



fifth annual undergraduate research symposium & celebration

march 24, 2008

weber state university

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SCHEDULE OF EVENTS

REGISTRATION

Check in and registration for Symposium participants:
8:30 - 10:00 AM on March 24, Shepherd Union
Building, Ballroom Mezaanine (3rd floor)

SCHEDULE

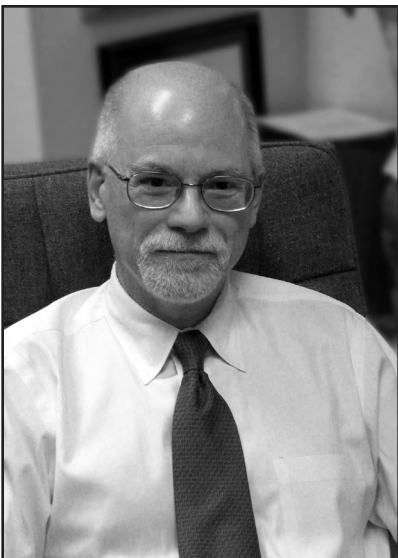
11:00 AM – 4:00 PM	Posters available to view	Atrium
11:00 AM – 12:45 PM	Oral Presentations	Shepherd Union Building Rooms 312, 316 and Ballroom C
12:45 – 1:15 PM	Break with Refreshments	Ballroom Mezzanine
12:45 – 1:15 PM	Performing Arts Presentations	Ballroom C
1:15 – 2:45 PM	Oral Presentations	Shepherd Union Building Rooms 312, 316 and Ballroom C
3:00 – 4:00 PM	Poster Session (Presenters available at posters for Q&A)	Atrium



Once again it is my pleasure to welcome you to Weber State University's Fifth Annual Undergraduate Research Symposium.

The undergraduate research, scholarly and creative work presented at this year's symposium reflects Weber State University's commitment to promote collaborative scholarly activities between faculty and students. Faculty-student collaboration in the research process provides an opportunity for personal and professional growth that uniquely prepares our students for their chosen careers. These projects are the culmination of countless hours spent working outside the traditional classroom environment to discover, create and learn. Through the dedication of our faculty, staff and administrators, Weber State University is developing into one of Utah's institutions of choice for students who want to engage in this process of discovery. By attending or participating in this symposium, you are helping Weber State salute these noteworthy collaborations.

F. Ann Millner
President



This year WSU hosts the fifth Undergraduate Research Symposium. The 2008 Symposium features 164 students who will present 66 poster displays, 39 research presentations, and 2 performances. This level of participation represents a nearly 14 percent increase in the number of participating students from last year. These numbers illustrate an important fact. Weber State University is rapidly becoming a national leader in undergraduate research. During any week of the year, WSU students can be found working with our faculty conducting pure and applied research. This experience prepares our students for the demands of careers and post-graduate education. I congratulate our students for the quality of their work, and I extend my thanks to the many WSU faculty who devoted their time and effort to serve as mentors to our students as they pursued their research.

Michael Vaughan
Provost



On behalf of the Office of Undergraduate Research, welcome to the Fifth Annual Undergraduate Research Symposium and Celebration. This event is a unique showcase for the talent and creativity of our students and of the committed mentoring they receive from both faculty and staff. These presentations are evidence that the pursuit of knowledge and creative expression is an integral part of the campus culture at Weber State University. From research utilizing high altitude ballooning to the effects of parental divorce on young adults, the students whose scholarly endeavors are represented here have explored new ideas and are clear examples of how students and faculty are advancing knowledge within their disciplines. We applaud the student presenters and their dedicated mentors and hope that this symposium will inspire other students to engage in research that promotes profound learning and intellectual engagement.

John F. Cavitt
 Director of Undergraduate Research

THE UNDERGRADUATE RESEARCH TASK FORCE

John Cavitt	Zoology	Dan Magda	Mech. Engineering Tech.
Ken Cuddeback	Telecomm. & Bus. Ed.	Susan Matt	History
Jeff Davis	Business Administration	Kathy Payne	Library
Judy Elsley	Honors	Kathy Sitzman	Nursing & B.I.S.
Lauren Fowler	ex officio CUR Councilor	Pene'e Stewart	Teacher Education
Alicia Giralt	Foreign Languages	Cori Tadehara	Social Work
Therese Grijalva	Economics	Viktor Uzur	Performing Arts
Colin Inglefield	Physics	Scott Wright	Clinical Lab. Sciences
Lisa Largent	Development		

SHEPHERD UNION BUILDING
ORAL PRESENTATIONS ROOM SCHEDULE

	312	316	BALLROOM C
11:00 AM	Samantha Balaich PASCAL: An Experiment in High Altitude Ballooning	Michael Kofoed Microcredit in the United States: Problems and Solutions	Cathie Carnes "PostSecret" A Postmodern Approach to Authorship
11:15 AM	John Metcalf High Altitude Ballooning Site Selection	Joni Powell and Celeste Jensen Podcasting	Brenda Cottrell Codes Among Mountain Man Re-enactors
11:30 AM	Rhett Zollinger Stable Orbits for Extrasolar Planets	Allison Barto, Ryan McGary and Brady Tucker The Effects of Secondary Centrifugation on a Comprehensive Metabolic Panel	Ryan Hale Explosion: An Analysis of the PG-13 Rating
11:45 AM	Jordan Brocius Mapping of GeSbTe Thin Film Electrical Properties with Conductive AFM	Jeffery Brown, Jamey Price and Steven Toller Comparison of Stat Tests Ordered Before and After Laboratory Centalization	Colby Bone Mercenaries or Marketers: The Status of and Jurisdiction over Private Military Contractors
12:00 PM	Isaac Myers Understanding Colligative Properties	Brianne Dahl, Kelsey Farnsworth and Teresa Patterson Survey on Pretransfusion Compatibility Testing Methodologies in the United States	Brad Wahlstrom Tomorrow in Iran
12:15 PM	Sonya Welsh The Effects of Desiccation of the Phenols of <i>Ascophyllum nodosum</i>	Kyle Wren, Brian Hains and Michael Blodgett Comparison of Homemade LISS to Manufactured Pharmaceutical LISS	Ann Western Cultural Effect on Incumbency Trends
12:30 PM	Leslie Patterson Distribution of Woody Decomposer Fungi within the Great Salt Lake	Bryce Hoover, Kyle Fowers and Paul Jeffery TRALI: A National Survey on Transfu- sion Related Acute Lung Injury	Nathan Hadley The Effect of Light Therapy on Cogni- tion in Medical Lab Shift Workers

SHEPHERD UNION BUILDING
ORAL PRESENTATIONS ROOM SCHEDULE

	312	316	BALLROOM C
12:45 PM	Break		
1:15 PM	Scott Kagie, Alan Noland, Eric Nelson and Adam Hutchinson Factors Affecting Enterococcus in the Great Salt Lake: Influence of Water Depth, Season, and Other Parameters	Todd Keskey, Bruce Jolly and Lauren Jackson Macrolide Resistance Rates in Streptococcus Pyogenes along the Wasatch Front	Ronald Partridge and Ben Nebeker What do Parents Disclose to Their Adolescents?
1:30 PM	Cristy Waters, Badreddin Edris and William Lorowitz Examining the Stringency of the CLSI Disc Diffusion Assay Protocol	Krista Hudgens Bigelow and Loren Liu Comparability of Patient Results and Its Verification in Multiple Medical Laboratory Instruments	Allesandra Salazar and Zachary Snow College, Depression, & Stress: The Influence of Financial Status and Living Situation on Psychopathology
1:45 PM	Christiam Francom and Jeff Caldwell The Structure, Function, and Temporal Expression of Fibrillin in Zebrafish (<i>Danio rerio</i>)	Ryan A. Rowe, Ryan Stephenson and Destry East Mechanisms of Resistance for Streptococcus Pyogenes in Northern Utah	Allesandra Salazar, Luke Harris and Amber Hansen Why Play Sports?
2:00 PM	Amiko Uchida Syringeal Muscle Fiber Organization in Female and Male Songbirds	Karly Swapp and Rechelle Silvio Establishment of Second Trimester Reference Intervals for TSH and FT4 on the Roche Modular E170	Shelly Pace Gender in My Space?
2:15 PM	Matthew Leaptrot Myosin Heavy Chain Diversity in Birds	Amy Jones, S. Bryan Keisel and Nichole Thompson Incident Rate of Respiratory Virus Infections for Utah	Tiffany Wilhelm and Lisa Araujo The Effects of Illumination, Sex, and Gender Role on Interpersonal Space
2:30 PM	Christopher Schulze and Richard Schulze Evaluation of a Ground-Based Paintball Mark Re-Sight Survey of Mountain Goats (<i>Oreamnous americanus</i>)	Tanya Wilcox, Laurie Shelton and Ben Heideman The Effects of Chemotherapy on Blood Eosinophil Counts in Breast Cancer Patients	Annie Stonehocker The Hartman Color Code Personality Test: Valid or Not

SHEPHERD UNION BUILDING ATRIUM POSTER DISPLAYS

- Display 1: Heather Amaral
The War at Work: Overt and Covert Aggression
Damaging Employee Well-Being
- Display 2: Jeremy Bell
Communicating About Gender in the Boy Scouts
Of America
- Display 3: Tanner Clark and Hyrum Rappleye
Communication Behaviors of Minority
Role Models: A Content Analysis
- Display 4: Nicholas Dragon
Misconstruing Feminism/Feminist
Ideologies: The Muting of a Group
- Display 5: James Elmer
Social Coding Theory: The Introversion/
Extroversion Factor and the Social
Joust for Connection and Status
- Display 6: Eric Holbrook
Religion and the 2008 Presidential Election
- Display 7: Jacqueline Jensen
Investigating Speech Codes in
"Mississippi Burning"
- Display 8: Amber Killian
Stifling Women Through Media
- Display 9: Marion Lockhart
Translation and Communication
- Display 10: Natalie Rawlings
"Hanging Out or Pairing Off": The Effects of
Religion on Cross-Gender Friendships
- Display 11: Jonathan Turner
Strengthening Personal and Professional
Relationships among Female Customer
Service Representatives
- Display 12: McKell Barnett
The Malcom Baldrige National Quality Award,
How Socially Responsible are the Award Winners
- Display 13: Jordan Robinson
Applying Industry Best Practices in Supply
Chain Management to the Public Sector
- Display 14: Jimmy Bokinskie
A Psychological Analysis of
College Basketball Players
- Display 15: Rachel Buswell, Katherine Hammer,
Debbie Hansen and Ashlynn Oborn
High School Extracurricular Activities Impact
on Postsecondary Academic Success
- Display 16: Suzie Caldwell, Jennifer Garn, Kris Larsen, Lydia
Metcalf and Megan Morrison
Motivation for Participating in the Celebration of
Marriage and Marital Enrichment Program Effectiveness
- Display 17: Michael Campbell
Extraction and Analysis of Trans-
Fat in Girl Scout Cookies
- Display 18: Jennica Davis, Rachel Peery and Kristin
Scheer
The Effects of Parental Divorce on Young Adults'
Relationships and Attitudes Towards Marriage
- Display 19: Robert Jensen and Nathan Smith
Sesamoidectomy in a Female Colligate
Volleyball Player: A Case Report
- Display 20: Tracylynn Parker
Family Dynamics, Coping Strategies,
Perceptions of Ambiguity, and Impacts on
Parents Raising a Child with Autism

SHEPHERD UNION BUILDING ATRIUM POSTER DISPLAYS

- Display 21: T. Lucas Willson
Posterior Hip Dislocation in 16 year old High School Football Player
- Display 22: Stephen Wren and Tamika Hardy
Management of Lisfranc Fracture-Dislocations
- Display 23: Nathan D. Brown
X-ray Fluorescence Analysis of Whole Blood
- Display 24: Laurie Falselv, Valerie Lousch and Shandee Bates
Pilot Study: Learning Techniques for Local Anesthesia in a Virtual World
- Display 25: Denise Hatch, MaryAnn Mowbary, Alicia Richins, Cristy Coons, Jentre Syrett and Jennifer Illum
Bridging the Gap, Creating a Future
- Display 26: Wynn Palmer
Oral Health Care in the United States of America
- Display 27: Skye Thompson, Casandra Thacker and Kimber Hassenyager
The ADPIE Model: Putting Theory into Practice
- Display 28: Arthur Anderson
Taxonomic Survey of Silver Island
- Display 29: Kendall Asper
Effects of Benzene on Brine Shrimp, *Artemia franciscana*
- Display 30: Jonathan Baker and Christian Barwick
Faunal Analysis of Five Nonmarine Microvertebrate Localities, Late Cretaceous, Southern Utah
- Display 31: Gabe Behling
Exploration of a Cattle Range: A Field Study
- Display 32: Brandon J. Burnett
Application of Colorimetric Protein Assay for Protein Hydrosylates
- Display 33: Greg Christensen, Eric Eilander, Chad Paget and Corey Park
Atomic Force Microscopy of Mineral Surfaces
- Display 34: Lindsay Cole
Nest-site Selection of Shorebirds at Great Salt Lake: Implications for Development of Water Quality Standards
- Display 35: Kim Darger
Does the Consumption of Whole Raw Eggs Induce a Biotin Deficiency in Lab Rats?
- Display 36: Tim Davis
Embedded Microcontrollers for Diode Laser Monitoring and Control
- Display 37: Rachel Glenn
A Study on the Horse's Hoof During Extreme Deceleration
- Display 38: Horald Hess
Cultivation of Micro-Organisms from Salt Crystals and Ancient Rock-Salt Deposits
- Display 39: Dustin Ingraham
Artemia's Physiological Responses to Mercury Exposure
- Display 40: Jed Jenkins
Petrology of Sandstones from John Henry Member, Straight Cliffs Formation, Late Cretaceous, Southern Utah

SHEPHERD UNION BUILDING ATRIUM POSTER DISPLAYS

- Display 41: Jeff Jepperson
Effect of Selenium on the Brine Shrimp *Artemia*
- Display 42: Skyler Johnson
Relationship Between Stream Habitat and The Distribution and Population Structure of the Paiute sculpin, *Cottus beldingii*
- Display 43: Benjamin Lewis
Enumeration of Airborne Microorganisms Aerosolized by the Duck Pond Fountain
- Display 44: Benjamin Lewis
Detection and Enumeration of Bacteria Associated with Fecal Contamination in Water from Duck Pond on the Weber State University, Ogden Campus
- Display 45: Erik McClure
Ultraviolet Reflectance of Seeds and its Potential Influence on Ant Dispersal
- Display 46: Natalie McKinnon
Methylophagous Bacteria in the Great Salt Lake
- Display 47: Stanton K. Nielson
Mapping Water Ice in North Polar Regions of Mars
- Display 48: Karli E. Oberg
Development of Signatures for the Detection and Differentiation of *Brucella*
- Display 49: Jay D. Sadler, Emily J. Smith and Karl B. Anderberg
Enumeration, Isolation and Characterization of Microbes from Drinking Water and Deionized Water Systems of Science Lab Building
- Display 50: Natalie Savage
Bacterial Predation by Bacteriophage Isolated from the Great Salt Lake
- Display 51: Chase L. Sessions and Jay P. Nichols
Phosphate and Phosphonate Use by Microorganisms Isolated from Hypersaline Environments of the Great Salt Lake, Utah
- Display 52: Kyle Stone
Nest Predator Identification at Great Salt Lake, Utah
- Display 53: Nathan R. Watkins and Nikalaus Spendlove
The Effects of Cigarette Smoke on Oral Micro-Flora
- Display 54: Logan Wood
What's in a Name, Alkaline Reserve or Antimicrobial Agent?
- Display 55: Elly Alvarado, Lauren Rankin, Jack Kettering and Melissa Ward
The Effect of Perspective on Misconceptions in Psychology: A Test of Conceptual Change Theory
- Display 56: Shane Bench
Who is Affected by Instructional Set?: A Dual Process Account
- Display 57: Derreck Calkins
Farragut POW's
- Display 58: Le'Wanda Croft
The Relationship between Novelty Seeking and Harm Avoidance Personality Traits and Risk Taking
- Display 59: Monica Guzman
Mental Models of On-line Learning: An Interview Study of University Decision-Makers
- Display 60: Brent D. Hatch
Personality and Cognitive Factors Related to Risk Taking Behavior

SHEPHERD UNION BUILDING ATRIUM & BALLROOM C
POSTER DISPLAYS & PERFORMING ARTS PRESENTATIONS

Display 61: Stacy Heik
History of the 388th Bombardment Group (Heavy)

Musical Performances:

Shing Yau Kai
Concerto Competition

Display 62: Susan Parker
Parenting Practices and the Development
of Guilt and Shame in Young Children

Hsin-Ju (Cindy) Lo accompanied by
Tong (Miranda) Wu
Prokofieff piano concerto
no.3 I mvt

Display 63: Megan Parry
Evaluating the Northern Utah Community
Correctional Center's Reentry Approach

Display 64: Shannon Ricks and Shane Bench
Strategies and Motivations for Deep Learning:
Gender Differences and Academic Outcomes

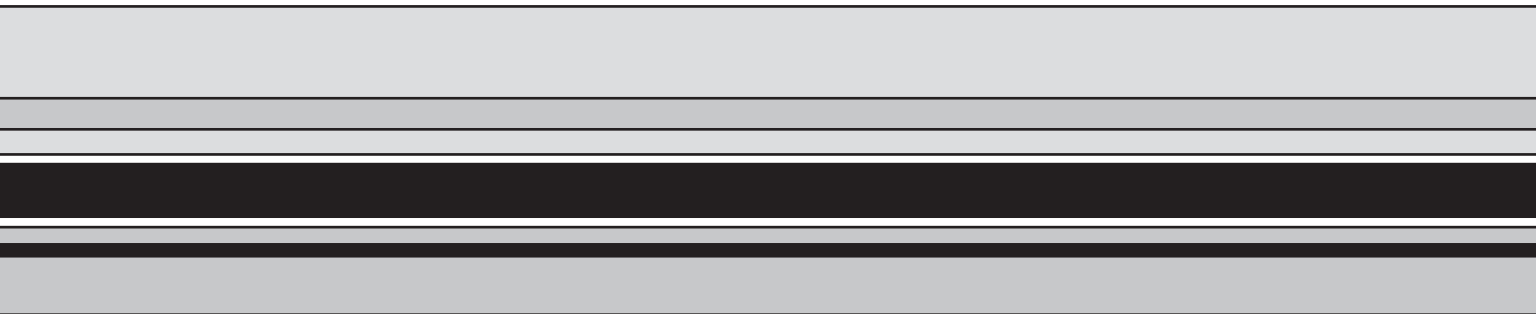
Musical Performances will be held in Ballroom C
from 12:45-1:15

