post practice core temperature was significantly higher than pre practice (100.5 + 0.8 °C vs. 98.5 + 0.8 °C, n=13) and D1 core temperature was significantly higher than D2 (99.6 + 1.0 °C vs. 99.4 + 1.5 °C, n=13). Post practice plasma volume was significantly higher than pre practice (54.6 + 3.7% vs. 52.4 + 2.4%, n=13) and D1 plasma volume was significantly higher than D2 (54.1 + 3.3% vs. 52.9 + 3.3, n=13 %). Post practice plasma volume was 4% higher following D1 compared to D2 practice type (55.7 + 3.5% vs. 53.5% + 3.6%, n=13). The results of this study indicate that football players at Weber State University are well hydrated during practice, and that the summer conditioning program helped prepare them for heat tolerance.

Dear Participants,

Wellness education, diagnosis, treatment, and rehabilitation - every step of the health care process depends on biomedical research for its core principles. In order to understand and apply these core principles in today's diverse and rapidly changing health care arena, it is vital for today's health care worker to have a solid background in research methodology.

A solid background starts with classroom work, but that's only the beginning. A full scope of the process cannot be appreciated until the student actually plans a research program, assembles a research team, seeks funding, secures approvals, carries out the research, and disseminates the results. This Third Annual Undergraduate Research Symposium and Celebration provides the vehicle for the final step in this process. It is a wonderful opportunity for the entire university community to come together to celebrate the accomplishments of our students and to recognize the untiring efforts of our faculty and staff who mentor them. Congratulations to our student researchers. We are proud of your work!



Dr. Shelley F. Conroy
Dean and Professor
Dumke College of Health Professions

Prevalence of Escherichia-coli O157:H7 in Free Range Cattle

Oral Presentation

**Brian Anderson (Scott Wright), Clinical Laboratory Sciences
Eccles Undergraduate Research Scholarship
2006 NCUR Participant**

Escherichia coli has been identified as a human pathogen causing enterohemorrhagic colitis as well as hemolytic uremic syndrome. The most common route of human infection is contamination of food or water in connection with cattle. Slaughter-yard and feedlot cattle have been found to carry E. coli O157:H7 as part of their normal intestinal flora. Due to the confined spaces that these cattle generally live in, there is an increased risk of cow to cow transmission. This has led to an increased occurrence of E. coli O157:H7 among cattle living in these conditions. This study is to identify the natural carriage of E. coli O157:H7 in an isolated free range cattle herd. A rectal swab from each cow (n=92) of the isolated cattle herd was collected. The swabs were immediately plated onto CHROMagar® for laboratory identification. Suspected colonies were identified using latex agglutination. Laboratory tests showed a 0% carriage of E. coli O157:H7 in the free range herd. The results suggest that cattle are not necessarily normal carriers for E. coli O157:H7 but are more likely to harbor the pathogen due to certain living conditions.

Comparison of C-Reactive Protein and Immature Granulocyte Count

Oral Presentation

**Diana Cotner, Julie Dexter, Heather Guillot (Kara Hansen-Suchy), Clinical Laboratory Science
Phyllis Crosby Gardner Undergraduate Research Scholarship
2006 NCUR Participants**

Physicians currently use two laboratory tests to determine at risk patients for an infection or infectious process. One of these indicators is the Absolute Neutrophil Count (ANC), a manually determined microscopic parameter of the white blood cell granulocytic line. Another indicator is the C-Reactive Protein (CRP), a laboratory test that detects a protein known to be increased in infections and assists physicians monitoring treatment. The CRP is often used to monitor the progression or regression of the infectious process. These commonly ordered laboratory tests are expensive, and labor intensive. With the advent of new technology and software for the Sysmex XE-2100 hematology analyzer, a rapid automated parameter is available that may allow an earlier identification of an infectious process. This parameter is an immature granulocyte count (IG) and represents an immature population of white blood cells in the granulocytic series known to become elevated in infections. The IG is already a feature on the Sysmex analyzer and there would be no additional cost to the laboratory or the patient to utilize this parameter. Also, the time it would take the physician to get the results would be decreased. In this study the automated IG will be compared to the ANC results and the CRP values for patients with an infectious process. This could result in the use of the IG parameter as an additional indicator to help the physician identify possible at risk patients for infections and monitor treatments.

Clinical Verses Statistical Significance of Coronal Polishing: Does It Matter?

Oral Presentation

**Mary Ann Jones, Brittany Nelsen, Melissa Rees, Heidi Wilson (Kami Hanson), Dental Hygiene
Weber State University Undergraduate Research Scholarship**

The purpose of this research is to determine if the enamel removed after a professional coronal polishing with a prophylaxis angle and paste, is “clinically” significant enough to warrant the practice of selective polishing. It is hypothesized that the amount of fluoride rich enamel removed during a prophylaxis polishing is not clinically significant to merit the practice of selective polishing. The information for this study will be obtained through an atomic force microscopy evaluation performed on extracted dentition and via survey from dental professionals and patients. The atomic force microscopy analysis will demonstrate the change in thickness of enamel by correlation of a baseline reading in comparison to the dentition after the prophylaxis. The surveys will demonstrate the opinions of both the dental professionals and patients regarding the use prophylaxis. The statistical findings will be evaluated and reported in the form of a baccalaureate thesis. It will be determined whether these findings have a clinical significance and warrant the practice of selective polishing.

Addressing the Challenges of Virtual Reality Design and Development Faced by Dental Hygiene Students

Poster Presentation

**Heidi Law, Natalie Jones, Marie Krantz (Kami Hanson), Dental Hygiene
Weber State University Undergraduate Research Scholarship**

There exists an increasingly attractive lure of using virtual reality applications for teaching in all areas of education, but perhaps the largest detriment to its use is the intimidating nature of VR technology for non-technical instructors. What are the challenges to using VR technology for the design and development of VR-based instructional activities, and what are the recommended approaches? This presentation addresses the issues regarding identifying the appropriate techniques for integrating VR into traditional instructional design, and the considerations for development for non-technical educators. Recommendations are grounded within the project involving virtual anesthesia. The discussion considers budgetary limitations, funding, and other factors.

Comparison Study of Gel Method vs. the Traditional Tube Method in Detecting Anti-Kell Antibody Oral Presentation

Natasha McRae, Linda Sethongkang (Bill Zundel), Clinical Laboratory Science Weber State University Undergraduate Research Scholarship

Blood transfusion is a common practice used in hospitals. Some patients have unexpected antibodies that can destroy transfused red blood cells. This can compromise patient health or cause death. Prior to transfusion, the patient's serum must be tested for unexpected antibodies, such as anti-Kell. In this research, fifty patient specimens were tested comparing three different techniques: Ortho-gel method, tube method with Polyethylene Glycol (PEG) enhancement, and tube method with Low Ionic Strength Solution (LISS) enhancement. The patient samples with known anti-Kell were obtained from local hospitals.