Display 65: Kimberlee Taylor
Younger and Older Adolescents' Risk-
Taking Intentions: Relations with Socio-
Moral and Socio-Relational Judgments

Display 66: Rick Walker and Shane Bench
The Relation Between Metacognitive and
Cognitive Ability on Analytic Processing



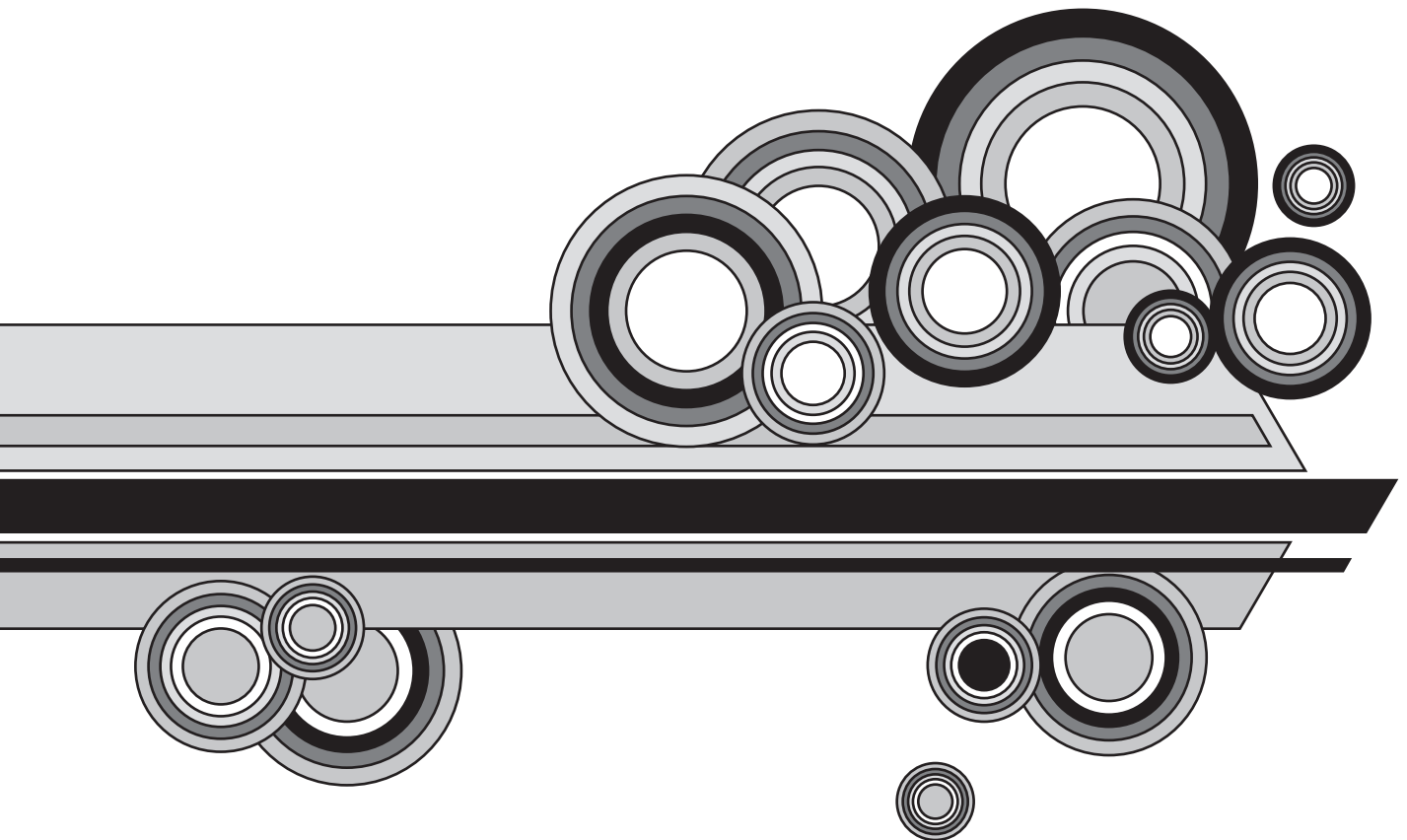
Learning through research and discovery



COLLEGE OF ARTS & HUMANITIES

Research has taught me patience and critical thinking skills, which are essential in my academic studies...I believe research is an on-going and often never-ending process that drives one to work harder and learn more. Priceless.

Amiko Uchida - WSU Undergraduate Research Student



THE WAR AT WORK: OVERT AND COVERT AGGRESSION DAMAGING EMPLOYEE WELL-BEING

Poster Display

Heather Amaral (Becky Johns)
Communication

*WSUSA Undergraduate Research Fellowship Travel Grant
Recipient
2008 NCUR Participant*

Rumors, gossip, back-stabbing--these are the facts of everyday workplace life. With Americans spending more and more hours at work every year, it may not be surprising to hear that a few employees “go postal”. The everyday, overt and covert aggression that is the subject of this research project may not make the newspapers but it may be claiming a high cost in employee turnover, absenteeism, production losses, costly mistakes, law suits, anger, fear, anxiety, and just an all-round hostile, nasty environment. 190 students from a local Northern Utah university and 64 employees from a Northern Utah credit union organization completed surveys that addressed the topic of workplace aggression. Participants were asked if they had experienced overt or covert aggression at work in the last six months and, if so, what effects they felt personally and organizationally. A higher amount of covert rather than overt aggression was reported but both were present. Their stories about such aggression and the ways they have dealt with it are useful pieces of information about aggression, people, and organizational life.

COMMUNICATING ABOUT GENDER IN THE BOY SCOUTS OF AMERICA

Poster Display

Jeremy Bell (Becky Johns)
Communication

“Be Prepared” is the motto of the Boy Scouts of America, but boys, and likely males in general, have long felt ill-prepared to engage in cross-gender communication. Genderlect is a theory which suggests that masculine and feminine styles of discourse are best viewed as two distinct cultural dialects rather than as inferior or superior ways of thinking and speaking. The Boy Scouts of America is a youth organization that provides leadership training for males between the ages of 7 and 19 years of age. Most of the organization’s leaders are male with the exception of female Cub Scout leaders. For this study, six Scout leaders (both males and females) were trained in the tenets of Deborah Tannen’s Genderlect Theory. A pre-test demonstrated a general lack of awareness of most feminine styles of discourse among the leaders. A training session in gender communication awareness was implemented and a post-test of the same individuals revealed that both male and female leaders expressed a higher level of awareness and skill in male/female communication. Gender awareness and skill-building of Boy Scout leaders may help prepare the next generation of males to better communicate with their female friends, partners, co-workers and supervisors.

"POSTSECRET" A POSTMODERN APPROACH TO AUTHORSHIP

Oral Presentation

Cathie Carnes (Susan Hafen)

Communication

How is a secret still a secret when all can see it? Postsecret.com is, as stated on the website, "an ongoing art project where people mail in their secrets anonymously on one side of a homemade postcard." Through individually created homemade "PostSecret" postcards, secrets are revealed and each reader then creates their unique interpretation of what each postcard and each collection of postcards is trying to convey. *Postsecret* represents a postmodern approach to "authorship" and identity construction through collage. This paper explores how postmodern hyper-reality merge with art, technology, and capitalism--all demonstrated by this unique *Postsecret* way of communication.

COMMUNICATION BEHAVIORS OF MINORITY ROLE MODELS: A CONTENT ANALYSIS

Poster Display

Tanner Clark and Hyrum Rappleye (Colleen Garside)

Communication

Some minority youth in the Ogden community lack accessibility to role models of their own ethnicity. As part of a community based research project, minority community leaders were asked to share their life stories in a narrative format in an effort to create an awareness of minority role models in the Ogden area. This study explores the communication behaviors of minority role models in the Ogden area. Video-taped interviews with minority community leaders provide the means of data collection. A preliminary content analysis of emergent themes in the narratives revealed that minority leaders became successful through overcoming adversity using nonviolent communication behaviors and interacting with a significant role model in their own lives. Preliminary findings suggest that competent communication behaviors can lead to success in personal and professional relationships. These findings are significant in suggesting how minority students in the Ogden community can experience success in their own lives.

CODES AMONG MOUNTAIN MAN RE-ENACTORS

Oral Presentation

Brenda Cottrell (Susan Hafen)

Communication

Through an auto-ethnographic study that includes stories from my memories as a female “mountain man” re-enactor and a survey of those in the re-enactor community, I show how the mountain man re-enactor uses a speech code to create communicative meaning. From my analysis five codes emerged: a code of respect, a code of service, a code of ethics, a code of trust, and a code of strength. Employing these codes is how re-enactors, which include men and women from all walks of life, go from their everyday life to a world of the past, understood only by other re-enactors who participate in the construction of meaning.

MISCONSTRUING FEMINISM/FEMINIST IDEOLOGIES: THE MUTING OF A GROUP

Poster Display

Nicholas Dragon (Becky Johns)

Communication

WSUSA Undergraduate Research Fellowship Travel Grant Recipient

2008 NCUR Participant

Bra-burning, feminazi, man-hating, Amazon, she-man, lesbian – these terms are often used to describe feminism and feminists. The reality is that many men, the girl next door, or your own mother could be a feminist. This study shows a gap in the information widely disseminated and accepted as accurate about feminism and how feminists and feminism are being silenced by various misinterpretations. One hundred twenty three students at a Northern Utah public university were asked three questions: “What is Feminism? What is a Feminist? Are you a Feminist and why?” From their responses, it was determined that a definite misunderstanding of feminist ideology exists among more than half of participants. Most respondents mistakenly claimed that feminism involves radical women striving to become more powerful than men. Even when participants accurately described feminism as quest for equality, they often renounced self-identification for fear of being considered radical themselves. Implications of these findings for language, ideology and feminism are discussed.

SOCIAL CODING THEORY: THE INTROVERSION/ EXTROVERSION FACTOR AND THE SOCIAL JOUST FOR CONNECTION AND STATUS

Poster Display

James Elmer (Colleen Garside)
Communication

*WSUSA Undergraduate Research Fellowship Travel Grant
Recipient
2008 NCUR Participant*

Deborah Tannen's "Genderlect" theory has not addressed the impact of cognitive style, called "attitudes" by the Myer's Briggs Type Indicator (MBTI). The purpose of this study is to create and pilot test a theory that addresses the above-mentioned shortcoming. Social Coding Theory (SCT) combines aspects of Genderlect Theory with the MBTI to find a causal link between an individual's need for connection and status (referred to as social needs in SCT) and the individual's cognitive preference - either introversion or extroversion (referred to as social preference in SCT). Balancing these two scales together brings forth a personality scale identifying four personality types (referred to as social codes in SCT), namely: comfortable introverts, comfortable extroverts, uncomfortable introverts, and uncomfortable extroverts. The social codes were matched to four leadership styles including analyst, expresser, director, and influencer and to a Likert scale measuring the need for image maintenance to relate the two factors to Social Coding Theory. The survey involved fifty participants at a western United States undergraduate institution. Analysis of the pilot study found a strong relationship between the individual's social preference and leadership style. Findings suggest both genders have a high need for image maintenance as they move higher up the social needs scale. The strength of the findings between the social preference and the leadership style provides justification to conduct the study on a larger scale.

EXPLOSION: AN ANALYSIS OF THE PG-13 RATING

Oral Presentation

Ryan Hale (Becky Johns)
Communication

One of the major responsibilities of the Motion Picture Association of America (MPAA) is to designate ratings on all films released in the United States. Today, more films are being released with a PG-13 rating than ever before. Along with this rating comes an increased amount of adult content. How much, why and is this trend significant? This study documents this trend by using content analysis to investigate four PG-13 films released in different decades. A statistical analysis of the top-grossing PG-13 films over the time period also informs this study. Results of this study demonstrate the increased frequency and degrees of sexual and violent content in PG-13 rated films and suggest that the trend may continue. Topic: Adult content in PG-13 films has become more intense and frequent. Method: To show how and why adult content in PG-13 films over the last twenty years has increased in volume and frequency. To also help provide a better understanding of the adult content in PG-13 films. Conclusion: Images of adult content in PG-13 films will increase in frequency and volume as long as audiences accept the content.

RELIGION AND THE 2008 PRESIDENTIAL ELECTION

Poster Display

Eric Holbrook (Becky Johns)
Communication

*WSUSA Undergraduate Research Fellowship Travel Grant
Recipient
2008 NCUR Participant*

Not since the days of John F. Kennedy have the religious preferences of U.S. presidential candidates been under as much scrutiny as in this final year before the 2008 presidential elections. How will Mitt Romney's Mormonism affect his chances to be the next U.S. president? Do a candidate's stated religious preferences matter to the voting public? This research study investigates general voting preferences and religious affiliation. Forty-six college students from a Northern Utah university were surveyed regarding their personal religious affiliation and their likelihood of voting for a presidential candidate who professed Jewish, Christian, Islamic, Buddhist or nonreligious beliefs. Findings indicate that a candidate's religious preference is a strong predictor of potential voting behavior.

INVESTIGATING SPEECH CODES IN "MISSISSIPPI BURNING"

Poster Display

Jacqueline Jensen (Becky Johns)
Communication

*WSUSA Undergraduate Research Fellowship Travel Grant
Recipient
2008 NCUR Participant*

How does one become a racist? This study consists of a qualitative content film analysis of "Mississippi Burning," released in 1984. This film depicts a racist speech community in the southern culture during the Civil Rights Movement. Grounded in Gerry Philipsen's Speech Codes Theory, this study investigates the existence of speech codes, their substance, the way they can be discovered, and their force upon people within a culture. A central question explored in this study is how racial speech codes are represented in film and the accuracy of their depiction. The significance of this research program lies in its potential to aid in understanding the relationship between culture and racist speech. Identifying racial speech codes may one day help our society to minimize racism by eliminating ways of speaking which continue to reconstitute it.

CONCERTO COMPETITION

Musical Performance

Shing Yau Kai (Ralph van der Beek)
Performing Arts

*Eccles Undergraduate Research Scholarship Travel Grant
Recipient*

Musical Performance

STIFLING WOMEN THROUGH MEDIA

Poster Display

Amber Killian (Becky Johns)
Communication

On the front page of the October 26, 2007 business section in the “New York Times” newspaper a man works on machinery, while in another picture more men work with concrete, while at the bottom of the page a woman works on a catwalk. The media portrays women as feminine, less competent than men. Along with these stereotypes that misrepresent women, women are also underrepresented in the media. In real life women outnumber men and do not necessarily fit into the media’s stereotype. Those views of femininity and passivity are then passed on to and reflected by the media consumers as being normal. This study is a content analysis of pictures in ten issues of the business section of the “New York Times” newspaper. The study finds that women make up one-third of those pictured on the pages of the business section and they appear in the main focus of those pictures only 18 percent of the time compared to men. This promotes the idea that men are supposed to be the breadwinners and actively involved in business and prevents women from expecting that they can achieve a certain level of success in business.

TRANSLATION AND COMMUNICATION

Poster Display

Marion Lockhart (Gary Godfrey)
Foreign Language

From business to education, there is no area of life untouched by the need to communicate, and communicating across cultural barriers often includes translation. Faulty translations can cause unnecessary communication problems. By showing various sample translations (in this case, from French to English) and bulleting various translation methods, including how different types of dictionaries can help in the translating process, we show how these barriers can be overcome. As we have learned more about the methods and effects of the various translations, we have also learned more about what is effective and clear in translation and communicating cross culturally. This bridges the unnecessary gaps created when translating across language and culture.

PROKOFIEFF PIANO CONCERTO NO.3 I MVT

Musical Performance

Hsin-Ju Lo (Yu-Jane Yang)
Performing Arts

*Eccles Undergraduate Research
Scholarship Travel Grant Recipient*

Musical Performance

“HANGING OUT OR PAIRING OFF”: THE EFFECTS OF RELIGION ON CROSS-GENDER FRIENDSHIPS

Poster Display

Natalie Rawlings (Becky Johns)
Communication

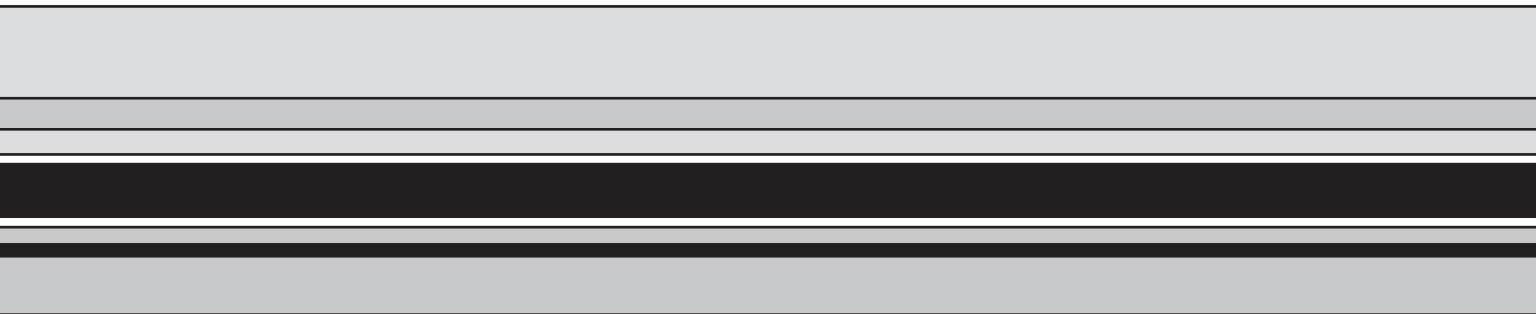
Religious prescriptions for behavior are powerful predictors of member interactions. In the Church of Jesus Christ of Latter-day Saints, church authorities have for decades taught against single pair dating for teens. Instead, group dating or a phenomenon called “hanging out” has been preferred. The unintended effects of this authoritative discourse in an obedience-worshipping religious milieu has been a reluctance on the part of many LDS young people to go from “hanging out” to “pairing up” in preparation for marriage. This is a cause for concern in a family-oriented church which prohibits any kind of sexual activity outside of lawful marriage. In-depth interviews with six cross-gender LDS friends provide unique and significant insights into this recent phenomena and its effects on young LDS adults of marrying age. The scholarship of religious discourse and communication both added to as a result of this study.

STRENGTHENING PERSONAL AND PROFESSIONAL RELATIONSHIPS AMONG FEMALE CUSTOMER SERVICE REPRESENTATIVES

Poster Display

Jonathan Turner (Becky Johns)
Communication

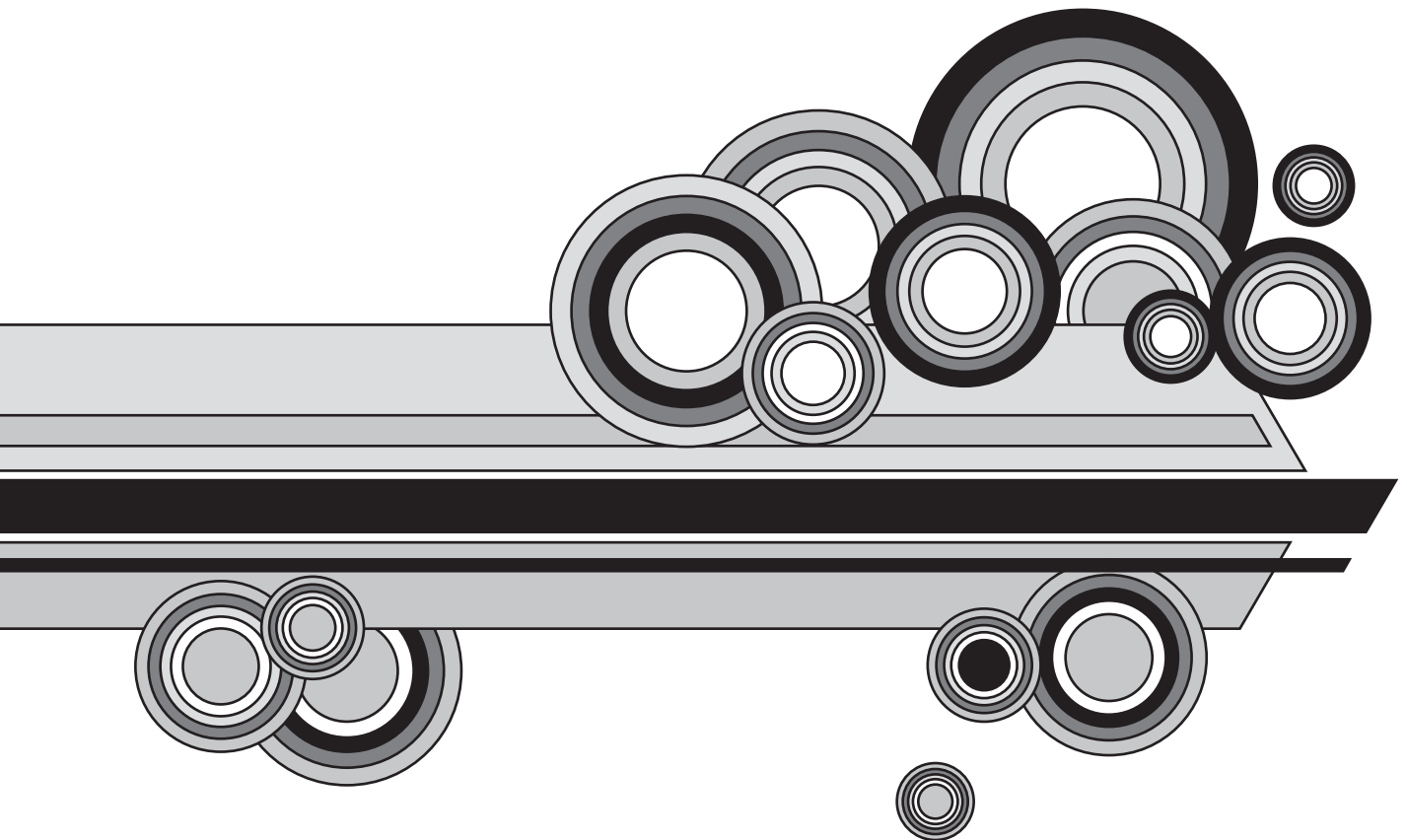
Will training female organizational members in communication and relational skills “leak over” into their personal relationships and thus be beneficial both professionally and interpersonally? For the purposes of this project, the researcher delineates the basic tenets of: (1) Systems Theory, (2) the DISC model of personality assessment, and (3) Neurolinguistic Programming. A survey was administered to a group of 6 female customer services representatives (and their respective spouses) from one banking organization in which the researcher determined the participants’ DISC tendencies and their perceived levels of satisfaction in both professional and personal settings. The participants were taught to recognize and interpret subtle communication practices inherent to different personality, perception, and information processing styles. A second survey was administered 10 days later, and the results were favorable. Four of the six female participants (and four of the six male participants) expressed a positive change in their familial levels of satisfaction. One female and one male participant expressed a decrease in familial levels of satisfaction, and one couple chose to withdraw from the study. Furthermore, five of the six female participants expressed a positive change in their satisfaction as it relates to relationships with their customers.



JOHN B. GODDARD
SCHOOL OF BUSINESS & ECONOMICS

I feel that undergraduate research has made me a more desirable employee, as well as a more marketable individual for graduate programs and fellowship opportunities

Kim Darger - WSU Undergraduate Research Student



THE MALCOM BALDRIDGE NATIONAL
QUALITY AWARD, *HOW SOCIALLY
RESPONSIBLE ARE THE AWARD WINNERS*

Poster Display

McKell Barnett (Shane Schvaneveldt)
Business Administration

In 1987, the United State Congress recognized a dire need for American businesses to increase their international competitiveness. To encourage businesses, Congress created the Baldrige Award in hopes that it would help increase performance excellence in domestic companies. The criteria for the award ranges from leadership to business results; however, there has been a growing emphasis on the criteria regarding social responsibility. In this research, information has been collected on the winning companies' activities relating to social responsibility from award application materials and other sources. Application categories include manufacturing, service, education, healthcare, and non-profit organizations. Using a content analysis approach, comparisons are made between companies in the same and different industries. Through this analysis patterns and trends between Baldrige Award winning organizations are identified.

MICROCREDIT IN THE UNITED STATES:
PROBLEMS AND SOLUTIONS

Oral Presentation

Michael Kofoed (Nazeen Ahmad)
Economics

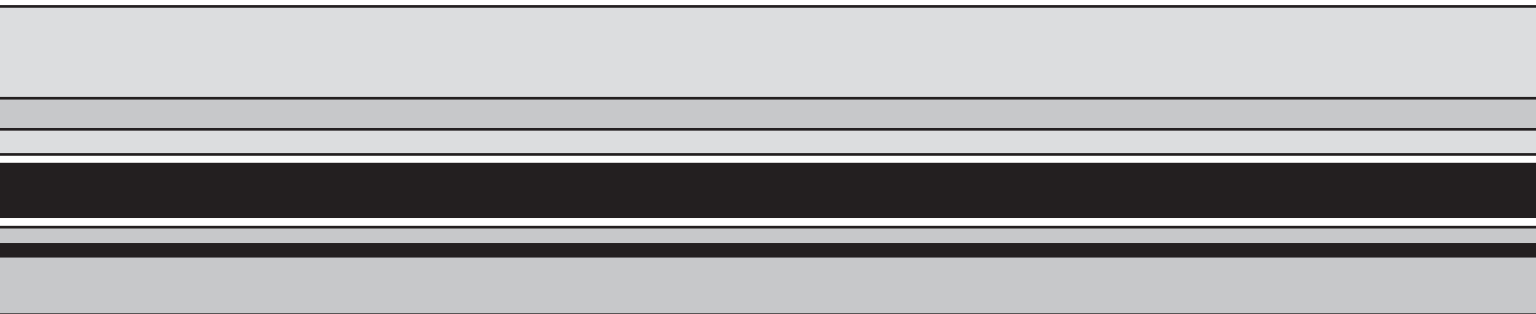
Micro credit has made a significant impact in the financial world recently. Micro credit is the offering of small loans to people who are generally classified as unbankable. These people are the very poor; who have neither collateral nor capital. Micro credit gives them an opportunity to take out small loans that would give them this chance to become participants in the capital market. Although this idea has been successful in the developing world, it has not been tested to a significant extent in the United States. This presentation examines attempts to replicate micro finance in the United States. I examined many problems with the Graamen Bank model such as competition with the mainstream banking sector, recruitment into the programs, problems with the group liability model, and sustainability of the programs. Additionally possible solutions such as making interest rates tax deductible, requiring people to provide their own people to vouch for their credit, realizing that if the borrower defaulted then it would affect the credit score of the backers, and focusing on key groups for recruitment were outlined in this presentation. These adjustments will hopefully encourage more micro finance institutions and create it into a force to help alleviate poverty.

APPLYING INDUSTRY BEST PRACTICES IN SUPPLY CHAIN MANAGEMENT TO THE PUBLIC SECTOR

Poster Display

Jordan Robinson (Shane Schvaneveldt)
Business Administration

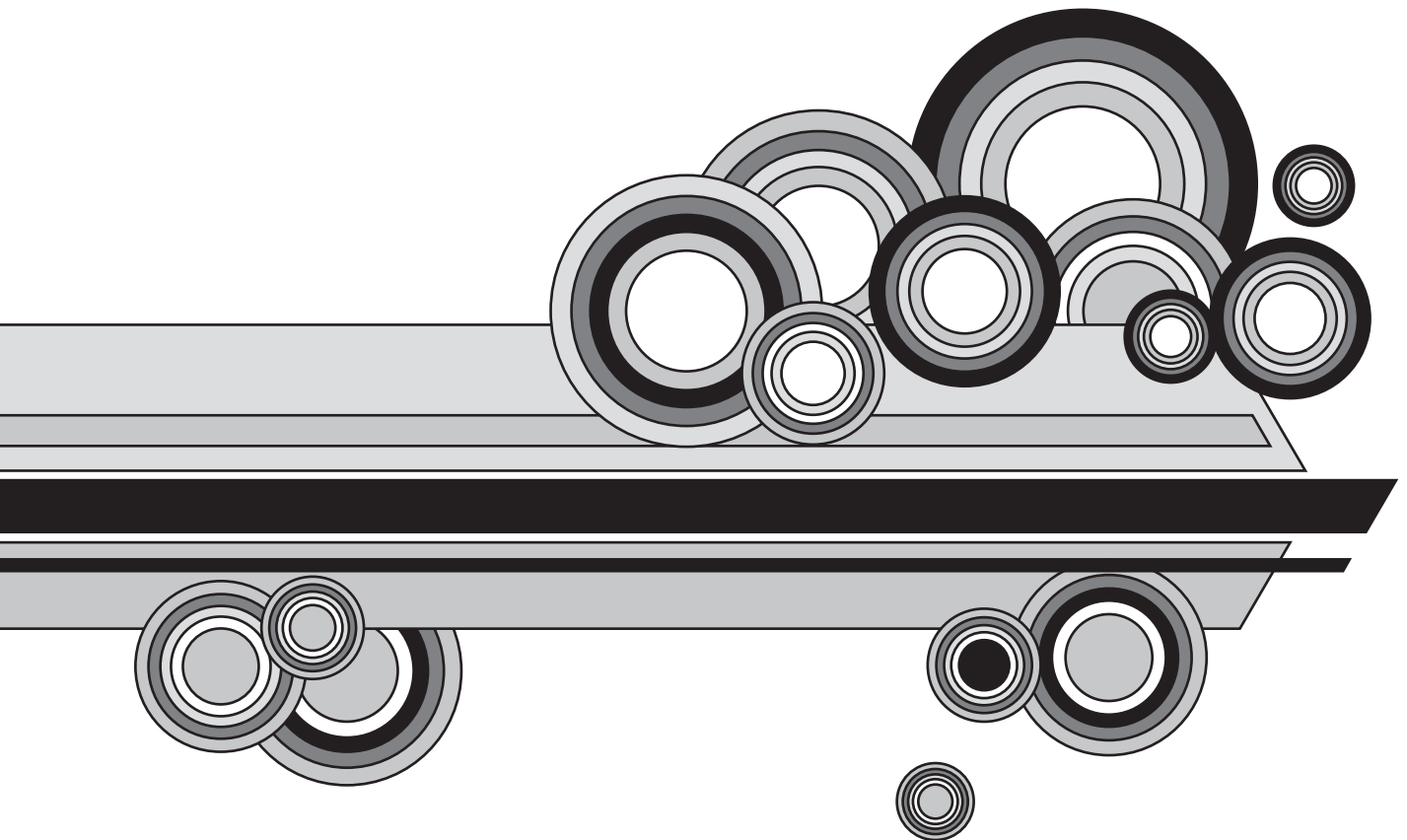
Collaborative planning, forecasting, and replenishment (CPFR) is considered to be a best practice in industry for improving supply chain performance and reducing cost. Despite its success in private industry, the approach had not been used in government or public sector environments due to their unique characteristics. My research consists of outlining the development of the CPFR process in industry and exploring the ability to implement a similar concept in a military/governmental environment. The nuances between these two worlds of operation create challenges for information sharing processes in particular; however, the need for better practices exists and the adoption of a modified form of CPFR seems feasible. In order to demonstrate this, an actual pilot project is in progress of implementation. Results of the pilot project are highlighted to show the ability to implement industry best practices into a government environment so as to improve governmental operations and provide a platform for better collaboration between government and industry.



JERRY AND VICKIE MOYES COLLEGE OF EDUCATION

I will be able to use these experiences throughout my
career.

Gabe Behling - WSU Undergraduate Research Student



A PSYCHOLOGICAL ANALYSIS OF COLLEGE BASKETBALL PLAYERS

Poster Display

Jimmy Bokinskie (Daniel Balderson)
Health Promotion and Human Performance

This research is an attempt to understand and analyze psychological characteristics among college basketball athletes during competition. A self-reporting profile (CAP) was administered among the men's (N=17) and women's (N=15) basketball teams at Weber State University. Results indicated that 50% of college basketball players consider themselves mentally tough, while 50% consider themselves moderately tough and 0% reported themselves as either mentally weak or extremely mentally tough. Also 44% more males indicated being mentally tough (71%) than females did (27%). The strongest characteristic, on a scale from 1 to 10, among both sexes was being competitive (9.06). The weakest among males was their ability to relax (7.35) and among females it was patience (5.4). Also a positive correlation (0.626) was found which states that 39% of the variation in the total score on the CAP is due to the number of years having competed in basketball.

HIGH SCHOOL EXTRACURRICULAR ACTIVITIES IMPACT ON POSTSECONDARY ACADEMIC SUCCESS

Poster Display

Rachel Buswell, Katherine Hammer, Debbie Hansen and Ashlynn Oborn (Paul Schvaneveldt)
Child and Family Studies

This research project studied the relationship of being involved in high school extracurricular activities and later academic success in a university setting. This study hypothesized that extracurricular participation at the high school level impacted academic success in college; however, we found that extracurricular involvement has more direct positive effects in secondary education than in postsecondary education related to achievement orientation and academic success. Conflicting views exist concerning the role of high school involvement in extracurricular activities and its positive or negative effects on social, cognitive, and physical development. It is important to understand the impact of secondary extracurricular interests on the development of student characteristics, specifically related to intellectual progress (Fejgen, 1994). Even though many factors contribute to academic success at the collegiate level, we found participation in high school extracurricular activities did not play a major role in postsecondary success for this sample, which included 163 students attending Weber State University and enrolled in at least one 3-credit hour course. In this study, we found the greatest predictors of self-efficacy, achievement orientation, and academic success were age and gender.

MOTIVATION FOR PARTICIPATING IN THE CELEBRATION OF MARRIAGE AND MARITAL ENRICHMENT PROGRAM EFFECTIVENESS

Poster Display

Suzie Caldwell, Jennifer Garn, Kris Larsen, Lydia Metcalf and Megan Morrison (Paul Schvaneveldt)
Child and Family Studies

This study, focusing on participants attending The Celebration of Marriage held annually in Salt Lake City, was designed to determine what motivated the participants to attend, and the degree to which they felt it impacted their relationship. Two anonymous surveys were conducted through my3q.com. The first, given two days after the conference, gathered demographic information, and included questions relating to the couples motivation for attending. The second, given one month later, allowed participants to disclose whether they implemented any of the principles given, and the degree of “impact” the workshops they attended--and the conference overall--had on their relationships. Both surveys used the Dyadic Adjustment Scale to determine marital satisfaction. As was hypothesized, most participants were proactive in their relationships and generally had high levels of marital satisfaction. On the contrary, participants who were not happy in their marriages, those with low marital satisfaction that were participating as an alternative to counseling or to address problems in the relationship, did not experience a change or an improvement in their relationship. The majority of the participants perceived a positive impact on their relationship. These results are of value to those that design, implement, and promote marital enrichment programs.