Anecdotal evidence suggests that the Ortho-gel method has missed anti-Kell antibodies when performing routine antibody screens. These same patient samples were tested using the tube method, and the anti-Kell antibody was detected. Validity was strengthened by running several specimens in duplicate without the researcher's knowledge. Patient information was not provided in order to comply with Health Insurance Portability and Accountability Act (HIPAA) regulations. The purpose of this study was to determine the sensitivity of detection for anti-Kell antibodies with the Ortho-gel method compared to the traditional tube method.

Effects of Oral Contraceptives on Protein C Oral Presentation

Callie Parry, Jacob Barnhill, Corey Bankhead (Yas Simonian), Clinical Laboratory Sciences Eccles Undergraduate Research Scholarship

Women on oral contraceptives are subject to an increased risk of developing blood clots. Oral contraceptives are thought to lower the levels of Protein C. The role of Protein C in the blood coagulation process is to inhibit certain activated blood clotting factors, Factors V and VIII. Without the proper levels of Protein C, an individual cannot inhibit the coagulation process as needed. The purpose of this study is to determine if there is a correlation between oral contraceptive use and decreased levels of Protein C.

Volunteer participants will be asked to complete a questionnaire to assess their health status, the length, type, and dosage of the oral contraceptives they are currently using. The same number of healthy female volunteers not using an oral contraceptive regiment will serve as the control population. Over a two-day period blood samples will be collected in sodium citrate vacutainer tubes for measurements of Protein C levels. Tests will be performed on an ACL 100 coagulation instrument from Beckman-Coulter. Appropriate statistical methods will be employed to analyze the results.

Tracking Strains of Methicillin Resistant Staphylococcus aureus (MRSA) through SCCmec Typing

Oral Presentation

**Justin Rhees, DaNette Bushman, Megan Maciel (Travis Price),
Clinical Laboratory Science
Weber State Undergraduate Research
Scholarship**

The occurrence of Methicillin Resistant Staphylococcus aureus (MRSA) infections within hospitals and the community is on the rise. Staphylococcus aureus is a bacterium which is naturally found on the skin of most people but can cause infections that are normally easily treated; however, due to the emergence of methicillin resistant strains, Staph infections can lead to complications, longer hospital stays, and more costly treatment. The Staphylococcal Cassette Chromosome (SCCmec) gene, which contains the gene responsible for the bacteria's resistance to methicillin, codes for one of five specific types of MRSA. Determining the SCCmec type of each strain of MRSA isolated from infected patients could be useful in tracking its spread through the hospital and community. Research performed on 200 frozen MRSA isolates from Intermountain Healthcare's LDS Hospital (Salt Lake City, Utah) will determine each isolate's cassette type and link it to that particular strain of MRSA's antibiotic susceptibility pattern. The DNA of the isolates will be extracted using the Qiagen method and tested by polymerase chain reaction (PCR) using the Applied Biosystems ABI Prism. An infection control team could then use this information to track the genetic lineage and person-to-person transmission of MRSA strains, thereby controlling serious outbreaks.

The Relationship of Sex Hormones and Migrain Headaches in Men

Oral Presentation

**Marc Schmitt, Rhett Crapo (Yasmen Simonian), Clinical Laboratory Sciences
Phyllis Crosby Gardner Undergraduate
Research Scholarship**

Recent evidence indicates a correlation between migraine headaches in menstruating females and fluctuations in circulating estrogen levels. Estradiol is the most potent and prevalent hormone of the estrogen family. In many women, a direct correlation exists between rapid, abrupt decrease in estradiol levels and migraine onset. The majority of hormone-related migraine studies have focused on women, while little attention has been given to migraines in males due to fluctuations in concentrations of sex hormones. A circadian rise and fall of testosterone is apparent in males. In addition, testosterone's biochemical structure is similar to estradiol and is converted to estradiol through aromatization in vivo; therefore, a possible correlation may exist between fluctuating sex hormone concentrations in males and migraine onset. Serum concentrations of estradiol and testosterone in males who suffer from migraine attacks will be measured. A diurnal concentration of both hormones will be assessed during non-migraine periods. In addition, hormone levels will be measured during the onset of a migraine. The study seeks to discover if a statistically significant difference exists between hormone levels at migraine onset and normal, daily levels. Finding such a correlation could open new avenues of research and may introduce possible therapeutic mechanisms for migraine symptoms.

Association of TGF Polymorphisms with Severity of Hepatitis C Virus Oral Presentation

Tiffany Smith, Masoud Rostamkhani, Garrett Anderson (Scott Wright), Clinical Laboratory Science

Hepatitis C virus (HCV) is an infectious blood-borne virus that usually persists as a chronic liver infection. There are four million people in the USA that are infected with HCV. The process HCV uses to infect the host is unknown. However, there has been increasing interest in the influence of genetic polymorphisms (DNA sequence variations), and whether they can identify subjects at risk of developing HCV. Several studies indicate that variants of Transforming Growth Factor-alpha and beta-1 genes stimulate the liver cell growth by inducing production of cell proteins and preventing their degradation. Our study involves Polymerase Chain Reaction (PCR) amplification of specific portions of the TGF genes from DNA samples in HCV infected and healthy individuals. We will use an enzyme to cut the synthesized DNA at specific sites and then visualize the generated bands (small pieces of DNA as the result of enzyme treatment) on gel electrophoresis. Statistical Chi square analysis of the generated band frequencies between the HCV infected and uninfected individuals will show if these genes are associated with HCV. This study could demonstrate that people who have certain polymorphisms in their genes are genetically predisposed to have a higher chance of becoming infected with HCV.

Building Virtual Conversations and Communities for Dental Hygiene Poster Display

Ashley Wade and Melissa Leger (Kami Hanson), Dental Hygiene

The purpose of this project was to investigate peer-to-peer learning in a virtual community of dental hygiene students. This research built on research completed last year on the utilization of emergent technologies in the development of virtual case studies for community oral health. Research findings indicated that students engaged in positive interactions via the use of online weblogs (blogs). Examples of such interactions were incidences of resource sharing, complimentary feedback, critical reflection and resultant discourse. While researchers were able to draw conclusions based on research outcomes, it was posited that a longer period of study would produce more substantive results. As a result, this research project investigated the use of blogs, and other forms of computer-mediated-communication viewed as virtual communications, by dental hygiene students for an entire academic year. Research questions included: 1) Can dental hygiene student virtual communications be classified as a community of practice? 2) Will student bloggers benefit academically and/or personally from virtual communications? And, 3) How will virtual "blog" communications compare to students face-to-face interactions?

Researchers are collected data at this time, the last two weeks of February, so do have data to present until March 2006. However, research outcomes will be available and presented at the WSU Undergraduate Symposium.

Dear Researchers,

I would like to commend you for your participation in the Third Annual Undergraduate Research Symposium and Celebration at Weber State University. Science as a discipline is fundamentally rooted in research. As active participants in the process, you have been able to develop a deeper understanding of the scientific method and what it means to “do science.” The development of hypotheses based on current theories, and the testing and verification or falsification of those hypotheses is an incredibly powerful way of learning. It carries you beyond the walls of the traditional classroom and laboratory experience to exploration at the edge of human knowledge.