EXTRACTION AND ANALYSIS OF TRANS-FAT IN GIRL SCOUT COOKIES

Poster Display

Michael Campbell (Rodney Hansen)
Health Promotion and Human Performance
Phyllis Crosby Gardner Undergraduate Research Scholarship

In 2007 the Girl Scouts replaced their normal cookies with trans-fat free Girl Scout Cookies. The change was made in response to the consumer’s desire for trans-fat free products based on scientific evidence showing trans-fat increase risk for cardiovascular disease. The new label reads trans-fat free but partially hydrogenated oil (a trans-fat containing product) is listed as an ingredient. The FDA allows a product to list zero as the trans-fat content if it contains less than 0.5g of trans-fat per serving, so the new Girl Scout Cookies likely contain varying amounts of trans-fat less than 0.5g per serving. This project used a sohxlet extractor to remove the fat from each variety of Girl Scout Cookies and FTIR spectroscopy to determine the amount of trans-fat in the new cookies. All of the cookies contained measurable amounts of trans-fat less than 0.5g per serving. Trefoils contained the most trans-fat followed by Café Cookies, Samoas, Tagalongs, Little Brownies, Do Si Dos, Thin Mints, and All Abouts. In conclusion Girl Scout Cookies can legally be labeled zero grams trans-fat. However, they can still be a significant source of dietary trans-fat.

THE EFFECTS OF PARENTAL DIVORCE ON YOUNG ADULTS' RELATIONSHIPS AND ATTITUDES TOWARDS MARRIAGE

Poster Display

Jennica Davis, Rachel Peery and Kristin Scheer
(Paul Schvaneveldt)
Child and Family Studies

Research was conducted to examine the effects of parental divorce on young adults and their attitudes towards relationships and marriage. The participants were individuals ages 18 – 30. A questionnaire measuring demographic information, parent-child relationship, and their views on marriage was distributed to 273 persons. Four factors that had the greatest impact on father-child relationships were the quality of communication between father and child, level of paternal involvement, amount of trust and autonomy that was granted by the father, and the trust and closeness of the relationship between the father and child. These variables were found to significantly differ for those with divorced parents versus those whose parents were still married. Those whose parent's divorced reported poorer quality communication with their father, lower levels of father involvement, lower levels of trust and closeness compared to those whose parents did not divorce. Interestingly, no statistically significant differences were identified in the mother-child relationships. When examining attitudes towards marriage, young adults, whose parent's divorced, reported more doubtful attitudes that a marriage would be successful and male participants had more pessimistic attitudes towards marriage than females.

SESAMOIDECTOMY IN A FEMALE COLLIGATE VOLLEYBALL PLAYER: A CASE REPORT

Poster Display

Robert Jensen and Nathan Smith
(David Berry and Nancy Weir)
Health Promotion and Human Performance

OBJECTIVE: To present the case of an intercollegiate volleyball player who underwent a sesamoidectomy. **BACKGROUND:** A 19-year-old female volleyball player presented with right foot/toe pain following a hyperextension of the great toe while lunging for a ball. She reported falling and experiencing blunt trauma to the toe. **TREATMENT:** The athlete was initially treated for turf toe. After 3 months of pain she was referred to a physician. Radiographs revealed no bony foot/toe trauma. She was diagnosed with sesamoiditis and treated with an injection of Kenelog and rest. One week prior to her follow-up visit she suffered a lateral ankle sprain. Ankle radiographs were negative; however, a sesamoid fracture was present. After 6 months of conservative care a sesamoidectomy was performed. She returned to full activity 6 months after surgery. **UNIQUENESS:** Sesamoid fractures are uncommon in collegiate athletes and often respond well to conservative care. While they normally occur due to forced hallux hyperextension, athletes such as baseball catchers and ballet dancers are at greatest risk. **CONCLUSIONS:** Despite the sesamoid bone's size and low injury rate a clinician should not overlook possible injury to this structure. When conservative management fails to resolve the injury, surgical intervention may warrant the removal of the sesamoid.

FAMILY DYNAMICS, COPING STRATEGIES, PERCEPTIONS OF AMBIGUITY, AND IMPACTS ON PARENTS RAISING A CHILD WITH AUTISM

Poster Display

Tracylynn Parker (Paul Schvaneveldt)
Child and Family Studies

Eccles Undergraduate Research Scholarship
WSUSA Undergraduate Research Fellowship Travel Grant Recipient
2008 NCUR Participant

Currently, 1 in 166 American children are diagnosed with Autism. The current study focused on parents who care for an Autistic child, examining issues of individual stress using the Perceived Stress Scale (Cohen, 1983); family coping strategies were measured using the Family Crisis Oriented Personal Evaluation Scales (Hamilton, McCubbin, Olson, & Larsen, 1981); perceptions of ambiguity in family dynamics were measured with the Boundary Ambiguity Scale (Boss, Greenberg, & Pearce-McCall, 1990); and the impact of caring for an Autistic child were measured by using the Family Implications of Childhood Disability Scale (Trute & Hiebert-Murphy, 2002). It was hypothesized that caring for a child with Autism would be associated with higher levels of stress, greater feelings of ambiguity in family dynamics, and that using positive coping strategies would serve as a buffer for the challenges of caregiving. A sample of 203 parents of children with Autism was evaluated. Results of multiple regression analyses indicate that higher levels of cognitive reframing as a coping strategy significantly predicted lower stress levels. Also, higher levels of care giving impact on a daily basis predicted greater stress levels. Ambiguity in family roles was also identified as important in coping and stress issues. These implications are important for therapists and teachers designing treatments for parents coping with Autism in their families and for policy makers to direct funds into such programs.

POSTERIOR HIP DISLOCATION IN 16 YEAR OLD HIGH SCHOOL FOOTBALL PLAYER

Poster Display

T. Lucas Willson (David Berry)
Health Promotion and Human Performance

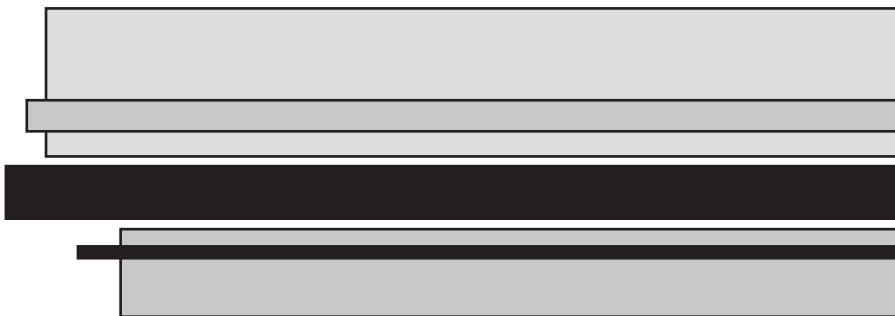
OBJECTIVE: To present the case of a high school football player who suffered a posterior hip dislocation and the clinical decision making necessary in the evaluation, management, and rehabilitation of this athlete. **BACKGROUND:** A 16-year-old male football player presented signs and symptoms of an acute hip pathology during a football game after being caught in a “pile up” with his hip flexed and medially rotated. He immediately experienced significant left hip pain. **TREATMENT:** He was transported to the emergency room for evaluation after being evaluated on-site by a physician. A physical examination and diagnostic testing in the emergency room demonstrated a posterior dislocation of the left hip. A closed reduction under conscious sedation was performed without complications. Two months later the athlete was allowed to increase his activity level for a full return to athletics. **UNIQUENESS:** Posterior hip dislocations are well chronicled throughout the medical community however; the mechanism of injury is usually a high-impact car accident with patients’ over the age of 35. **CONCLUSION:** While posterior hip dislocations are extremely rare in athletics they are still a possibility in high-impact sports. A clinician must act appropriately to minimize damage and improve recovery time when confronted with such an injury.

MANAGEMENT OF LISFRANC FRACTURE-DISLOCATIONS

Poster Display

Stephen Wren and Tamika Hardy (David Berry)
Health Promotion and Human Performance

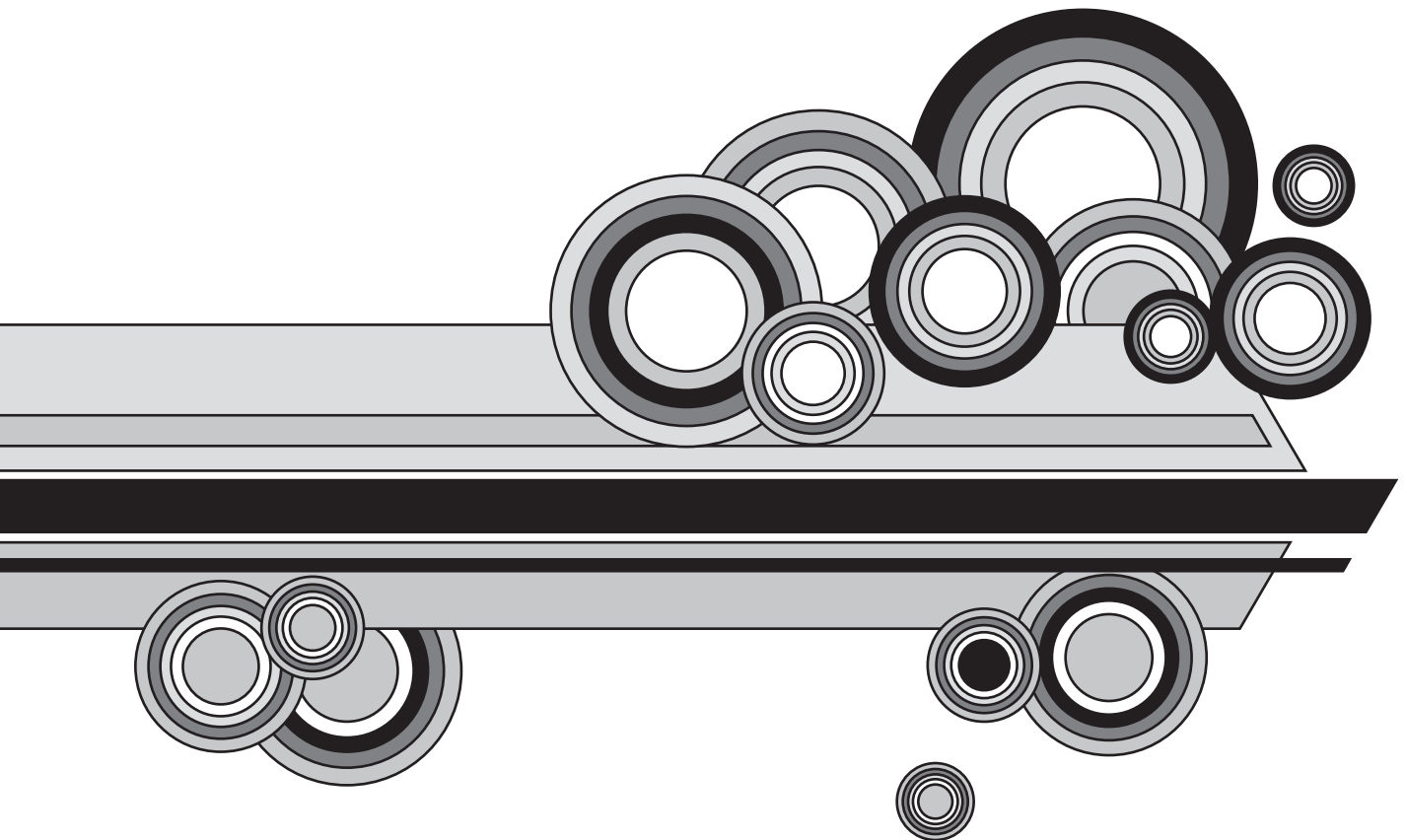
OBJECTIVE: To present the case of an intercollegiate track and field athlete with a rare and difficult to diagnose injury, Lisfranc fracture-dislocation, and the decision making skills necessary for the management of this athlete. **BACKGROUND:** A collegiate sophomore track and field athlete suffered a Lisfranc fracture-dislocation playing volleyball on a non-practice day after landing on hyperflexed tarsometatarsal joints. The injury was surgically repaired causing athlete to miss current track season. **TREATMENT:** Athlete underwent a surgical repair of her Lisfranc fracture-dislocation six days after sustaining the injury. Three screws and one pin were used to secure the fracture. She was placed in a walking boot and given crutches to avoid any weight bearing until the injury healed. **UNIQUENESS:** Lisfranc injuries are rare, one in 55,000 people per year, and seen most in collision sports or motor vehicle accidents causing hyperextension of the tarsometatarsal joints. In this case the athlete hyperflexed her tarsometatarsal joint playing volleyball. **CONCLUSION:** Because of their rarity, Lisfranc injuries can be difficult to diagnose. To ensure proper management of injury, athletes need to be evaluated by a health care professional familiar with foot injuries. This ensures proper treatment and intervention is initiated quickly in order to improve outcome.



DUMKE COLLEGE OF HEALTH PROFESSIONS

I have been able to apply what I have learned in classes and used it hands-on in my research.

Natalie McKinnon - WSU Undergraduate Research Student



THE EFFECTS OF SECONDARY CENTRIFUGATION ON A COMPREHENSIVE METABOLIC PANEL

Oral Presentation

Allison Barto, Ryan McGary and

Brady Tucker (Gary Nielsen)

Clinical Laboratory Science

Weber State University Undergraduate Research Scholarship

Physicians typically order laboratory tests for their patients in conjunction with either the annual physical exam, or if the patient is ill. One of the most common tests is the comprehensive metabolic panel (CMP). This panel gives a fairly good indication of the patient's overall health. It is standard practice for clinics to centrifuge samples initially after collection. The sample is then sent via a courier to the testing facility. These specimens are not always kept upright during transportation causing the gel separator in the tube to change shape. These changes can interfere with the pipetting device of the analyzer, resulting in errors. A simple fix is to re-centrifuge the samples at the testing facility before they are analyzed. It is imperative that test values are accurate to ensure correct diagnosis and treatment. The purpose of this research project is to evaluate the effects of secondary centrifugation by centrifuging serum and plasma separator tubes and run an initial CMP to establish base-line values. Then the samples will be re-centrifuged and re-analyzed. The two CMP values will then be compared using appropriate statistical analysis. Because sample integrity is so critical, it is necessary to assure that the second centrifugation does not negatively affect results. This information has the potential to vastly improve the accuracy of clinical laboratory test values and thereby improve patient treatment.

COMPARABILITY OF PATIENT RESULTS AND ITS VERIFICATION IN MULTIPLE MEDICAL LABORATORY INSTRUMENTS

Oral Presentation

Krista Hudgens Bigelow and Loren Liu (Gary Nielsen)

Clinical Laboratory Sciences

The intent of this study was to develop standardized procedures for evaluating comparability testing, allowing clinicians and medical laboratory scientists to better identify variability in different test results among multiple laboratory instruments. Other studies have been done using this theory, however greater clarification was needed to assist laboratory professionals in evaluating the differences observed with various methodologies, ultimately improving patient care. A new Clinical and Laboratory Science Institute (CLSI) protocol that is currently being developed and drafted: *Verification of Comparability of Patient Results Within One Healthcare System; Proposed Guideline, C54-P. Vol. 27 No. 25. Undrafted document, Clinical and Laboratory Standards Institute*, was used as a guideline for this study. Application of the CLSI guideline has shown that statistical calculations of laboratory quality control data and a minimal number of samples can be used to evaluate the comparability of test results and its verification on multiple laboratory instruments; in turn this can reduce the cost and time of insuring accurate test results.

COMPARISON OF STAT TESTS ORDERED BEFORE AND AFTER LABORATORY CENTRALIZATION

Oral Presentation

Jeffery Brown, Jamey Price and Steven Toller (Yasmin Simonian, Gary Nielsen and Scott Wright)
Clinical Laboratory Sciences

Many health organizations across the United States are choosing to send clinical laboratory specimens to large centralized laboratories. This is done in order to decrease the need for extensive on site laboratory testing and decreasing cost. Specimens are being sent from various health care institutions to a central laboratory which generally results in an increase in the turn-around time (TAT) for receive results. To avoid the longer TATs, physicians may order the test as a STAT, rather than a routine. A STAT test is defined as having a TAT of less than one hour. When STAT samples are ordered, the procedures are expedited and are tested at their local clinical laboratories instead of being sent to the central laboratory. The aim of this research project is to determine if there is a significant increase in STAT tests ordered after the opening of a central lab. In order to evaluate this hypothesis, the ratio of STAT to routine tests ordered before and after laboratory centralization will be assessed. The data from four external clinics and three internal clinics within a local hospital will be compared and analyzed to determine if centralization has caused a significant increase in STAT testing compared to routine testing.

X-RAY FLUORESCENCE ANALYSIS OF WHOLE BLOOD

Poster Display

Nathan D. Brown (Edward Walker and Gary Nielsen)
Chemistry and Clinical Laboratory Sciences

Iron is the most abundant transition metal in blood. Iron concentrations vary in humans with age and abnormal values are associated with various diseases. Low levels of iron are manifestations of anemia, while high concentrations can be toxic. Rapid, reliable methods for determining iron concentrations in blood are necessary to support accurate medical diagnoses. This study evaluates the application of x-ray fluorescence for rapid determination of iron in whole blood using a light-weight, hand-held x-ray fluorescence (XRF) spectrometer. The utility of XRF for determination of other common metallic elements in blood are also examined and reported.

SURVEY ON PRETRANSFUSION COMPATIBILITY TESTING METHODOLOGIES IN THE UNITED STATES

Oral Presentation

Brianne Dahl, Kelsey Farnsworth and
Teresa Patterson (William Zundel)
Clinical Laboratory Sciences

*Weber State University Undergraduate Research
Scholarship*

The purpose of pretransfusion compatibility testing is to prevent incompatible red blood cell (RBC) transfusions that could lead to immune mediated hemolytic transfusion reactions. Several different elements are included in the process of pretransfusion testing such as ABO grouping and Rh D typing, screening for unexpected antibodies, identifying unexpected antibodies, selecting appropriate donor cells for transfusion, and crossmatch between recipient and prospective donor cells. While these procedures are essentially universal in transfusion practices, the specific methods used to perform the procedures can vary from one facility to another. As technology advances, the array of available methods is ever growing. Transfusion service facilities are being presented with these methods and we predict that an increasing number are choosing to stray from tradition and to implement these innovative methods. The purpose of this survey is to assess the current testing practices for ABO grouping, Rh D typing, antibody screening, antibody identification, and crossmatching in the United States. We have chosen to use the online survey engine, Zoomerang, to administer and review the survey. The survey was launched on February 5, 2008 to approximately 750 transfusion centers in the United States in hopes of having at least 60% participation. The information is being compiled for statistical review as it is received. We foresee this information providing beneficial insight for educators, the health care industry, and blood bank product manufacturers.

PILOT STUDY: LEARNING TECHNIQUES FOR LOCAL ANESTHESIA IN A VIRTUAL WORLD

Poster Display

Laurie Falselv, Valerie Lousch and
Shandee Bates (Kami Hanson)
Dental Hygiene

*Eccles Undergraduate Research Scholarship Travel Grant
Recipient*

The purpose of this research was to investigate if dental hygiene students could learn the techniques for local anesthesia using a first-person perspective in a virtual world. Further, it was posited that students would gain a greater understanding of anatomical spatial and dimensional acuity related to local anesthesia and develop conceptual understandings with the virtual interface that would allow them to direct their own learning, thus experience an iterative cycle as they manipulated virtual objects. A pilot study was conducted using a custom built virtual system for local anesthesia. The methodology included a pre and posttest exam, a single time 20-minute interaction with the virtual reality (VR) system that was digitally recorded and a post treatment questionnaire. The digital recording was evaluated according to a skills competency rubric for local anesthesia and viewed to watch for epistemic shifts in thinking. The evidence suggested that learning took place with a difference in pre and posttest scores that were statistically significant $t(9) = 3.7, (p = .00, \text{one tailed, alpha level } .05)$, however, there were flaws with the system that impeded user presence. The post questionnaire revealed that students liked the options in the virtual world that allowed for the transparency of tissue and the visualization of landmarks for anesthesia, but felt it was difficult to navigate the needle and could not get a sense of where their left hand was at to guide their technique. As a result, the quantitative and qualitative analysis of the digital recording did not support that the VR system could be used to observe for skills competency and that episodes of epistemic shifts were rare. While learning took place as evidenced by the pre and post test, the ability to demonstrate competency for skills was not found. There were too many problems with the system that need to be worked out before students could demonstrate competency with the system.

BRIDGING THE GAP, CREATING A FUTURE

Poster Display

Denise Hatch, MaryAnn Mowbary, Alicia Richins, Cristy Coons, Jentre Syrett and Jenifer Illum (Sharon Brady) Nursing

The Weber State Ogden Campus chapter of NSNA (National Student Nurses Association) has been conducting a project to encourage interest in nursing education, especially targeted at underprivileged/culturally diverse populations. We have set up after school programs for two middle schools: Mound Fort Middle School and Ogden Middle School. We talk to students about nursing and healthcare professions and talk to them about planning for the future. At Ogden Middle School we help them with their homework. We make ourselves available to be mentors to these students. They learn about what is required of them if they want to become a healthcare professional. They come and visit Weber State University and get to see “Sim Man”, the ambulance, and the nursing skills lab. These students are excited to learn, and are beginning to think about their futures as they ask questions like “what kind of grades do nurses need?” and “can I get help with paying for school?” Many of these students are beginning to think of college as a reality. As we reach more students from minority groups we can help them to reach college, and we can also help the nursing profession to grow, and become more diverse.

TRALI: A NATIONAL SURVEY ON TRANSFUSION RELATED ACUTE LUNG INJURY

Oral Presentation

Bryce Hoover, Kyle Fowers and Paul Jeffery (William Zundel) Clinical Laboratory Sciences

One adverse affect of blood product transfusions is a reaction called Transfusion Related Acute Lung Injury (TRALI). In 2001 6-10% of TRALI cases were fatal, making it the third most common cause of transfusion related deaths. In the first six months of 2006 there were 35 fatalities reported to the Food and Drug Administration (FDA) due to TRALI, which was 46.5% of transfusion related deaths in 2006. While seen mostly with the transfusion of plasma products it can also be seen with transfusion of packed red blood cells. To determine the impact of TRALI on donor centers this research project is going to send surveys to all donor centers in the United States. These are a few of the survey questions that we used:

What policy changes have been made at your facility to prevent/reduce TRALI?

What impact has TRALI had on your blood donations?

Within the last 3 years how many cases of TRALI have been linked to you facility?

INCIDENT RATE OF RESPIRATORY VIRUS INFECTIONS FOR UTAH

Oral Presentation

Amy Jones, S. Bryan Keisel and Nichole Thompson (Scott Wright)
Clinical Laboratory Sciences

Viral respiratory infections are a leading cause of morbidity and mortality worldwide. In the clinical laboratory a standard viral respiratory screen is performed on patient nasal washings, and detects eight different viruses including influenza A and B, parainfluenza 1, 2, and 3, respiratory syncytial virus (RSV), adenovirus, and human metapneumovirus (hMPV). Typically viral infections occur in the winter months between October and March and can infect both the lower respiratory tract and the upper respiratory tract, and range in severity from a mild infection to hospitalization and to death. The objective of this study is to determine the incident rate of respiratory infections in the state of Utah. We will be analyzing laboratory results obtained through direct fluorescence antibody (DFA) technology by Intermountain Health Care during October 2004 through October 2007. We will be statistically comparing incident rates of single infections versus co-infections, and whether or not age, gender, and geographical regions play a factor.

MACROLIDE RESISTANCE RATES IN STREPTOCOCCUS PYOGENES ALONG THE WASATCH FRONT

Oral Presentation

Todd Keskey, Bruce Jolly and Lauren Jackson (Travis Price)
Clinical Laboratory Sciences

Eccles Undergraduate Research Scholarship

The Centers for Disease Control maintain there are over 10 million cases of Strep throat infection every year in the United States. The antibiotic of choice for treating *Streptococcus pyogenes*, the bacteria that causes strep throat, is penicillin. When a patient presents a potential allergy to penicillin that would counter-indicate its use, physicians prescribe macrolide drugs, such as azithromycin, erythromycin, and clarithromycin. With the growing antimicrobial resistance in various types of bacteria, many drugs are becoming ineffective. This causes physicians to prescribe different drugs that have to be taken for a longer period of time, have more detrimental side effects, and often require intravenous administration. Studies performed around the world are finding an average resistance rate of 7% to the macrolide drugs used to treat Strep throat. These rates vary year to year, and from region to region, thus supporting the need for a study along the Wasatch front. We will collect swabs positive for strep and grow the bacteria. The bacteria will then be tested for antimicrobial susceptibility to penicillin, azithromycin, erythromycin, and clarithromycin. Using these data, we can determine the resistance rates of Strep to each of these antimicrobials.

ORAL HEALTH CARE IN THE UNITED STATES OF AMERICA

Poster Display

Wynn Palmer (Nicole Okazaki)
Health Professions

Observations from a dental practice in Ogden indicate that Congolese families who emigrated to Ogden, Utah, need more dental care after their arrival in the United States Of America. Prior to and immediately after their arrival, they had relatively little problems with their teeth. As time went by, their teeth began to decay. The goal of this study was to 1) quantify the rate of tooth decay before and after immigration, 2) examine associated factors such as plaques, hygiene habits, the presence of other oral conditions and 3) suggest some remedies in order to improve dental condition. The Congolese families and their dentist were given a short questionnaire assessing their dental history, current dental condition and dental hygiene habits. While cavities were rare in Congo, they averaged 9 per person after immigration. Survey results showed that diet, and lack of dental care might contribute to the rapid decay of the teeth. The survey suggests that a decrease in sugar and soda intake as well as an increase in dental flossing might help reduce the rate of dental cavity formation.

PODCASTING

Oral Presentation

Joni Powell and Celeste Jensen (Kami Hanson)
Dental Hygiene

The purpose of this research is to investigate facilitated learning in dental hygiene through podcasting. "Podcasting" is a term inspired by the Apple Computer Corporation's iPod - a portable digital audio player that allows users to download music from their computer directly to the device for later listening. The term, podcast, refers to any software and hardware combination that permits automatic downloading of audio files. Unlike traditional radio or other Web-based streaming media, podcasts give listeners control over when they hear the recording. Instead of a central audio stream, podcasting sends audio content directly to an iPod or other MP3 player. This research project involved a one-time six-question anonymous survey on the usefulness and appeal of the podcast for learning after subjects have reviewed the specified podcasts. The survey results will be analyzed for descriptive frequencies. This project is a work in progress. Final outcomes and the podcasts will be available by the end of February and ready to present in time for the symposium.

MECHANISMS OF RESISTANCE FOR STREPTOCOCCUS PYOGENES IN NORTHERN UTAH

Oral Presentation

Ryan A. Rowe, Ryan Stephenson and
Destry East (Scott Wright)
Clinical Laboratory Sciences

Denkers Undergraduate Research Scholarship
WSUSA Undergraduate Research Fellowship Travel Grant
Recipient
2008 NCUR Participant

There is a growing distress among health care professionals regarding antimicrobials that no longer work against human pathogens. *Streptococcus pyogenes* has demonstrated two main mechanisms of resistance against antimicrobials like erythromycin and other macrolides. The first mechanism, efflux, allows the bacterium to pump the antimicrobial out of the cell. The second mechanism is the modification of the bacterium's ribosomes, making the target of the macrolide ineffective. Both of these phenotypic mechanisms are associated with *MefA*, *Erma*, or *ErmB* genes. The objective of this study is to determine the rate of resistance to erythromycin in the northern Utah area, and identify if any single genotype is more prevalent among the resistant strains. Throat swabs were received from surrounding laboratories. Researchers isolated and identified the organism based on three diagnostic criteria commonly used in clinical laboratories. Susceptibility patterns were conducted utilizing an agar diffusion method (Kirby-Bauer). Of the 400 organisms tested, and 1.5% were resistant to erythromycin. The erythromycin resistant strains were separated into phenotypic groups based on reactions from the clindamycin disk induction test. Each phenotypic group was analyzed by polymerase chain reaction (PCR) to identify the frequency of *MefA*, *Erma*, and *ErmB* genes responsible for the resistant phenotypes seen.

ESTABLISHMENT OF SECOND TRIMESTER REFERENCE INTERVALS FOR TSH AND FT4 ON THE ROCHE MODULAR E170

Oral Presentation

Karly Swapp and Rechelle Silvio (Kara Hansen-Suchy)
Clinical Laboratory Sciences

Diagnosis of thyroid disorders are complicated by changes in functional hormone levels during pregnancy. Disease diagnosis can be missed if the clinician is using the established non-pregnant reference intervals (normal ranges). This study focused specifically on thyroid-stimulating hormone (TSH) and free thyroxin (FT4) levels run on the Roche Modular E170 chemistry analyzer in the core laboratory at Associated Research and University Pathologists (ARUP). The principle objective was to determine if separate reference intervals needed to be established for TSH and FT4 for women in their second trimester of pregnancy. Testing was conducted on samples from pregnant women that had no detectable thyroid antibodies and with a gestational fetal age of 14 to 21 weeks. On a previous study, the same specimens were run on the Abbott Architect enabling a method comparison to be performed. While the results have not been evaluated at the present time; the establishment of new reference intervals for TSH and FT4 will help in diagnosing thyroid diseases in pregnant women.

THE ADPIE MODEL: PUTTING THEORY INTO PRACTICE

Poster Display

Skye Thompson, Casandra Thacker and
Kimber Hassenyager (Kami Hanson)
Dental Hygiene

Periodontal disease is an infection of the structures that support the teeth. Periodontitis affects most of the adult population. Several studies have been conducted that have linked periodontal disease to stroke. The general public should be educated about periodontal disease, so they can prevent it. The purpose of this study was to identify the public's knowledge of the correlation between stroke and periodontal disease using the ADPIE model. The word ADPIE is an acronym for "Assess, Diagnose, Plan, Implement and Evaluate." These are the steps in identifying a community need and creating a program. The research questions were: does the public know what periodontal disease is; can they articulate the harmful effects periodontal disease has on the mouth and the body; and is the public aware of the correlation between periodontal disease and stroke? The research design was a one shot 10-question survey distributed to 300 people. The findings supported the hypothesis that the general public is unaware of what periodontal disease is and also unaware that there is a correlation between periodontal disease and stroke.

THE EFFECTS OF CHEMOTHERAPY ON BLOOD EOSINOPHIL COUNTS IN BREAST CANCER PATIENTS

Oral Presentation

Tanya Willcox, Laurie Shelton and Ben
Heideman (Yasmen Simonian)
Clinical Laboratory Sciences

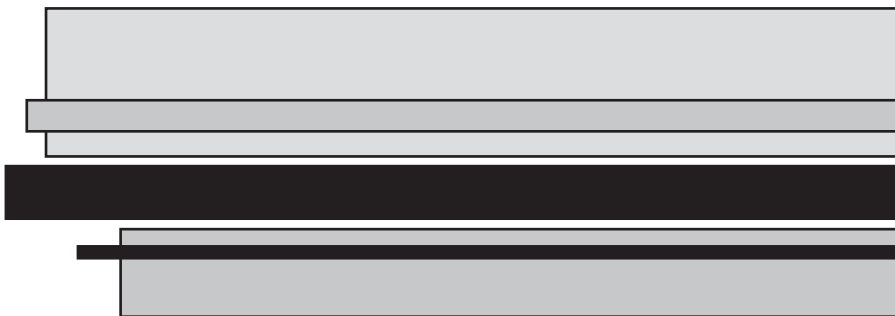
Certain drugs and various conditions have been known to cause eosinophilia or an absolute peripheral blood eosinophil count of $< 0.45 \times 10^9/L$. Eosinophilia has been reported in parasitic infections, allergies, hay fever, asthma, usage of some medications and chemotherapeutic agents, Hodgkin's Lymphoma, and several cancers. In reviewing the literature, there have not been distinct studies conducted to correlate eosinophil counts on cancer patients with previous history of allergies and asthma to cancer patients without a prior history of allergies and asthma. The purpose of this study is to examine the effects of chemotherapeutic agents Cyclophosphamide, Methotrexate, 5-fluorouracil, and Adriamycin on eosinophil counts of breast cancer patients with a previous history of allergies and asthma compared to breast cancer patients on the same regiment without previous history of allergies and asthma. The goal of the study is to track the patient's medical history from diagnosis and throughout the entire course of treatment including complete blood counts and specifically their absolute eosinophil count. Sixty patients from the oncology clinic of Dr. Carl Gray and Harold Johnson have been evaluated for eosinophilia in breast cancer patients to date.

COMPARISON OF HOMEMADE LISS TO MANUFACTURED PHARMACEUTICAL LISS

Oral Presentation

Kyle Wren, Brian Hains and Michael
Blodgett (William Zundel)
Clinical Laboratory Sciences

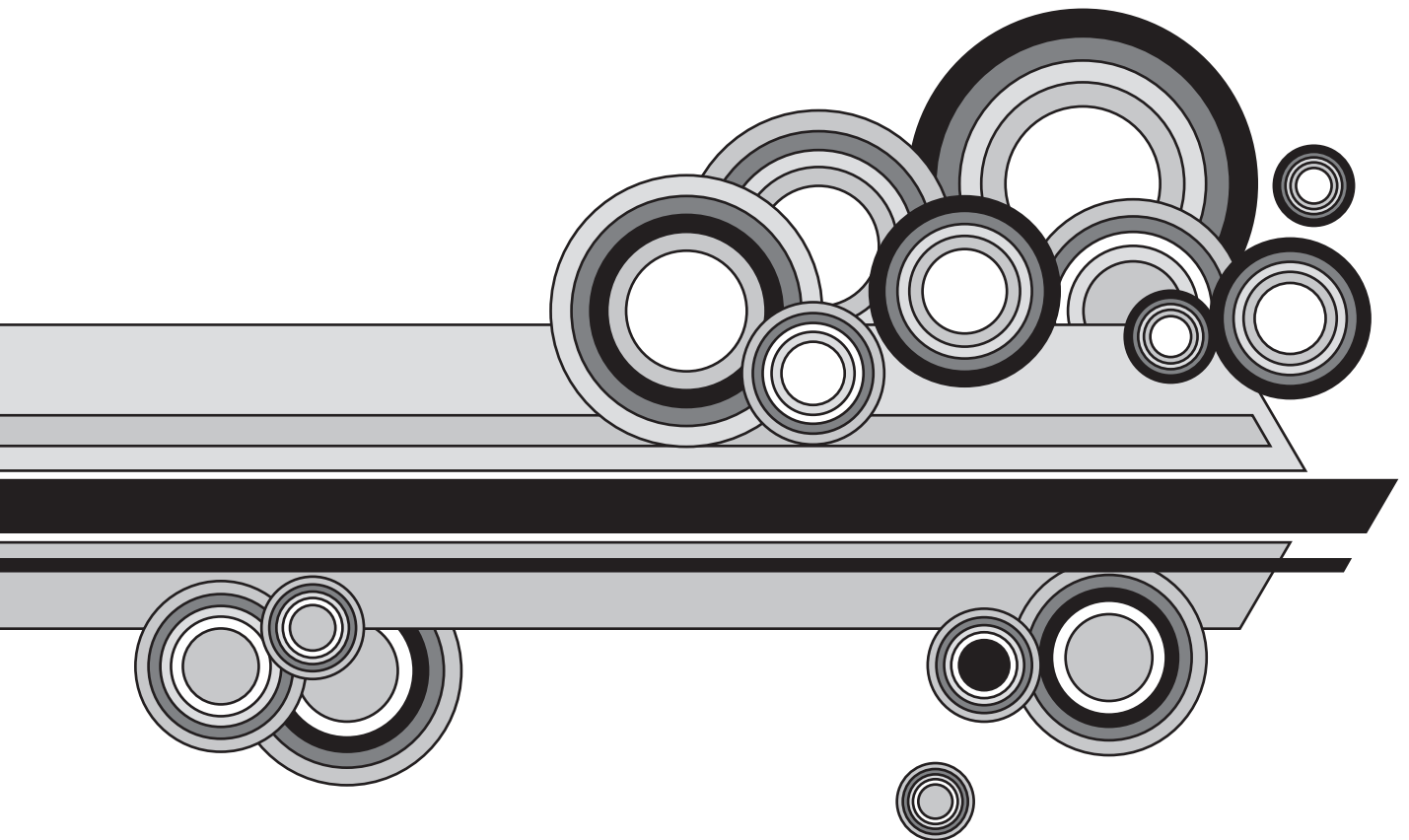
The purpose of this study is to compare Low Ionic Strength Solution (LISS) prepared at Weber State University Clinical Laboratory with LISS reagent made by ORTHO Diagnostics and IMMUCOR. We will demonstrate that LISS reagent prepared in WSU laboratory is of the same quality as LISS manufactured by companies. This research study will aid the WSU CLS department and hospital departments, by reducing the cost of purchasing LISS reagent from manufacturers by making their own. LISS aids the clinical laboratory scientist in identifying unexpected antibodies in the plasma of patients who have the potential of receiving blood transfusions. When the plasma is being screened, the LISS reagent enhances the antibody/antigen reaction so the antibodies can be detected. Not identifying unexpected antibodies in transfusion patients can lead to hemolytic transfusion reactions and death. This research study will be conducted by obtaining the proper materials and reagents required to make LISS. The production of our homemade LISS will be done in the CLS department's lab. Upon completion of our homemade LISS we will then purchase a LISS reagent from the ORTHO Diagnostics Company and from the IMMUCOR Company, so that a correlation study could be completed.