Your undergraduate research experience has certainly brought relevancy and immediacy to those countless hours spent buried in textbooks and in the laboratory. But more than that, your undergraduate research experience has prepared you well for furthering your education, or for entering the workforce with a fundamental and important experience in the scientific process, and it has provided you with the sense of the excitement of science that can be carried on to students that you may one day be instructing.

Our society today owes most of its growth to science and technology, and you are at the forefront of the incredibly rapid advances that we are witnessing today.

Congratulations on your tremendous accomplishments, and we celebrate them with you today.

Sincerely,

A handwritten signature in black ink, appearing to read "Dale A. Ostlie". The signature is fluid and cursive, with the first name "Dale" being the most prominent.

Dr. Dale A. Ostlie, Dean
College of Science

Bacteriocin Production by Locally Isolated Strains of *Flavobacterium*

Poster Display

Brett J. Barrett, Trevor L. Bright, Quinn Lindstrom, Derek Florek, Jayde Ferguson (Matthew J. Domek), Microbiology

Competition among organisms for desirable habitats is a frequent occurrence at all levels in the biological world. Bacteriocins are antibiotic-like substances that are produced by bacteria against closely related strains or species that appear to offer the producer strain a competitive advantage. We investigated whether strains of bacteria from the genus *Flavobacterium* produced bacteriocins. *Flavobacterium* grows in fresh water and can be easily isolated from the local environment. Although bacteriocins have been reported to be produced by many species of bacteria, there is little information about the production of bacteriocins by flavobacteria. Strains were isolated locally from Strong Creek and Beus Pond. To detect bacteriocin activity, agar stabs of flavobacterium were made and then killed using methylene chloride. Soft agar containing flavobacteria were overlaid on stab plates. The plates were observed for noticeable inhibition of overlaid bacteria. Early results show evidence for several producer strains. Our investigation is ongoing in our attempts to chemically identify these compounds.

Phosphate Utilization in Halophilic Organisms of the Great Salt Lake

Oral Presentation

**Brigette Beyer (Craig Oberg, Michele Zwolinski), Microbiology
National Science Foundation Research
Experience for Undergraduates Fellowship**

Phosphate, although an essential nutrient, contributes to significant eutrophication of aquatic systems by stimulating algal and bacterial growth and thus depleting the oxygen available for other aquatic life. Hypersaline environments are understudied with respect to phosphate cycling, and halophilic microorganisms may play a critical role in determining the impact of excess phosphate on hypersaline ecosystems. Sediment and water samples were collected from two environments of the Great Salt Lake, UT, and used to inoculate media, developed for this project, to isolate hypersaline organisms and to test their abilities to use defined organic (o-phosphorlethanolamine, 1-aminoethylphosphonic acid, or o-phospho-DL-serine) or inorganic phosphate (KH_2PO_4 , or H_3PO_4) sources. Bacterial growth occurred on all introduced phosphate sources, including minimal media with no phosphate added. DNA was isolated from unique colonies and the 16S ribosomal RNA gene was amplified and sequenced. The isolates were related to other halophilic or marine gamma-Proteobacteria, including the genera *Halomonas*, *Marinobacter*, *Salinivibrio*, and *Idiomarina*. In addition, the isolates were able to use multiple phosphate sources. This indicates that halophilic microorganisms have the ability to use a broad spectrum of phosphate sources and may have alternative mechanisms for obtaining phosphate in phosphate-limited environments.

Measurement and Analysis of Trans Fat in Commercial Cooking Fats

Oral Presentation

Michael Campbell (Rod Hansen, Robert Hogge, Don Davies), Chemistry and HPHP

Trans fats are all over the media today because of their role in cholesterol profiles and heart disease. The purpose of this project is to develop a chemistry laboratory exercise to be used as an educational tool that will help students understand trans fats better and give them the knowledge they need to make healthy food choices and help them recognize outside-the-box uses for organic chemistry instruments such as the infrared spectrometer.

The method is based on one of the ways trans fats are measured in commercial products. The method uses an infrared spectrometer to detect a part of the trans fat molecule that is not present on other fat molecules. Pure samples of known amounts of trans fat are measured for reference, then commercial fats and oils are measured. The data from the known samples are used to determine the amount of trans fat in the commercial products.

There is also a section in which an oil containing very little trans fat is chemically modified to increase the amount of trans fat. This section gives the students a chance to use the method of measuring trans fat content to detect changes that occur after chemical reactions.

Unequal-Arm Michelson Interferometer for Laser Characterization and Atom Trapping

Oral Presentation

Trealyn Christensen (John Sohl), Physics Denkers Undergraduate Research Scholarship

To run an efficient atom trap, the employed lasers, integral in initiating the trapping of atoms, must be characterized or, in other words, the stability and wavelength of the laser light need to be measured and controlled. Several methods of characterization have been tried without success. Based on research by other groups we think that an unequal-arm Michelson interferometer will analyze the laser beams at the required resolution, consequently characterizing the laser. The basic idea is that the interferometer, as the lengths of its arms are adjusted, quantifies incredibly fine changes in wavelength structure, effectively creating a ruler to which the user can measure and control the laser output, thereby enhancing the success of the atom trap. Results of this testing and the effects on the laser design and alignment will be discussed in the presentation.

Elucidation of the Antimicrobial Activity of a Liquid Disinfectant Containing Cinnamaldehyde

Poster Presentation

Jeff Douglas (Craig Oberg), Microbiology
Phyllis Crosby Gardner Undergraduate Research Scholarship

Previous research demonstrated the microbicidal power of cinnamaldehyde, an essential plant oil component. In this study, three different concentrations of cinnamaldehyde were used to produce a liquid disinfectant tested for its possible application in the food, industrial, domestic, and institutional areas. *Escherichia coli*, *Proteus vulgaris*, *Pseudomonas aeruginosa*, and *Staphylococcus aureus* were used in the CEN basic bactericidal activity test to elucidate the antimicrobial activity of the disinfectants. The disinfectant containing only 0.3% cinnamaldehyde and along with 30% reagent alcohol, necessary for the dissolution of cinnamaldehyde in water, showed substantial reduction in viable organisms after a 1 minute contact time with *Staphylococcus aureus*. At a 0.5 % cinnamaldehyde concentration, the lethal effect occurred even faster, less than 30 seconds, making it difficult to calculate the exact time required for the death of a given number of organisms to ensue. Cinnamaldehyde, at very low concentrations, proved to be an effective component for a disinfecting solution.

The Effect of Energy Development on Sage Grouse in the Western United States

Poster Display

Rebekah Downard (S. I. Zeveloff), Zoology

The greater sage grouse is a bird native to the western United States. In the past 150 years its populations have declined to a point of concern, and now a new threat in the form of energy development threatens this sensitive species even more.

Sage grouse are sagebrush obligates, any activities that degrade sagebrush condition directly damage sage grouse numbers. Oil and gas development is one of these activities. Energy development results in the direct habitat loss, fragmentation of continuous habitat, and noise, water and air pollution. With respect to sage grouse, it may degrade breeding habitat to a point it is no longer usable, and diminish food sources. This is a particular concern in the Uintah Basin of eastern Utah, where both grouse and gas development coincide.

Sagebrush habitat is very difficult to restore once it has been disturbed. Land management agencies and energy developers can work together to reduce the footprint left behind by development. New development must proceed in a manner conducive to healthy habitats. I did literature research and conducted interviews to find a way both mining and sage grouse populations can continue.

Feeding Ecology and Diet of American Avocet and Black-necked Stilts at Great Salt Lake, Utah

Poster Display

Christian Edwards, Karla Terkelson (John F. Cavitt), Zoology

Both the American Avocet (*Recurvirostra americana*) and Black-necked Stilt (*Himantopus mexicanus*) overlap in breeding and foraging sites throughout much of their ranges. However, very little is known about the feeding ecology and diet of these species at Great Salt Lake, Utah; where the largest breeding assemblages in the western United States occur. We examined foraging strategies and diet of these species during the 2005 breeding season at three study sites within the Great Salt Lake ecosystem. Dietary information was obtained by direct examination of gut contents. Birds were randomly collected after being observed feeding for >15min. Esophageal, proventricular and ventricular contents were removed and placed in 80% ethanol. Invertebrates were identified to family, counted and % volume and dry mass of samples determined. Following each shorebird observation/collection, invertebrates were sampled from the benthos and water column within each foraging area. The results of this study indicate that both diet and foraging behavior was significantly different between species. For example, Chironomid larvae made up over 90% of the invertebrates identified in American Avocet stomachs but accounted for only 20% in Black-necked Stilts. These dietary differences may serve as a mechanism for niche partitioning during the breeding season.

Geospatial Analysis and Modeling of the Wyoming Salient of the Sevier Orogenic Belt

Poster Display

Steve Fellows, Cameron Thompson, Arlo Weil, and Aviva Sussman (Adolph Yonkee), Geosciences

Mountain belts display curvature at a range of scales, reflecting complex 3D deformation. To better understand origins of curvature, a collaborative effort is underway to determine the deformation history of the Wyoming salient of the Sevier orogenic belt. Paleomagnetic and structural data have been collected from the Triassic Ankareh and Jurassic Twin Creek Formations in the fold-thrust belt, and record systematic patterns. In order to better visualize relations, a Geographic Information System has been compiled, incorporating digital geologic, digital elevation, ortho-photographic, structural, and paleomagnetic data. Data can be overlain/draped, variously projected, and statistically queried to reveal geospatial patterns. Moderate counter-clockwise rotations are widespread in the northern part of the salient, with larger rotations in frontal thrust sheets that interacted with the Gross Ventre foreland uplift. Variable clockwise rotations are found in the southern part of the salient where thrust sheets interacted with the Uinta foreland uplift. Widespread early shortening produced minor folds, minor faults, and cleavage subperpendicular to bedding. Principal shortening directions fan about the salient, reflecting a combination of initial curvature and vertical axis rotation.

Comparison of Mycorrhizal Colonization Frequency of *Bromus tectorum* and Native Grass Species at Antelope Island State Park

Oral Presentation

**Shaunna Anne Goldberry (Ron Deckert),
Botany
WSUSA Undergraduate Research Fellowship
2006 NCUR Participant**

Bromus tectorum—cheat grass, is a non-native species that affects ecosystems by altering plant community structure. Though much is understood about the role of symbionts in the autecology of native species, little is known about the role of symbionts and invasive species establishment. The objective of the study was to compare the colonization frequency of root symbionts (arbuscular-mycorrhizal and dark septate endophytes) between *B. tectorum* and several species of native grasses. Native species were chosen according to forage potential and the degree to which they are impacted by cheat grass invasion. Inoculum potential of the soil from the test sites was analyzed by growing *Zea mays* and the test species in collected soil from Antelope Island State Park—an island in the Great Salt Lake of northern Utah. After twelve weeks, roots were cleared and stained with trypan blue in lactoglycerol. Fifty 10.0 mm root sections from twenty individual grasses were collected from the five test sites. Samples were quantified for root fungal structures using the line intersect method. Fungal identifications were made where possible. Preliminary results show higher colonization frequency of an unidentified dark-septate endophyte (DSE) in *B. tectorum* relative to native grass species. We found differential distribution of an unknown Chytridiomycete in the non-native species *B. tectorum*, and other native grass species. Identification of the isolated DSEs from *B. tectorum* root and a Koch's postulate test is ongoing.

Comparative Physiology and Anatomy of Warm Bodied Sharks

Poster Display

**Phillip Gray (Ron Meyers, Diego Bernal),
Zoology
Weber State University Undergraduate
Research Scholarship**

While most species of shark have a body temperature that is similar to that of the surrounding environment, a few species maintain their body warmer than the surrounding environment that is they are warm bodied. The heart of these sharks, however, is not warm and is exposed large changes in temperature as the shark dives or inhabits cold waters. The present study quantifies biochemical capacities at temperatures ranging from 5 to 30° C in the cardiac muscle of warm bodied sharks (e.g. thresher, mako and salmon sharks) as well as describes the anatomical differences between warm bodied sharks and non warm bodied sharks. Our findings show that the myocardium of salmon sharks has an increased aerobic capacity relative to the other sharks and a decreased thermal effect (2.46 fold). Optimal conditions show no significant difference between warm and non-warm sharks. Anatomically, the hearts of warm bodied sharks are larger when compared to other sharks of similar size. Fiber arrangement in warm sharks is also different than the non-warm sharks. Our findings suggest that, in the heart, anatomical rather than physiological differences appear to be the factor that allows the warm sharks to inhabit cold waters while maintaining elevated body temperatures.

**The Effects of Cheatgrass
(*Bromus tectorum*) on the
Relative Abundance of
a Northern Utah Snake
Community
Poster Display**

**Lucas K. Hall and Nicole M. Pietsch (John F. Cavitt and John F. Mull), Zoology
Weber State University Undergraduate
Research Scholarship**

Cheatgrass, an invasive annual exotic plant, has been found to diminish many shrub and native grass dependant organisms; however relatively little research has been done regarding how it affects snake communities. We conducted a study on Antelope Island State Park, Davis County, Utah, where cheatgrass is abundant and may be negatively impacting snake populations. Four study sites with varying cheatgrass cover (38 - 69%) were established to measure relative abundance of snakes. We trapped snakes using funnel traps attached to drift fence arrays (one array per site). A total of 35 individuals were captured between June and September 2005 representing two snake species: western yellow bellied racer (*Coluber constrictor mormon*) and Great Basin gopher snake (*Pituophis catenifer desertiicola*). Regression analyses were performed to determine if a relationship existed between the percent of cheatgrass cover and species relative abundances. We found a negative relationship between the relative abundances of both snake species at sites with the highest cheatgrass cover. These results suggest that cheatgrass may negatively affect the snake community.