COLLEGE OF SCIENCE

I know that this experience has and will continue to prepare me for further graduate studies, in the planning out process as well as in the procedures of research.

Leslie Patterson - WSU Undergraduate Research Student



TAXONOMIC SURVEY OF SILVER ISLAND

Poster Display

Arthur Anderson (Stephen Clark)

Botany

Phyllis Crosby Gardner Undergraduate Research Scholarship

The Silver Island was once isolated from all other land masses by lake Bonneville, and is now isolated by salt flats. The plant species of Silver Island have never been collected. I was interested in Silver Island because of its extreme climate and isolation. Plants were collected from the Cobb peak region identified and pressed. All species were noted, mounted and placed in the Weber State University Herbarium. The species not collected had pictures taken and identified on site this included rare and endangered species. The plants of Silver Island were not as unique and isolated as was expected. No new species have yet to be discovered.

EFFECTS OF BENZENE ON BRINE SHRIMP, ARTEMIA FRANCISCANA

Poster Display

Kendall Asper (Nicole Okazaki)

Zoology

A remnant of the prehistoric Lake Bonneville, the Great Salt Lake is a terminal lake. As a result, the lake is highly susceptible to pollution. The lake is important for numerous migratory bird species and supports a brine shrimp cyst industry. The close proximity of oil refineries to the south-eastern side of the lake makes benzene, a product of crude oil distillation and a known carcinogen, worth examining. In this study, larvae and adult brine shrimp, *Artemia*, were exposed to benzene concentrations ranging from 10⁻⁶ to 10⁻²(v/v). The survival rate was measured after 24 hour acute exposure. Also, survival rate, time to maturation, and fertility were measured in shrimp exposed to a constant low amount of benzene. Shrimp proteins were examined after a 24 hour acute exposure using SDS-PAGE. Heat shock proteins 70 and 90 (hsp 70 and 90) were measured using western blots. Acute benzene exposure, over a 24 hour period at 10⁻²(v/v), showed a 50% mortality rate in adults and a 31% mortality rate in larvae. Preliminary studies show that time to maturation is prolonged and fertility is unaffected. Compared to controls, benzene exposure appears to induce hsp 70 and 90 expressions.

FAUNAL ANALYSIS OF FIVE NONMARINE MICROVERTEBRATE LOCALITIES, LATE CRETACEOUS, SOUTHERN UTAH

Poster Display

Jonathan Baker and Christian Barwick (Jeffrey Eaton)
Geology

*Phyllis Crosby Gardner Undergraduate Research
Scholarship Travel Grant Recipient*

Five Late Cretaceous nonmarine microvertebrate localities from the eastern margin of the Paunsaugunt Plateau were analyzed for faunal content. These localities are in stratigraphic sequence and include Utah Museum of Natural History Vertebrate Paleontology Locality 820 (Straight Cliffs Fm., John Henry Member, Coniacian), UMNH VP 781 (Straight Cliffs Fm., John Henry Member, early Santonian), UMNH VP 799 (Straight Cliffs Fm., John Henry Member, middle Santonian), UMNH VP 83 (lower Wahweap Fm., Campanian) and UMNH VP 77 (upper Wahweap Fm., Campanian). Fish, including rays, sharks, lepisosteids, amiids, and teleosts were the most common elements at all localities. Dinosaur elements were rare at all localities (<1%). Mammals comprised less than 2% at the Coniacian and Santonian localities but are proportionally high at UMNH VP 83, where they comprise 19% of the vertebrate fauna. UMNH VP 820 is thought to be riverine and near the coastal margin, containing the highest proportion of ray teeth (38%). UMNH VP 781 is an organic-rich mudstone with abundant bivalves and gastropods, and may represent a paludal environment. UMNH VP 799 appears to be a proximal crevasse splay and has a large number of fish teeth and scales (*Lepisosteus*), and also has the highest proportion of shark teeth (16%). UMNH VP 83 is a floodplain locality, consisting of mudstone, which has by far the highest proportion of mammal teeth (19%) and amiid teeth (26%). UMNH VP 77, stratigraphically the highest locality, is in a channel sandstone and although similar to riverine localities lower in section, has a higher proportion of mammals and fewer sharks. In conclusion, the data indicate that local depositional environment is the most important control on the distribution of taxa at nonmarine microvertebrate localities, but proximity to coastline also impacts faunal composition. The data may also suggest that mammals become more common from the Coniacian to Campanian.

PASCAL: AN EXPERIMENT IN HIGH ALTITUDE BALLOONING

Oral Presentation

Samantha Balaich (Shane Larson)
Physics

*Weber State University Undergraduate Research
Scholarship*

The PASCAL (Pressure Aloft Sensor to Characterize Atmospheric Layering) experiment is a combined temperature and pressure sensor that will be carried aloft in the balloon's payload module. During the flight, it will record the atmospheric temperature and pressure every couple of seconds, yielding a vertical profile of the atmosphere's structure. The experiment will be sensitive enough to see known layers in the atmosphere, such as the transition region from the lower atmosphere to the upper atmosphere (the "tropopause"), and should record minute pressure differences in the upper atmosphere that can be compared against theoretical models. The experiment is versatile and portable, and will be flown along the Wasatch Front by HARBOR, as well as in central Montana by a ballooning team at Montana State University.

EXPLORATION OF A CATTLE RANGE: A FIELD STUDY

Poster Display

Gabe Behling (Barbara Wachocki)
Botany

Denkers Undergraduate Research Scholarship

The Manti La-Sal National Forest is one of several national forests in Utah in which grazing permits are issued for cattle. Land managers must move cattle between pastures to prevent irreparable overgrazing of native vegetation. This study established 3'x 3' enclosures in ten different pastures to exclude all herbivores over a five month period (May-October, 2007). Heights of a dominant palatable grass species were measured 10 times in two-week intervals. As expected, final heights of enclosed plants were significantly higher than those of the same species outside the enclosures at all sites. In addition, final heights were all lower than initial heights in open areas due to grazing. Conversely, in 90% of the sites, final heights were greater than initial heights for enclosed plants due to growth. Measuring the height of selected plants is a useful tool in determining when to move cattle from a pasture. Previous observation suggests that this grass species will not remain viable if cropped to a height of less than three inches. Hence, cattle should be moved from a grazing unit at or before this point. This study could be used to improve grazing management practices in the Manti La-Sal National Forest.

MAPPING OF GESBTE THIN FILM ELECTRICAL PROPERTIES WITH CONDUCTIVE AFM

Oral Presentation

Jordan Brocious (Colin Inglefield)
Physics

WSUSA Undergraduate Research Fellowship
Denkers Undergraduate Research Travel Grant Recipient

The phase-change material system GeSbTe (GST) is currently used for optical data storage, however many details of the mechanism governing the phase change are not understood. GST's optical properties and electrical conductivities differ between the amorphous and crystalline phases. For instance, the electrical conductivity in the amorphous phase can be $\gg 10^3$ times smaller than electrical conductivity in the crystalline phase. Thin films of Ge₂Sb₂Te₅ and other alloys were created by a RF sputtering technique, which is known to produce amorphous samples. Crystalline regions were created after growth by localized laser heating. We characterized these films with Conductive Atomic Force Microscopy, which provides physical and electrical topography images. From this characterization we have identified sparse ~100 nanometer highly conductive regions in the overall low-conductivity amorphous material. Although the laser treatment does not result in a uniformly conductive film, conductive regions in the treated material are significantly denser and larger.

APPLICATION OF COLORIMETRIC PROTEIN ASSAY FOR PROTEIN HYDROSYLATES

Poster Display

Brandon J. Burnett (Edward Walker)
Chemistry

Numerous assays are used for biochemical analysis of whole proteins. Typically methods for soluble proteins are based upon a spectral shift in a dye's absorption spectrum as it binds to the hydrophobic surfaces of whole proteins. Partial hydrolysis of proteins dramatically alters the responsiveness of the dye, requiring adaptation of the traditional methods to measure concentrations of these proteins. Responsiveness of the dye-protein interactions was studied and a method developed to measure protein hydrosylates in commercial products.

ATOMIC FORCE MICROSCOPY OF MINERAL SURFACES

Poster Display

Greg Christensen, Eric Eilander, Chad Paget and Corey Park (Colin Inglefield and Marek Matyjasik)
Physics

Our group (Greg Christensen (chemistry), Eric Eilander (physics), Chad Paget (geosciences), Corey Park (geosciences), Dr. Inglefield (physics), and Dr. Matyjasik (geosciences)) started a long term research project in the summer of 2007. This project consists of examining a set of mineral surfaces with the Atomic Force Microscope (AFM), and then comparing these samples to similar samples buried in Spitsbergen, Norway in 2006, by the University of Mining and Metallurgy in Krakow, Poland. An in-situ microcosm approach was utilized to observe dissolution features and mineral-bacteria interactions on freshly fractured mineral surfaces buried in young soils of different age for a period of one year. The study area is the foreland of the Werenskiold glacier on West Spitsbergen (continuously retreating in the last century by several meters a year). AFM allows us to view topographic features on the samples on length scales ranging from 10 nanometers to 10 micrometers. We are now in the second phase of this project; we have started examining samples exposed for one year. Surface features down to the nanometer scale vary greatly between the exposed and control (unexposed) samples.

NEST-SITE SELECTION OF SHOREBIRDS AT GREAT SALT LAKE: IMPLICATIONS FOR DEVELOPMENT OF WATER QUALITY STANDARDS

Poster Display

Lindsay Cole (John Cavitt)
Zoology

CUR 2008 Posters on the Hill Participant

The “Clean Water Act” requires that states develop water quality standards for the beneficial use of its water bodies. The Great Salt Lake (GSL) is a critical stopover and breeding site for shorebirds. Approximately 5 million birds utilize the GSL each year. Despite its importance, water quality standards do not exist. The state of Utah and the USEPA have initiated projects to develop water quality standards for GSL. In order for these standards to provide optimal breeding habitat for shorebirds, it is imperative that habitat conditions are identified which sustain healthy populations of coexisting species. Consequently, I monitored the nesting success of two shorebird species, American Avocets (AMAV) and Black-necked Stilts (BNST) at GSL, and characterized the vegetation surrounding each nest. I measured the following variables at nests and at random non-use sites: substrate, percent cover, cover height, distance to water, and vertical concealment of nests. My results identified key habitat features used in selecting nesting sites, as well as habitat features which increased nesting success. The results of this study provide clear information on breeding habitat preferences. These data will be utilized to ensure that water quality standards and management guidelines promote optimal breeding habitat for these species.

DOES THE CONSUMPTION OF WHOLE RAW EGGS INDUCE A BIOTIN DEFICIENCY IN LAB RATS?

Poster Display

Kim Darger (Michele Skopec)
Zoology

Eccles Undergraduate Research Scholarship

Health professionals such as dietitians, physicians and veterinarians typically dissuade people from consuming raw eggs or feeding raw eggs to their pets. The reason for this is two-fold. One, consumption of uncooked poultry products comes with the risk of *Salmonella* contamination and two, egg whites contain avidin, an enzyme that binds biotin (an essential B-vitamin) and prevents its absorption. Despite the potential risk of *Salmonella* contamination and the presence of biotin-binding avidin in raw egg whites, many health enthusiasts persist in eating whole raw eggs. Justification for their consumption may be the large amount of biotin found in the egg yolk. Though many studies show that raw egg whites eaten alone can induce a biotin deficiency, no studies have clearly demonstrated their combined effect. In a 21 day feeding trial, 16 laboratory rats were fed a diet which contained either 30% whole raw egg or 30% raw egg whites. Urine samples were taken before and after the trial to determine whether or not a biotin deficiency occurred. The data is still being analyzed, though visual signs of a biotin deficiency were observed in the egg white only group and not in the group which were fed whole raw eggs.

EMBEDDED MICROCONTROLLERS FOR DIODE LASER MONITORING AND CONTROL

Poster Display

Tim Davis (John Sohl)
Physics

WSUSA Undergraduate Research Fellowship

Diode laser systems are commonly utilized in atomic scientific research. The ability to control the wavelength output of a laser is paramount when working toward fluorescence of certain elements such as rubidium. Any temperature fluctuation has a significant impact on the laser cavity size, thus changing the wavelength of the laser. I have been developing a temperature control system that incorporates a microcontroller, thermistor, thermal electric cooler, and digital temperature measurement devices. The system has been created around a LCD display and user keypad to enhance efficiency and usability. Data acquisition using RS-232 communication and LabVIEW software was used to collect thermistor voltage and digital device temperature data. This data may help calibrate the thermistor for accurate thermal measurements. Ultimately this may help the user know exactly at what temperature the laser system will output a specific wavelength. This temperature system is the first step in the continuing development of a diode laser embedded control system.

THE STRUCTURE, FUNCTION, AND TEMPORAL EXPRESSION OF FIBRILLIN IN ZEBRAFISH (DANIO RERIO).

Oral Presentation

Christian Francom and Jeff Caldwell (Barbara Trask)
Zoology

*WSUSA Undergraduate Research Fellowship
Eccles Undergraduate Research Travel Grant Recipient*

Although the sequence of fibrillin is highly conserved among numerous species, the structure, function and expression of this elastic extracellular matrix protein has yet to be described in zebrafish. To investigate these parameters of fibrillin in this model organism, we first confirmed the structural similarity of fish microfibrils with their mammalian counterparts in both ciliary zonules and the ventral aorta using transmission electron microscopy. Using a published zebrafish fibrillin cDNA sequence (GenBank Accession # XM_43257), oligonucleotide primers were designed to amplify a 678 nt region of fibrillin using RT-PCR. Similarly, using a published *Xenopus* MAGP-1 cDNA sequence (GenBank Accession # BC041238) primers were designed and used to amplify a 300 nt portion of the zebrafish MAGP gene. By using these primers on whole embryo total RNA isolated at many different developmental stages, the timing of peak expression for both genes was identified. To assess the function of fibrillin in zebrafish, additional primers have been designed to amplify various TGF-Beta binding-like regions of fibrillin. These amplified regions have been cloned for expression so the recombinant protein may be used in future protein binding studies.

A STUDY ON THE HORSE'S HOOF DURING EXTREME DECELERATION

Poster Display

Rachel Glenn (John Sohl)

Physics

WSUSA Undergraduate Research Fellowship

One of the more popular equine sports is team roping. The team roping horse and other athletic horses can experience fatalities with these activities. One common fatality is a fractured P-2 bone, which is located just above the hoof capsule. It is still common for a horse to be euthanized if it fractures the P-2. This devastating fatality has inspired the undergraduate research on the measuring of these extreme forces that the horse's hoof experiences. The device to measure these extreme forces is to be glued on the hoof. This enables the horse to move freely while the device is collecting data. The device is a wireless accelerometer. The accelerometer sends the deceleration force to a transceiver that transmits the signal from the hoof. Another transceiver at a laptop receives the signal and inputs the data into a laptop where it is graphed, acceleration vs. time. The data will then be analyzed and compared to other studies on deceleration of the hoof at a walk and trot in which they used non-mobile accelerometers. The data will also be compared to maximum strain of the bone with the use of biomechanics. It is that expected that the device will measure forces above 50g's.

CULTIVATION OF MICRO-ORGANISMS FROM SALT CRYSTALS AND ANCIENT ROCK-SALT DEPOSITS

Poster Display

Horald Hess (Mohammad Sondossi)

Microbiology

As part of a larger study, attempts were made to cultivate and characterize microorganisms associated with and or embedded with the salt crystals. The rock salt used in this study is from a very old mine in Pakistan. The salt-mine is 945 feet above sea level and extends around 2,400 feet below the surface from the mine-mouth. Two commercially available table salts were used as controls. Recovery of viable microbes from salt samples varied greatly, by sample type, resuscitation process, and media composition. The industrial processing of the table salts influences the type of microorganisms recovered and their salt tolerance characteristics. The results suggest that organisms cultivated most likely are environmental contaminants during product processing and packaging. On the other hand, experiments with unprocessed and unrefined rock salt (claimed to be geologically old deposits) resulted in recovery of many types of microorganisms. The refining process used to produce table salt results in elimination of possible organisms from original salt deposits. The microbes isolated from processed salts were regarded as halotolerant (only grew up to 10%). Much larger numbers and types were isolated from rock salt samples that had the ability to grow in a wide range of salinity. This included microorganisms that could be labeled as true extreme halophiles (grow only at high salt concentration, up to 30%).

Artemia's Physiological Responses to Mercury Exposure

Poster Display

Dustin Ingraham (Nicole Okazaki)

Zoology

2008 UCUR Participant

The physiological effects of chronic exposure to various mercury levels were tested in the brine shrimp *Artemia*. *Artemia's* mortality rate, maturation time, and number of eggs per brood were recorded after exposure to mercury concentrations of 0, and 10⁻⁹ through 10⁻³ (10⁻³= 1 g/L). The expression of stress proteins hsp70 and hsp90 were concomitantly followed using SDS-PAGE and western blots. Mortality was high at the 10⁻³ and 10⁻⁴ levels, with decreasing mortality as mercury levels decreased. Chronic exposure resulted in much slower maturation of males and females than in controls. Average eggs per brood were 21.2 and 48.5 in mercury raised and control shrimp, respectively. These differences are statistically significant. Preliminary results with hsp70 and hsp90 levels suggested an increased expression at the highest mercury concentrations (10⁻⁵ and above). While mercury is lethal after 24-hour exposure at a concentration of 10⁻⁴ and above, its effect is profound at lower concentrations. Shrimp fertility is sharply impaired, thus raising concerns for the population fate, as well as for the numerous bird species feeding on them. The increase in hsp70 and hsp90 expressions at higher concentrations might provide a mean to monitor the state of stress in the shrimp.