**Fructose
Poster Display**

Jared Hansen (H.L. Beghout), Chemistry

In nature fructose is found in several different forms, some of which are found more abundantly than others. Fructose is found in its chain form, as well as several different configurations of two types of ring structure. The most abundant form is fructofuranose which is a five membered ring, the other less abundant form is fructopyranose which is a six membered ring. Some reasons why one form might be more favorable than the other is energetically and/or entropically the one form is more stable than the other.

We have been investigating possible explanations for why fructofuranose is found more commonly in nature than fructopyranose. Using computational methods we are modeling the chain form of fructose, fructofuranose and fructopyranose under different conditions to obtain information, such as energetics, that might give us some insight into why one form is favored over another.

We have calculated the energies and thermodynamical properties of each of the three forms in the gas phase, and are currently investigating solvation effects on their energies using different computational models.

Timing and Location of the Elastic Extracellular Matrix Protein, MAGP, in Zebrafish Embryos

Oral Presentation

**Justin Harper (Barbara Trask), Zoology
Weber State University Undergraduate
Research Scholarship
2006 NCUR Participant**

A specific set of proteins designed to function in tissues (such as blood vessels, lungs and skin) that undergo repeated stretching and recoil are called the 'elastic extracellular matrix'. While the elastic extracellular matrix is comprised of multiple components, the protein upon which this study focuses is known as 'microfibril associated glycoprotein', or MAGP. This study investigates the translation, timing, and deposition of MAGP in *Danio rerio* (zebrafish) during their embryonic development. Because very little is known about MAGP production in zebrafish during this physiologic process, the information obtained during these studies will likely contribute to the understanding of this important protein mixture. To accomplish this we have used RT-PCR, molecular cloning, in-situ hybridization, northern blotting, gel electrophoresis and other molecular biology techniques. The project was initiated by extracting Zebrafish RNA from whole embryos from different developmental stages. Using RT-PCR with degenerate oligonucleotide primers, a 300 bp probe specific for *Danio* MAGP was generated. The creation of these primers was accomplished by aligning known sequences of MAGP from different organisms. Initially this probe was used to analyze relative levels of MAGP through embryonic development. Whole mounted embryos were then used to assess the spatial deposition of this protein more specifically.

Bone Lead Levels of Individuals in the Salt Lake City Area

Oral Presentation

**Sarah Henry (Michelle Arnold), Physics
Denkers Undergraduate Research
Scholarship**

For thousands of years lead has been known to have harmful health effects. It is over the past few decades that damage caused by lead has become increasingly concerning as lead toxicity has been recently reported as a major health problem in the United States. Exposure to lead can come from the environment and also occupational and hobby activities.

Currently, lead is most commonly monitored by measuring blood-lead levels. While this method is successful to a certain extent, the biological half-life of lead is approximately 36 days. Therefore, blood-lead levels can only indicate recent lead exposure. ^{109}Cd K XRF is a measurement of long-term lead exposure. This method involves the use of photons to fluoresce atoms of lead in bone and the measurement of the subsequent characteristic X-rays. Bone-lead levels are measured on the right tibia and the left calcaneous and do not require an invasive procedure.

We measured volunteer subjects, using ^{109}Cd K XRF, to estimate the base lead level for the Utah population. This base level will be used to compare individuals who have been harmfully exposed to lead, determining the severity of their exposure.

Preliminary data suggests that there may be a trend indicating an increase level of lead with age. This preliminary bone lead data suggesting the base line will be presented.

Rock Weathering Microorganisms: Exploring the Role of Silicate-Mobilizing Bacteria in the Silicon Cycle

Poster Display

**Keri Kinghorn, Rachel Day, Kim Thorsted,
Jennifer Stone (Mohammad Sondossi),
Microbiology**

Mircoorganisms play a vital role in mobilizing silicon, making it more readily available to other organisms, which contributes to biogeochemical cycles-specifically the silicon cycle. Several mineral structures are known to contain silicon in the form of silicates and silicon dioxide. In Utah, it is primarily found as quartz and feldspar, and secondarily within granite and clay. In our experiment, we will isolate these silicon-specific microorganisms in order to show that they do contribute to the silicon cycle. Samples from the rocks were collected by using an environmental swab which was swabbed across the surfaces of the large weathered rocks which were previously selected. These swabs were then streaked onto silicon selective agar. Upon incubation, we found opaque colonies with halos, indicating silicon dissolved. Once gram-stained, the organisms were gram negative rods. This indicates from other studies that these organisms were similar to others found and that they do play a role in dissolving silicon. The organisms indicate through experimentation that the mechanisms for the mobilization was not through acidulation, but by chelation forming a complex cyclic structure. Our experiment illustrates the depolymerization of silicon into its monomeric form, which could be taken in by other microorganisms, showing the process of the silicon cycle.

Anatomy and Histochemistry of Hind-limb Flight Posture in Shorebirds

Oral Presentation

**Joshua McFarland (Ron Meyers), Zoology
Weber State University Undergraduate
Research Scholarship
National Science Foundation Research
Experience for Undergraduates Fellowship**

During flight, birds support their hindlimbs in one of two possible positions. A flexed limb posture involves flexion of the hip, knee, and ankle joints, resulting in a tucking of the legs beneath the body. An extended limb position (as seen in shorebirds) occurs when the hip and knee joints are flexed, but the ankle joint is extended so that the legs trail caudally. Muscles that hold the legs in these positions should contain populations of non-fatiguing slow muscle fibers. We examined hind-limb muscles in American Avocets (*Recurvirostra americana*) to determine anatomical specializations associated with the extended posture. We expected to find postural muscles composed entirely of slow fibers; however, we found that all muscles examined contained both fast and slow fibers. Slow fibers ranged from 10 to 80% for 12 limb muscles examined. We believe this is due to multiple functions of the avian hind-limb. Leg muscles function not only during flight, but also in standing, walking, running, or swimming. Therefore, the muscles of the hind-limb produce versatile actions, both postural and dynamic in nature. Preliminary data shows a similar pattern in muscles of other species. Supported by a NSF-REU grant, a NIH grant, and WSU.

Nest Site Selection and Nesting Success of Snowy Plover at Great Salt Lake, Utah

Poster Display

**Trina Nixon (John Cavitt), Zoology
National Science Foundation Research
Experience for Undergraduates Fellowship**

The Great Salt Lake is one of the most important inland breeding sites for Snowy Plover (*Charadrius alexandrinus*) in North America. It is estimated that approximately 10,000 Snowy Plovers breed within the Great Salt Lake ecosystem representing close to 55% of the entire breeding population west of the Rockies. We examined nesting success and the factors influencing nest-site selection of Snowy Plovers during the 2003-2005 breeding seasons. Study sites were searched for nests throughout the breeding season and once located, were monitored every three to four days until either the eggs hatched or the nest failed. Following termination of the nest, we measured percent vegetative cover, maximum vegetation height, percent bare ground, density of vegetation, visual obstruction caused by vegetation, and percent rock cover. Nesting success was highly variable between sites and ranged from 24-54%. Snowy Plovers chose sites with significantly more bare ground and lower, sparser vegetation relative to unused sites. In addition, sites used by Snowy Plovers had a higher percentage of rocks less than 1 cm in size when compared to unused sites. The results of this study provide critical information on both the nesting success and habitat selection of a highly imperiled species.

Use of Essential Oil Components to Inhibit Fungi **Oral Presentation**

**Erik Oberg and Jeff Douglas (Craig Oberg),
Microbiology**

A serious problem in buildings is the growth of fungi resulting in health problems, structural damage, and unpleasant atmosphere. Many cleaning agents currently used are only fungistatic, not fungicidal allowing fungus to return once the cleaning agent has dissipated. Previous experiments have shown that many essential oils exhibit antifungal properties. Using the disc assay, 30 individual components from these essential oils were screened for inhibition against *Penicillium*, *Alternarium*, *Rhizopus*, and *Aspergillus*. Many of the components showed some fungal inhibition. Components with the largest zones of inhibition were: benzaldehyde, carvacol, cinnamaldehyde, furfural, jasmone, geraniol, and perillaldehyde. These seven components were tested in triplicate at various concentrations with similar results. The seven components were then tested utilizing the poison media method to determine if their inhibition was fungistatic or fungicidal. Preliminary results indicated that several compounds might be fungicidal. Results from this experiment show that several individual components from essential oils have fungicidal capabilities and could be used to both remove and inhibit and prevent the growth of fungi in and on structures.

Effect of Heat on Epithelial Cell Viability

Oral Presentation

**Taylor Oberg, Evan Call (Matthew Domek),
Microbiology**

There has been extensive research done on the effects of pressure as a cause of “pressure ulcers” in patients seated in wheelchairs and confined to beds for long periods of time. Recent research indicates that temperature may also be a factor in the development of “pressure ulcers”. The purpose of this research project is the development of a model system to simulate the temperature stress that a person’s skin experiences while seated in a wheelchair for long periods of time. In this study, a Human Keratinocyte cell line was obtained and grown in serum free media. The cells were then placed into a temperature-controlled incubator. Tests were run at three degree intervals beginning at the minimal level of skin temperature measurements (27oC) and progressing to the temperatures observed in seated individuals after approximately 4 hours of uninterrupted sitting (37oC). Samples of cells were taken every 3 hours for a 30 hour period. Each of the cell samples was then stained with Trypan blue vital stain to identify viable cells and the cells were graded for cytopathic effect. We found that the cells that were exposed to higher temperatures had a greater cytopathic effect than the cells that were exposed to a lower temperature.

The Fibonacci Numbers

Poster Display

**Spencer Parkin (Afshin Ghoreishi),
Mathematics**

I will discuss Fibonacci numbers and some of there interesting properties and present solutions to two problems proposed in mathematical journals.

The Effectiveness of Scientific Visualization Techniques: Teaching the Lunar Cycle

Poster Display

R. Proctor (J. Armstrong, A. Johnston, S. Palen), Physics
Weber State University Undergraduate Research Scholarship

A significant number of university students hold serious misconceptions about the lunar cycle. In particular, these students hold to alternative, non-scientific explanations of the lunar phases. For example: a popular misconception is that the lunar cycle is caused by Earth's shadow on the Moon (Driver et al. 1994; Dunlop, 1997; Trundle et al., 2001). Studies indicated that the most effective method of overcoming these alternative concepts is to confront them directly, using an inquiry based approach (Dunlop, 1997; Trundle et al. 2001). We conducted a study of the effectiveness of several scientific visualization methods in correcting these alternative views.

Superfast Myosin Protein Isolation

Poster Display

Daniel Schmutz (Barbara Trask), Zoology
Eccles Undergraduate Research Scholarship

Muscles are groups of fibers that can contract at different rates, thus enabling them to perform a multitude of functions. The speed of contraction depends upon the type of myosin protein that a fiber contains; myosin is classified generally as either 'fast' or 'slow'. Several recent studies conducted on rattlesnake tailshaker muscles suggest the presence of 'superfast' myosin, enabling very rapid contraction. The presence of 'superfast' myosin in the songbird syringeal muscles (responsible for song production) has also been suggested through physiological studies. Typically immunohistochemical mechanisms, involving antibody use, are used to identify both 'fast' and 'slow' myosin. However, no such antibody to superfast myosin exists. Therefore, a study was initiated to generate a 'superfast' antibody, involving two approaches. The first employs the common molecular technique, RT-PCR, on RNA isolated from rattlesnake tailshaker muscles. Degenerate oligonucleotide primers made toward myosin proteins were used to amplify the enzymatic region of myosin. This region can be cloned for production of a protein fragment to which an antibody can be made. An alternative biochemical process requires isolation of the protein. Purified protein can also be used for antibody production. Successful antibody generation will allow verification of superfast myosin in songbird syringeal muscles.

**Upper Cretaceous
Stratigraphy, Paleontology
and Petrology of Hillsdale
Canyon southern Utah
Poster Display**

**Cameron Thompson, Daniel Cox (Jeffrey
Eaton), Geosciences
Eccles Undergraduate Research
Scholarship**

Hillsdale Canyon is located in southern Utah, west of Bryce Canyon National Park on the Paunsaugunt Plateau. Two detailed stratigraphic sections were measured during the summer 2005 field season, one north of the Rubies Inn Thrust fault and the other south of the fault. The sections can be correlated across the fault. The sedimentary rocks in Hillsdale Canyon consist of fluvial sandstones and associated floodplain deposits. Surface prospecting and screen washing techniques were undertaken to find fossils which have biostratigraphic utility, in order to correlate the stratigraphic section in Hillsdale Canyon with that present in Bryce Canyon National Park. One multituberculate molar suggests an age of Santonian or Early Campanian. Ostracods recovered are currently under study. Microfossils recovered which had no biostratigraphic utility includes: multituberculate premolars and incisors, dinosaur teeth and bone fragments, crocodile teeth and scutes, gastropod shell fragments, and fish teeth, vertebrae and scales. Preliminary petrographic thin section analysis indicates an overall up section increase in lithic fragments including chert, carbonate, and quartzite. The section in Hillsdale Canyon likely represents the John Henry and Drip Tank members of the Straight Cliffs Formation, and lower part of the overlying Wahweap Formation.

**Precipitation by Wetting-
Drying Mechanisms Observed
on Calcite and Gypsum
Surfaces with Atomic Force
Microscopy, Scanning Electron
Microscopy and X-Ray
Microscopy
Poster Display**

**Steven Toller, Wesley Snow (Colin Inglefield,
Marek Matyjasik), Physics**

Atomic force microscopy (AFM) and scanning electron microscopy (SEM) were used to study calcite and gypsum nucleation, precipitation and growth. This study is aimed at improving the understanding of mechanisms and rates of nucleation, precipitation and growth resulting from wetting and drying cycles in natural soils under conditions of variably acidic environments. Evaporation on glass surfaces was used for comparison.