PETROLOGY OF SANDSTONES FROM JOHN HENRY MEMBER, STRAIGHT CLIFFS FORMATION, LATE CRETACEOUS, SOUTHERN UTAH

Poster Display

Jed Jenkins (Jeffrey Eaton)

Geosciences

Phyllis Crosby Gardner Undergraduate Research Travel Grant Recipient

Stratigraphic and petrographic analysis of the John Henry Member of the Straight Cliffs Formation (Coniacian-Santonian) on the eastern margin of the Paunsaugunt Plateau records changes in sedimentary sources and dispersal patterns in the foreland basin. Petrographic samples were compared to samples previously taken from the overlying Drip Tank Member of the Straight Cliffs Formation and the Wahweap Formation, as well as from the underlying Smoky Hollow Member of the Straight Cliffs Formation. Petrographic analysis shows that the lower John Henry Member is dominated by monocrystalline quartz (80%), chert, and microcline, which is consistent with the petrology of the sandstones in the underlying Smoky Hollow Member. Higher in the John Henry Member, carbonate clasts become more pervasive (30%), as does calcite cement, and the microcline disappears. Previous work indicated that lithics in the Drip Tank Member are dominated by chert, metamorphic quartzite and microcline and that the Wahweap Formation lithics are dominated by carbonates (>85%) and lack the quartzite and microcline. The change in Petrology from the Drip Tank Member to the Wahweap Formation represents a relatively abrupt shift in provenance from a southern source (Mongollon Highlands of Arizona) to the Sevier orogenic belt to the west, which contains abundant carbonates. The petrographic change from lower to upper John Henry Member indicates a similar but more gradual change from a south source (Mongollon Highlands) to a western source (Sevier thrust belt). Changes in sediment supplied to the foreland basin reflect both allocyclic and autocyclic controls, and these changes can be abrupt (Drip Tank/Wahweap transition) or gradual (John Henry Formation).

EFFECT OF SELENIUM ON THE BRINE SHRIMP ARTEMIA

Poster Display

Jeff Jepperson (Nicole Okazaki)
Zoology

The Great Salt Lake (Utah) ecosystem is significant for hosting many bird species and supporting a brine shrimp cyst industry. These populations are affected by the increasing levels of selenium, a byproduct of the local mining plants. This study attempts to quantify the effect of selenium on the brine shrimp *Artemia*, in acute setting and under chronic exposure, on life parameters and at the cell level. The survival rates of *Artemia* larvae and adults exposed for 24 and 48 hours to selenium concentrations ranging from 10^{-2} (w/v) to 10^{-7} were measured. Shrimp were raised at 10^{-6} and 10^{-5} selenium concentrations. The survival, time to maturation, and the number of eggs per broods were measured. In addition, the level of heat shock proteins 70 were monitored under each condition. Selenium concentrations of 10^{-3} and above are 100% fatal to both larvae and adults while the survival rate is nearly 100% at concentrations below 10^{-4} . Preliminary results in shrimp raised in 10^{-4} selenium resulted in poor survival and 0% maturation. A hsp 70 western blot indicated an increase in protein expression in shrimp exposed to 10^{-3} selenium. Shrimp in 10^{-5} selenium were able to mature and produce viable eggs.

RELATIONSHIP BETWEEN STREAM HABITAT AND THE DISTRIBUTION AND POPULATION STRUCTURE OF THE PAIUTE SCULPIN, *COTTUS BELDINGII*

Poster Display

Skyler Johnson (Christopher Hoagstrom)
Zoology

Phyllis Crosby Gardner Undergraduate Research Scholarship

My goal was to study relations between stream habitat and the distribution and population structure of Paiute sculpin (*Cottus beldingii*). I measured nine stream habitat variables and collected fishes at 16 streams in northeastern Utah, measuring all fish to the nearest millimeter standard length. All sites were wadeable and paired with U.S. Geological Survey gauging stations, from which I gathered data for four additional habitat variables. A principle components analysis of all 13 variables showed that streams varied in size (Axis 1) and slope and discharge flashiness (Axis 2; 43% and 20% of the variation explained). Paiute sculpin were restricted to seven relatively large streams. Mean standard length varied among streams (ANOVA $F = 89$, $df = 6$, 1726, $P < 0.01$). A principle components analysis combined skewness, kurtosis, and median of standard length into a variable that explained 85% of the variation in population structure among streams. A stepwise linear regression of this variable versus the 13 habitat variables indicated a strong relation with water column velocity ($F = 81$, $df = 1, 5$, $P < 0.01$, $r^2 = 0.94$). Larger streams were important for Paiute sculpin and a range of stream sizes promoted diversity among populations.

FACTORS AFFECTING ENTEROCOCCUS IN THE GREAT SALT LAKE: INFLUENCE OF WATER DEPTH, SEASON, AND OTHER PARAMETERS

Oral Presentation

Scott Kagie, Alan Noland, Eric Nelson and Adam Hutchinson (Karen Nakaoka and William Lorowitz)
Microbiology

Enterococcus species are used as indicators of fecal contamination of water. Since enterococci are able to survive in the presence of high salt and are potentially pathogenic, their presence in the Great Salt Lake (GSL) and elucidation of factors which influence their survival in the GSL are important. The purpose of this investigation was to study the influence of water depth, seasons and other parameters on the numbers of Enterococcus. Water samples were collected from the south arm of the GSL near the marina from surface and sub-surface depths throughout the year. Numbers of Enterococcus were determined by membrane filtration. Physical characteristics of the water such as temperature, salinity and pH were measured. Water depth, season of collection, saline concentration all influenced the number of Enterococcus present in the GSL samples. In vitro studies of Enterococcus showed that it was able to survive for over one week in sterilized GSL water with over 10% total dissolved solids. Persistence of Enterococcus-like organisms in the GSL through all seasons suggests that other halotolerant pathogens, such as Staphylococcus aureus, may survive as well. Thus, there is a need to be vigilant about usage of these waters for recreation.

MYOSIN HEAVY CHAIN DIVERSITY IN BIRDS

Oral Presentation

Matthew Leaptrot (Ron Meyers)
Zoology

Denkers Undergraduate Research Scholarship

Myosin is a contractile protein characteristic of muscle. Muscle cells express different isoforms of myosin heavy chains (MHCs) depending on functional requirements. For example, the rat diaphragm has slow and fast contracting muscle fibers that express one slow and three fast MHC isoforms. It is not known if specific fiber types in bird muscles express a distinct pattern of MHC isoforms. In order to determine this, we isolated MHC isoforms from various bird muscles utilizing gel electrophoresis to separate them according to molecular weight. Our hope was to correlate MHC isoforms with muscle fiber types as has been done in mammals. The results of these experiments show that, unlike mammals, there is substantial variation in both the number and diversity of MHCs that comprise the same type of muscle fibers among different avian species. Additionally, there is significant variation in the number of isoforms expressed by the same muscle fiber types among individuals of the same species, even when identical muscles are compared. These findings suggest that myosin isoforms are more conserved in mammals than in birds as a result of different selective pressures. This research was supported by NIH grant #DC004390 and a Weber State University undergraduate research grant.

ENUMERATION OF AIRBORNE MICROORGANISMS AEROSOLIZED BY THE DUCK POND FOUNTAIN

Poster Display

Benjamin Lewis (Mohammad Sondossi)
Microbiology

The water fountain in the duck pond at Weber State University, Ogden campus, was the subject of this study as the main source of live microbial droplet generation. Aerosolized water droplets may contain pathogenic and non-pathogenic microorganisms that will be transported downstream by wind. It has been also demonstrated that bacteria present in waterfowl droppings constitute a potential health risk to humans exposed to the droppings. The aim of this study was to demonstrate transport of microorganisms present in the water from the fountain. Using different air sampling devices samples were collected. Selective and differential media were also exposed to the air around fountain to quantify the number of CFUs that would contact 1 square inch due to gravitational fallout. Water samples plated directly from the pond showed 2.7×10^6 CFU/ml. Results of a t-test showed that there was a significant difference ($P < 0.05$) between days when the fountain was on and off. However, the average count per days when the fountain was on, was 1600 CFU/m³. Five-minute exposure of open plates was 1.5 CFU per 10 cm², which was much lower than anticipated. These preliminary data suggest an enormous drop in either viability or cultivability of organisms aerosolized.

DETECTION AND ENUMERATION OF BACTERIA ASSOCIATED WITH FECAL CONTAMINATION IN WATER FROM DUCK POND ON THE WEBER STATE UNIVERSITY, OGDEN CAMPUS

Poster Display

Benjamin Lewis (Mohammad Sondossi)
Microbiology

An earlier study of microbial counts in the duck pond and aerosolized droplets by the fountain on Weber State University, Ogden Campus, showed a dramatic drop in the viability/cultuability of organisms aerosolized. However, high counts in the fountain water, 2.7×10^6 CFU/ml, were still a water quality concern. Routine water quality tests indicated high coliform counts in the water samples. Other samples initially enriched and then plated on selective and differential media confirmed the presence of fecal indicator organisms, *E.coli* and enterococci in the samples. These commonly used faecal indicator organisms; faecal coliforms (*E.coli*) and enterococci are found in both human and animal faeces. Other studies have shown that waterfowl, such as ducks and swans, can influence water quality compliance significantly by markedly increasing the total counts for the indicator organisms. It has also been shown that a wide variety of *Enterobacteriaceae*, including *Salmonella* spp are present in the droppings of waterfowl. Our findings indicate that *Salmonella* spp are present in the duck pond water samples. This confirmation comes from use of several selective and differential media for cultivation of *Salmonella* spp. Further confirmation was provided by *Salmonella* specific antibody mediated agglutination of suspected colonies upon testing.

ULTRAVIOLET REFLECTANCE OF SEEDS AND ITS POTENTIAL INFLUENCE ON ANT DISPERSAL

Poster Display

Erik McClure (John Mull and John Sohl)
Zoology

Weber State University Undergraduate Research Scholarship

Certain plant species, known as myrmecochores, solicit the aid of ants in the dispersal of their seeds. The commonly accepted explanation for this relationship is the attractant fragrance of a nutritious elaiosome or fat body attached to the seed which serves as a food source for the ant and a reason for it to transport the seed to its predation-safe, nutrient-rich nest. Ant eyes are known to detect ultraviolet light, so we examined the seeds and elaiosomes of three known myrmecochores for the presence of ultraviolet light reflectance as an indicator that it may also serve as a visual cue for seed discovery by ants. Seeds from *Dicentra uniflora*, *Claytonia lanceolata*, and *Viola nuttallii* were collected from various locations in the Wasatch Mountains and were digitally photographed while simultaneously employing three important devices: 1. an ultraviolet filter which allows only wavelengths of light between approximately 280nm and 310nm to pass through to the photographic device, 2. a magnifying UV-transmitting doublet lens, and 3. a UV-enhanced digital CCD. Images of the seeds of all three species displayed specular reflectance. Intensity of reflectance of the elaiosomes differed among species with that of *Viola nuttallii* being especially bright. The presence of UV reflectance in these seeds suggests that it may play a role in ant attraction.

METHYLOTROPH BACTERIA IN THE GREAT SALT LAKE

Poster Display

Natalie McKinnon (Michele Zwolinski)
Microbiology

Weber State University Undergraduate Research Scholarship

Methylotrophs are important bacteria that use one carbon compounds like CH₄ (methane) as both an electron donor and carbon energy source. Methylotrophs are widespread in nature and have been isolated from many environments. We wanted to know more about the diversity and distribution of methylotrophic bacteria in the Great Salt Lake, they have never been isolated from this environment. A methyltroph culture was grown in methane broth media and on agar media as a control. Soil and water samples from both the north end of the GSL and the south end of the GSL were taken to test for methylotrophic bacteria. Many molecular techniques were used to try to extract DNA from the samples to identify and amplify genes in the bacteria. Methyltrophic bacteria are very rigid microorganism so it is very difficult to extract DNA. We were unsuccessful in extracting and identifying methylotrophic bacteria from the Great Salt Lake samples.

HIGH ALTITUDE BALLOONING SITE SELECTION

Oral Presentation

John Metcalf (Shane Larson)

Physics

High altitude ballooning provides a near-space platform for amateur research projects in science and engineering. This venue allows new experiments, otherwise not conducted from costs or lack of transportation, from WSU and surrounding areas to be flown into the upper atmosphere. A highly skilled and motivated group of scientist and engineering students from WSU have contrived its own high altitude balloon to lift payload capsules filled with experiments and tracking equipment up to 100,000 feet where it then bursts and payload capsules are parachuted into a landing zone. Launch site selection is based upon the safety of those that come within the balloons projected flight path and terrain accessibility from the launch and landing zones. Restricted ground and airspace, mountainous regions, lakes and rivers, and densely populated or high air traffic areas were obstacles to be avoided. Computer flight simulations and region analysis show that there are several viable launch and recovery sites in Utah as well as SE Idaho, SW Wyoming, and NW Colorado.

UNDERSTANDING COLLIGATIVE PROPERTIES

Oral Presentation

Isaac Myers (Dan Schroeder)

Physics

Did you know that you can raise the boiling point of a liquid just by dissolving something in it? What's more interesting is that it doesn't matter what you dissolve, only how much. Properties of solutions that depend only on the amount of a dissolved substance and not its chemical identity are called colligative properties. I attempted to find a simple explanation of these properties by writing a molecular dynamics computer simulation. I used the simulation to help me analyze simulated mixtures for specific properties that cause colligative effects and collect data that could be compared to theory. Most of my results are what I expected them to be—they agree with theory, but several of my last data sets depart from earlier findings. I found that one effect occurs exactly opposite to how I imagined it should. Does that mean I am looking for the wrong properties, or that my experiment is flawed? Am I just misinterpreting the data? You be the judge.

MAPPING WATER ICE IN NORTH POLAR REGIONS OF MARS

Poster Display

Stanton K. Nielson (John Armstrong)
Physics

Through the collection of 3 km footprint readings from the Thermal Emissions Spectrometer on the Mars Global Surveyor, a large amount of thermal data exists to characterize the thermal properties of the Martian surface. Utilizing geographic information systems (GIS) for means of spatial and mathematical analysis of North Polar Regions, the data yield new insight into the nature of thermal characteristics of polar craters and other features. Such analysis is a step further in identifying and mapping the potential deposits of water ice on the surface of Mars.

DEVELOPMENT OF SIGNATURES FOR THE DETECTION AND DIFFERENTIATION OF BRUCELLA

Poster Display

Karli E. Oberg (Craig Oberg and Deborah Newby)
Microbiology

Brucella are gram negative bacteria that cause the zoonotic disease brucellosis. The eight species of Brucella are 98% genetically similar, making differentiation difficult so biovar designations are used to discriminate differences within species. Current methods of differentiating biovars include biochemical tests, bacteriophage susceptibility, and immunological reaction assays. Since these methods are expensive and time-consuming, there is a need for development of rapid detection and identification assays for specific Brucella spp. and biovars. The purpose of this research was: 1) to develop and validate a universal real-time PCR assay that detects all Brucella spp.; and 2) to identify DNA signatures that could be developed into real-time assays that detect a specific Brucella spp. or biovar. Identification of these specific signatures involves amplification of key genome regions followed by DNA sequencing which allows minor sequence differences to be identified and targeted for assay development. Our research focused on the VirB operon (pathogenicity island) and sequences spanning IS711 insertion elements. Sequence analysis comparison was done using BLASTX 2.2.13 and BioEdit. Initial results indicated this approach to identifying specific strains and/or biovars of Brucella appears feasible. In addition, the IS711 approach may also provide a unique method of generating molecular fingerprints.

DISTRIBUTION OF WOODY DECOMPOSER FUNGI WITHIN THE GREAT SALT LAKE

Oral Presentation

Leslie Patterson (Ron Deckert)
Botany

Weber State University
Undergraduate Research Scholarship
WSUSA Undergraduate Research Fellowship Travel Grant Recipient
2008 NCUR Participant
2008 UCUR Participant

Fungi play an important role in the decomposition and recycling of plant litter, due to their capacity to produce enzymes that digest cellulose and lignin. The Great Salt Lake (GSL) is an extreme saline environment, yet some fungi survive these conditions. The GSL varies in salinity at different locations from a low concentration of 9‰ to a high of 28‰. Every year coarse woody debris (CWD) is washed into the lake creating a potential substrate for fungi. I studied the differential dominance of decomposing fungal species within areas of differing salinities. I collected CWD from six different areas of the lake with salinities ranging from 5.1‰ to 34.4‰ and plated the samples on agar made with water collected at the site. Four samples were taken from each site. Plates were incubated for two months at 27°C. Filamentous fungal growth only occurred on two areas. After the two month period I replated half the samples from all areas, with the exception of one, onto agar with 5‰ salinity to observe possible dormancy effects. Results suggest that the areas of least salinity allowed growth of filamentous fungi more readily than that of the higher salinities. Salinities of 30‰ or greater showed no filamentous fungal growth.