In the experiments with calcite, a solution saturated with calcium carbonate at pH=4 (adjusted with HCl) and doped with KH₂PO₄ was repeatedly evaporated on a freshly cleaved calcite crystal. The presence of phosphates altered crystallization pattern. Calcite crystals have not formed in the presence of phosphate ions. All surfaces displayed homogeneous and heterogeneous crystal growth.

In the experiments with gypsum, a solution saturated with calcium sulfate at pH =6 in equilibrium with air and pH=3 (adjusted with H₂SO₄) were evaporated on freshly cleaved gypsum. Both homogeneous and heterogeneous growth occurred on various surfaces of gypsum. The crystallization pattern varied on sloping and flat surfaces. At low pH an elliptical dissolution accompanied crystallization.

Chemical analysis of areas of 40 micrometers on studied surfaces was conducted using X ray microscope.

Student Researchers--

The College of Social and Behavioral Sciences is proud to have your research on display. You come from a wide array of disciplines--from history, psychology, social work, political science, and geography. What unites you all is your initiative, your intellectual curiosity, and your dedication to scholarly inquiry.

This symposium is an opportunity to share your findings with the Weber State community. We hope you enjoy discussing your research, explaining your methodology, and exploring your scholarship's larger implications.

Again, we congratulate you on your participation in this important event and wish you success in your future scholarly endeavors.

Sincerely,

A handwritten signature in black ink that reads "Susan G. Matt". The signature is written in a cursive style with a large, sweeping initial 'S'.

Dr. Susan Matt
Associate Professor of History
College of Social & Behavioral Sciences

Vitamins for Treating Bi Polar Disorder

Oral Presentation

Mickel Blomquist (Chris Millard), English

Bipolar Disorder or Manic Depression affects millions of people every year. The word Bipolar is now used to indicate the 2 poles, or extremes, that characterize the disorder. It affects people's ability to have normal moods. People with this disorder have a life something like an emotional roller coaster with extreme highs and depressing lows. When they experience highs, they tend to have very irritable moods, become angry, and sometimes violent. When they experience lows, they become sad or depressed. Some lows have gone as far as suicide. Although there is no cure for the disorder, with proper medication, education, and support, it can be treated very effectively. What is the proper medication? In 1995 a Canadian Hog-feed Salesmen, David Hardy, thought of treating the disorder by using vitamins and minerals. Could vitamins and minerals be more affective than the medications that are used to treat Bipolar disorder today?

Hotel Bigelow/Ben Lomond: The History and Restoration of Ogden's Grand Dame

Oral Presentation

**Beau James Burgess (Kathryn MacKay) ,
History**

Located at the crossroads of 25th Street and Washington Boulevard, the Hotel Bigelow/Ben Lomond dominates the Ogden City center. More than its ornate architecture and interior decorations, the hotel is a persona, a place in time, a beloved piece of the social and cultural landscape.

Built as the last word in the hotel industry, through the years, this structure has seen its fair share of altering, neglect, and remodeling. Currently, the hotel awaits restoration. Along with contemporary usage, the hotel shall ultimately be returned more closely to its grand opening state of June 4, 1927.

With support from Undergraduate Gesearch grants, I have been researching historic 25th Street. Based on that work, I have been hired by the current developers to research further the history of Hotel Bigelow/Ben Lomond in support of their managing an authentic restoration.

This presentation will include: then and now photographs taken from the same vantage points, stories surrounding the hotel involving folklore of tunnels and ghosts, famous guest and events, fun facts and trivia, as well as insight to the current restoration plans and process.

Volunteer Tourism in Rural North India: The ROSE Experience

Oral Presentation

**Eric Coleman (Bryan Dorsey), Geography
Weber State University Undergraduate
Research Scholarship**

Conventional tourism exhibits negative social, economic, and environmental impacts in developing countries. It is hypothesized that such impacts can be reduced by volunteer tourism. This research describes the operational, economic, and social features of the Rural Organization for Social Elevation's (ROSE) volunteer-based tourism program, located in the Uttaranchal state of North India. The primary goal was to understand the various dimensions of the ROSE volunteer tourism experience including: ROSE history and structure, local residents' perceptions of volunteer tourists, and the characteristics of ROSE volunteer tourists and their perceptions of the ROSE program. ROSE's ability to initiate community development projects was also evaluated. Findings suggest a two-dimensional program structure, whereby ROSE serves as both a tourist and charitable organization. Local residents expressed approval of the ROSE program, while some ROSE volunteer tourists expressed concern and/or dissatisfaction with various aspects of their experience. Fieldwork as a participant-observer at the ROSE program completed over the course of three months generated the majority of data, which contributes to the growing body of critical research on volunteer tourism.

Orgins of the Ghost Dance Oral Presentation

**David Eldredge (Susan Matt), History
Eccles Undergraduate Research
Scholarship**

One of the most influential Native American movements that occurred since Europeans came to this land was the Ghost Dance religion of 1890. It started in an obscure valley in western Nevada and spread east through the various tribes as far away as the Missouri River. It has been linked to the death of Sitting Bull and the tragic events at Wounded Knee. But how did this religion start? What kind of man was Wovoka, the founder of the religion, and where did he get his ideas? How did other tribes interpret his doctrine? This project address those influences that bore the most sway on this movement and its beginnings.

History of Hill Aerospace Museum

Oral Presentation

Sabrina Enriquez (Kathryn MacKay), History Weber State University Undergraduate Research Scholarship

No abstract entered.

Basque Festivals and the Preservation of Identity

Poster Display

Kimball Kelsey (Susan Matt), History Weber State University Undergraduate Research Scholarship

The first Basque festival occurred in 1959 in Nevada. Prior to that time, festivals were non-existent in the United States. The Basque immigrants were tied together within an economic relationship. Mining and sheepherding maintained intimate ties among the Basque community. With time, however, economic diversity dissolved the close-knit community. Basque festivals were a necessary component to revive ethnic identity, culture, and customs. This research focuses on the effects of national and local Basque festivals and the influence festivals play in the identity of Basque-American citizens. The research focuses on current festive participation, especially among the youngest generations. The primary objective of this research is to evaluate the impact of festivals in the preservation of Basque ethnic identity, and whether festivals have or can achieve ethnic preservation.

Students' Conception of being Rational and Intelligent on Reasoning Tasks

Oral Presentation

David Leavitt (Eric Amsel), Psychology

The importance of accurately understanding and predicting human decision-making is reflected in societal concerns about the frequency with which poor decisions, such as adolescent risk-taking decisions, are made. One promising theory utilizes research in which participants make evaluations about the underlying rationality of preferring one gamble over another mathematically equal, intuitively dissimilar gamble. Such methodology hinges on an assumption that participants share with their experimenters the normative definition of "rational", and don't subscribe to a different connotation more in line with another concept, such as intelligence. This study sought to test this assumption by soliciting participants' everyday notions of "rationality" as applied to their own decisions, as well as in theoretical ratio problems, and comparing these to their subjective definition of "intelligence", measured in exactly the same way. Results indicate that there is a certain degree of ambiguity about what it means to be "rational", suggesting that it is not as efficient a way to elicit normatively-based judgments in students. Notwithstanding this finding, the results demonstrate the power of perspective to influence the performance of students on reasoning tasks; the data encourage further evaluation of the way to prepare interventions promoting the development of greater normative performance skills.

Fish Lake, Utah Fish Density Project

Oral Presentation

Brice Lucas (Julie Rich), Geography

Fish Lake has been a managed fishery for the state of Utah for over 50 years. The lake is formed between two fault lines in a Horst and Graben system and is one of Utah's natural lakes. This project will research the fish density in relation to the bathymetric topography and water temperature while the lake is covered with ice. It will look at winter conditions on the lake then correlate those conditions with the fish density. This research could help future management plans by providing winter data on the lake and by locating where the higher density of fish are in the winter.

The Effects of Social Norms on Anxiety

Poster Display

Ryan Mortensen (Azenett Garza), Psychology

The purpose of this research was to determine if there is a link between anxiety and imposed social norms. The imposed social norm for the purpose of this study was the restriction from speaking in a group setting while participants played a game of Jenga. Eighteen participants were gathered in small groups in order to test this. Each trial lasted approximately 30 minutes.

Each group consisted of 2-5 participants, one of which was the pre-selected target participant and the rest of whom were confederates. As participants arrived, they were given a PANAS questionnaire as a self-report of anxiety and a measure of their heart rate was taken. Participants were taken to a side room one at a time. In the control groups, no special instructions were given. In the experimental conditions the target participant was asked not to speak to anyone during the course of the experiment. Participants then played a game of Jenga. At the end of the game, the PANAS was administered and heart rate measures were taken. Analysis of the results indicated that the target participants rated themselves significantly lower on the positive affect scales of the PANAS in the experimental group compared with the control group.

Marriage Laws and Customs Under the Religious Jurisdiction of Heinrich Bullinger

Oral Presentation

Rebecca Mueller (Stephen Francis, Susan Matt), History
Weber State University Undergraduate Research Scholarship

Heinrich Bullinger, a contemporary of John Calvin, was an instrumental figure during the Reformation in Switzerland. His influence on Reformation thought and philosophy was significant and extended far beyond the borders of Switzerland and even Europe. Yet, his name goes largely unnoticed, overshadowed by John Calvin's and Martin Luther's more sensational exhibition of revolutionary word and deed.

An intriguing aspect of Bullinger's legacy is the spread of his religious theory and practice to Puritan societies in England. One reason for this is that Bullinger granted English exiles refuge during the reign of "bloody" Queen Mary. When those English Protestants returned to their homeland, they carried with them a rich knowledge of Bullinger's theory. This paper examines marriage laws and customs in areas of Switzerland under the religious jurisdiction of Bullinger. It then analyzes how these practices shaped and influenced marriage laws and customs among puritan societies in England.

Heinrich Bullinger was indeed a powerful religious reformer who was able to extend his sphere of influence on a significant scale, far beyond what is attributed to him today.

Significance of Battle of Mogadishu, Somalia on Current Military Policy and Strategy

Oral Presentation

R. Nate Rhees (Chris Millard), English

October 3, 1993 was historically one of the most volatile and bloody conflicts since the Vietnam War. Forces ordered to retrieve Habr Gidr Clan Leaders from the center of Mogadishu, Somalia faced enormous opposition; 18 U.S. Soldiers lost their lives, and another 84 were injured in an eighteen-hour fight for survival. U.S. Forces were pulled from Somalia showing weakness within the structure of the world's greatest military power. America felt the shockwaves across the nation. Peacekeeping strategies since the efforts in Somalia have drastically changed, and while there have been many successes, genocide of the largest scale has taken place within this generation. Regrettably, the world community stood back and watched. Post Cold War conflict has changed the way the American public views war and military strategy. The attacks on September 11 cemented the understanding that future battles may not be fought on foreign soil. What responsibility does the world's largest military power have to act as peacekeepers for the world? Should other super-powers intervene in future cases? How does the nation view the loss of 18 soldiers, and does that loss carry significance in today's military combat situations? Do lessons learned translate to policy and strategy?

Depression: A Comparative Look at Prevalence among Psychology versus Non-Psychology Undergraduates

Poster Display

Penelope Scow, Lindsey Montague (Paul Caldarella and Theresa Kay), Psychology

In many of today's research studies, psychology students are commonly recruited as the sole participants. The implications of this debated topic may have consequential importance to the external validity (or how well the results generalize to the greater population) of many of these studies, especially those dealing with personal problems. In support of this, we expect to find depression greater among psychology undergraduates than non-psychology undergraduates. The present study used the Beck Depression Inventory (BDI) to test this hypothesis by comparing the mean scores of 30 psychology students and 63 non-psychology students. Even though the psychology students had a slightly higher average score (8.63) compared to their non-psychology counterparts (7.03); there was no statistical significance in the difference. This suggests that psychology undergraduates may not be very different than non-psychology undergraduates and the research that includes psychology undergraduates as their sole participants may be easily generalized to other undergraduate students or even the greater population.

Comparative Evils: A Look at the Soviet Gulag and Nazi Concentration Camps

Oral Presentation

**Danielle Stout (Nancy Haanstad),
Political Science**

The complex history of the Soviet Gulag has long been a mystery. It has been a difficult subject of research due to the significant lack of published information regarding its history. A countless number of books have been published vividly displaying similar horrific events of the twentieth century but very few depict the tragedy of the Gulag system and its aftermath. The aims of this study were to determine why the cultural mood toward the Gulag is so different from comparable atrocities of its time, namely the Nazi concentration camps. While many are disgusted at the thought of wearing a swastika, tourists visiting the former Soviet Union find adorning themselves with emblems of the former regime humorous. This project compares and contrasts the prison camp systems of both regimes. In doing so, I have attempted to show that, while one mass murder produces horror and the other generates humor, they are incredibly similar.

Civic Education and Political Participation

Oral Presentation

**Jestina Val-Mudge (Leah Murray), Political
Science and Philosophy**

My research paper argues that the American democracy is failing because Americans are not up-to-date with the activities of their elected representatives and that there is a political disengagement of citizens in the US culture. This paper attempts to investigate whether civic education can motivate citizens to be politically engaged.

I hypothesize that there is a positive correlation between civic education and political participation. If my hypothesis proves true, one may then hypothesize that a causal relationship exist, that is ... attainment of civic education will generate increased political involvement, - because knowledge will lead to interest, which will connect community interest with self-interest and the realization that democracy requires active participation.

My unit of analysis is college students. Most of the research that has already been done reflects poorly on the political savvy of young adults. A renewed call for participation in politics will not only give legitimacy to America's constitutional democracy, but it will also give added vitality to public policies.

The result of the research showed that there is indeed a positive correlation between civic education and political engagement.