ENUMERATION, ISOLATION AND CHARACTERIZATION OF MICROBES FROM DRINKING WATER AND DEIONIZED WATER SYSTEMS OF SCIENCE LAB BUILDING

Poster Display

Jay D. Sadler, Emily J. Smith and Karl B. Anderberg (Mohammad Sondossi)
Microbiology

Drinking water and deionized water distribution systems in the College of Science (COS) were analyzed for viable microbial counts. This was done by sampling water from Microbiology Laboratory tap water outlets. Two types of samples were taken; 1) from outlets that were not used at least for 24 hours, 2) the tap water was run for 10 minutes before samples were taken. The deionized water system was sampled in two locations; 1) in Microbiology Laboratory (3rd Floor SL) from the distribution system, 2) and from water in the tank before entering the distribution system (6th Floor SL). Specific media for isolation of oligotrophic bacteria from water distribution systems (R2A), commonly used microbiological media (nutrient agar, NA), diluted strength NA, and defined mineral medium were used to enumerate and isolate microorganisms from these water distribution systems. Surface plating, pour plating, and filtration techniques were used to quantify microbial numbers. Campus tap water samples, depending on sampling techniques, media, and outlet used shows variability in the counts. However, surprisingly high counts in 100s-1000s per milliliter were recorded. The deionized water distribution system in SL building also yielded substantial microbial presence in the waters sampled from both locations.

BACTERIAL PREDATION BY BACTERIOPHAGE ISOLATED FROM THE GREAT SALT LAKE

Poster Display

Natalie Savage (Matthew Domek, Michele Zwolinski and Craig Oberg)
Microbiology

Weber State University Undergraduate Research Scholarship

The Great Salt Lake (GSL) is a hypersaline environment that is ideal for moderate to extremely halophilic microorganisms. A high concentration of nutrients, constant sunlight exposure, and wind generated aeration allows the GSL to support a high concentration of halophilic organisms. Bacteria predation by bacteriophages is reported to have a significant impact on controlling bacterial populations. There are very few reports of bacterial predation by bacteriophage in the GSL. Bacterial strains previously isolated from the south arm of the GSL on 8% NaCl halophilic medium were used as potential prey. Water samples obtained from the south arm were centrifuged then filtered to remove bacteria and tested for bacteriophage activity by using plaque assay in soft agar. A common moderate halophile in the GSL, *Vibrio costicola*, identified based on morphology, Gram stain, and 16S rRNA was found to be a susceptible host to bacteriophage in the south arm water sample. Amplification of this bacteriophage isolate (NS01) in broth culture resulted in a titer of 10^8 pfu/mL. NS01 bacteriophage activity was destroyed by boiling but not by freezing. Molecular analysis of NS01 bacteriophage suggests it is a DNA bacteriophage. Studies are currently underway to determine the potential impact of this bacteriophage on the *Vibrio costicola* population densities in the GSL ecosystem.

EVALUATION OF A GROUND-BASED PAINTBALL MARK RE-SIGHT SURVEY OF MOUNTAIN GOATS (*Oreamnos americanus*)

Oral Presentation

Christopher Schulze and Richard Schulze (Samuel Zeveloff)
Zoology

Eccles Undergraduate Research Scholarship

This study was conducted in the Willard Peak and Ben Lomond Peak area of Box Elder and Weber counties in northern Utah. Mountain goats were transplanted to the Willard Peak area in 1994 with a supplemental transplant in 2000. Since their establishment, this herd has exhibited phenomenal growth. It is now one of the largest herds in Utah, and its growth and possible effects on the habitat have been a cause of both interest and concern for biologists. We desired to explore the feasibility, utility, and accuracy of a ground-based mark re-sight survey. In this study we conducted both our marking and surveying from the ground. We utilized recreational paintball equipment for our marking and conducted twelve re-sight surveys between July 11 and August 31, 2007. Estimates of abundance were calculated using the Chapman-modified Lincoln-Petersen population estimate model. We concluded that ground-based mark re-sight surveys can be accurate and feasible. However, conducting such surveys may pose several challenges when trying to formulate accurate population estimates. This method could be utilized in instances where mountain goat populations are relatively dense and accessible, and where time, budgets, and person-power are limited.

PHOSPHATE AND PHOSPHONATE USE BY MICROORGANISMS ISOLATED FROM HYPERSALINE ENVIRONMENTS OF THE GREAT SALT LAKE, UTAH

Poster Display

Chase L. Sessions and Jay P. Nichols (Craig
Ober and Michele Zwolinski)
Microbiology

Eccles Undergraduate Research Scholarship

The Great Salt Lake (GSL) contains high levels of phosphate, however most is precipitated with minerals and is not bioavailable for microorganisms. We hypothesize that organisms from the GSL will be versatile in the types of phosphate sources they can use and may be able to scavenge phosphate at low concentrations. Organisms from the south arm (8% saline) and the north arm (22% saline) of the GSL were isolated and characterized. Isolates from the north arm were related to the halophilic genera *Salicola*, *Halomonas*, *Marinobacter*, *Natronococcus* or *Haloarcula*. Isolates from the south arm were related to *Marinobacter* and *Salinivibrio*. Growth of the organisms on defined organic or inorganic phosphate sources was measured by monitoring absorption at 595 nm. Most isolates could use several phosphate sources, but individual isolates preferred some phosphate sources over others. All of the isolates could grow with KH_2PO_4 as the sole phosphate source. However, several also grew on 1-aminoethylphosphonic acid indicating the ability to cleave the C-P bond of the phosphonate molecule. Glyphosate, the active ingredient of the herbicide Roundup, inhibited isolate growth. A dose-response assay confirmed glyphosate inhibited growth when it is the only phosphate source, but not when isolates are also given KH_2PO_4 .

NEST PREDATOR IDENTIFICATION AT GREAT SALT LAKE, UTAH

Poster Display

Kyle Stone (John Cavitt)
Zoology

The Great Salt Lake (GSL) ecosystem is one of the most important inland shorebird sites in North America (Oring et al., 2005) and has been recognized both nationally and globally for its importance to breeding and migratory birds. Despite the large numbers of shorebirds which breed at the GSL, many wildlife managers and local conservation agencies have been concerned that populations may be experiencing significant nest failure due to increased rates of predation on eggs. The purpose of this project was to identify the major nest predators for shorebirds and waterfowl breeding at the GSL. Shorebird nest losses may be attributed to numerous factors, including nest predation, flooding, death of the attending adult, and nest desertion (e.g. Paton 1995, Koenen et al., 1996). This project utilized miniature video cameras with infrared illumination to record predation events at nests. It is important for managers to have an accurate description of the predator community so that the management strategies implemented can be effective.

SYRINGEAL MUSCLE FIBER ORGANIZATION IN FEMALE AND MALE SONGBIRDS

Oral Presentation

Amiko Uchida (Ron Meyers)
Zoology

WSUSA Undergraduate Research Fellowship

Our lab has been investigating the syringeal structure of female and male European Starlings, whose syringeal muscles produce song by contracting at very high rates (over 150Hz). Myosin ATPase and immunohistochemistry were used to distinguish and quantify muscle fiber characteristics. We found two fiber types: fast and superfast. Females and males displayed similar patterns; the syringealis muscle had ~51% fast (mean diameter 26 μ m) and ~49% superfast (mean diameter 38 μ m) fibers, while the tracheobronchialis muscle contained ~27% fast (mean diameter 17 μ m) and ~73% superfast (mean diameter 36 μ m) fibers. This Starling data served as a baseline for comparison with other songbird species. Since female and male Red-wing Blackbirds (RWB) sing at different frequencies, we examined their syringeal muscles for differences. We were surprised to find that both sexes had the same two muscle fiber populations as Starlings. Our analysis of Zebra Finches found significant differences between sexes. Non-singing females have no superfast fibers, while singing males have a muscle fiber organization comparable to Starlings and RWBs. These findings suggest that the superfast muscle fiber type does not dictate the frequency of song, but rather the ability to sing. Supported by NIH grant # DC004390 and a WSUSA Undergraduate Research Fellowship.

EXAMINING THE STRINGENCY OF THE CLSI DISC DIFFUSION ASSAY PROTOCOL

Oral Presentation

Cristy Waters, Badreddin Edris and William
Lorowitz (William Lorowitz)
Microbiology

The disk diffusion assay for antibiotic sensitivity is a common experiment in undergraduate microbiology labs. The method, set forth by the Clinical and Laboratory Standards Institute (formerly the National Committee for Clinical Laboratory Standards), is exacting and not always convenient. The stringency of some of the parameters, particularly those that would be most inconvenient in a teaching lab, were investigated using *Escherichia coli* ATCC 8739 as the test organism. There were no significant differences ($p < 0.05$) observed when zones of inhibition were measured after 15-24 h incubation or after an additional 8 h refrigeration. It was found that the guidelines should be adhered to in regard to using a 24 h culture as inoculum, not using plates stored for more than a week, using agar plates poured 4 mm deep, and antibiotic discs should be allowed to come to room temperature.

THE EFFECTS OF CIGARETTE SMOKE ON ORAL MICRO-FLORA

Poster Display

Nathan R. Watkins and Nikalaus
Spendlove (Mohammad Sondossi)
Microbiology

Cigarette smoke is known to contain many harmful chemicals. Among those is ammonia, aliphatic hydrocarbons, aldehydes, aliphatic nitrogen compounds, aromatic amines, halogen compounds, monocyclic aromatic hydrocarbons, N-nitrosamines, phenols, and polycyclic aromatic hydrocarbons. Many of these compounds have been shown to have cytotoxic and genotoxic effects on living organisms including human. The aim of this study as part of a larger project was to evaluate the effects of formaldehyde present in cigarette smoke on oral micro-flora. It was hypothesized that when smoke is passed through oral cavity, the oral microbial populations are subjected to toxic effects of the chemical constituents of the smoke. This toxic effect could be perceived as a rather strong selective pressure that may alter composition of the oral micro-flora. We have objectively tested and characterized some of these effects and have collected data to show how exposure to cigarette smoke can affect oral micro-flora.

THE EFFECTS OF DESICCATION OF THE PHENOLS OF *ASCOPHYLLUM NODOSUM*

Oral Presentation

Sonya Welsh (Eugene Bozniak)
Botany

Denkers Undergraduate Research Scholarship
2008 UCUR Participant

The brown alga *Ascophyllum nodosum* (*Phaeophyceae*) is an important primary producer and a keystone species in the intertidal zone of the North Atlantic. In addition, *A. nodosum* is of great economic importance in these regions. It is unclear what impact predicted climate change might have on this organism. The purpose of this study was to determine the possible effects of climate change on the marine brown alga *A. nodosum* by measuring phenolic levels, respiration and chlorophyll fluorescence. Phenols are stress metabolites that protect against herbivory (Pavia and Toth 2000), ultraviolet radiation (Pavia et al., 1997), and aid in antioxidant activity (Connan et al., 2006). Algal tips were collected and placed in four temperature treatments. Each temperature treatment included algal tips placed in seawater at 35‰ salinity and 17‰ salinity with each salinity group exposed to daily desiccation periods of six and eighteen hours over a 30-day duration. The phenols were extracted from specimens of *A. nodosum*, in triplicate, from the collection day, day 0 and tips collected from each treatment on day 1 and week 4. The extracted phenols were assayed using photospectrometry. Results indicate *A. nodosum*'s production of phenols varied in response to desiccation stress. These results may facilitate the establishment of this species as a bio-indicator for climate change.

WHAT'S IN A NAME, ALKALINE RESERVE OR ANTIMICROBIAL AGENT?

Poster Display

Logan Wood (Mohammad Sondossi)
Microbiology

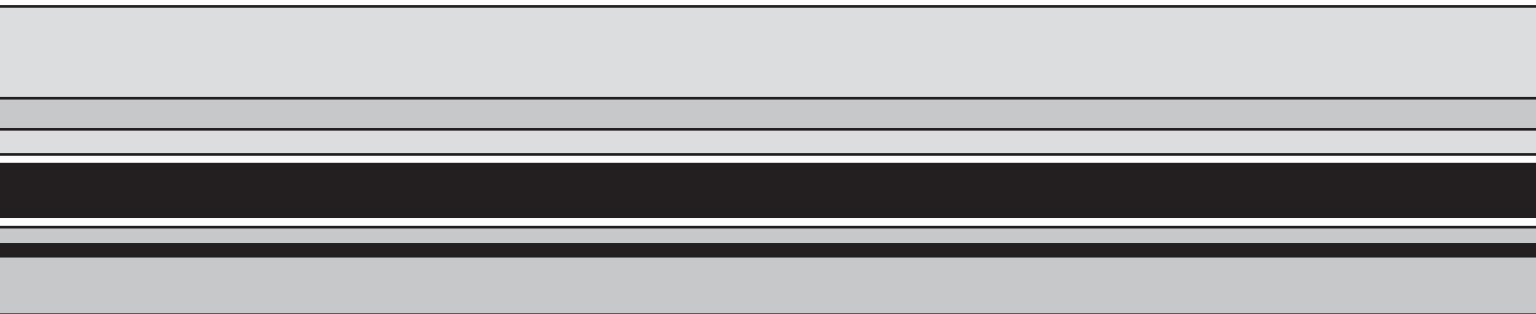
An extensive number of compounds derived in part from formaldehyde (FA) are used as antimicrobial agents. The reactivity of FA has made possible the synthesis of a variety of these compounds, including aminals, formals, and methylols. The role of FA in the mode of action of formaldehyde-adducts is not always asserted since FA is a potential carcinogen in animal studies. In this study we have examined a triazine molecule that has been advertised and used as "alkaline reserve" in variety of industrial products. In present study, the role of FA in activities attributed to 1,3,5- tris-(methoxypropyl)hexahydro-s-triazine was examined. The antimicrobial activities of this compound were confirmed. The rate of formaldehyde release was determined to be consistent with the ration of starting material involved in its synthesis. The characteristic of the molecule to act as "alkaline reserve" involves the release of methoxypropylamine from an equilibrium reaction. Conversely, the antimicrobial activity is directly related to FA release from the molecule.

STABLE ORBITS FOR EXTRASOLAR PLANETS

Oral Presentation

Rhett Zollinger (John Armstrong)
Physics

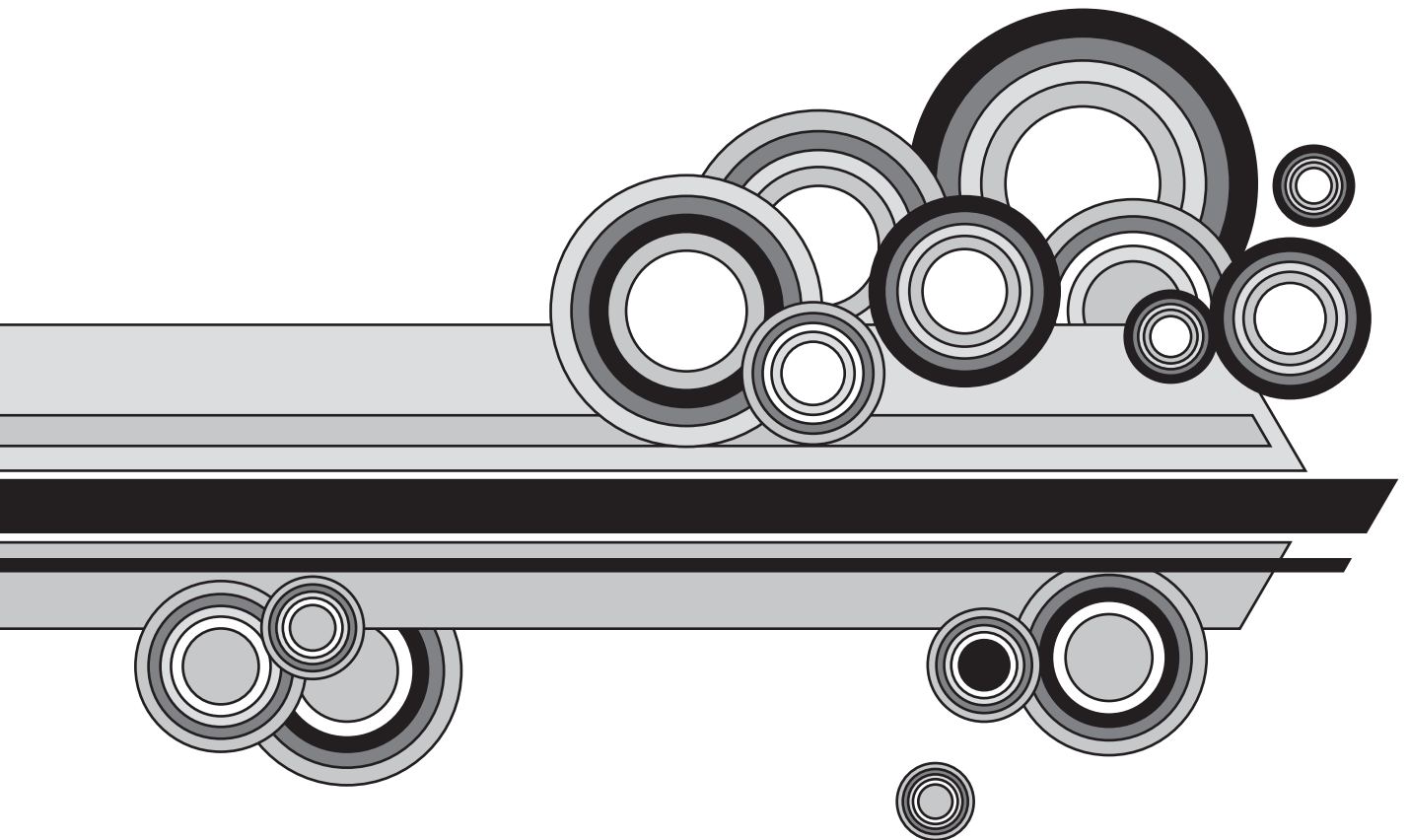
Extrasolar planetary science has grown in popularity over the recent decade. In 1998, there were only 13 known extrasolar planets to ever be detected. Since that time, there have been 258 additional detections. Some of these detections include systems of two or more planets orbiting the same star. Unfortunately, the ability to detect individual planets is limited by the sensitivity of the instrumentation. My research is focused on the possible existence of additional planets in known systems, which are currently undetectable. These would be planets that don't fall within the current detection limits of available techniques. Using the available data of a known system, I run orbital simulations to test for possible regions of stable orbits. A stable orbit indicates the possibility that an extra planet could be found there. As the instrumentation advances, we may soon have the ability to detect such planets. When that time arrives, it will be very helpful to know the best places to start looking.



COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES

This has been an incredible experience, which I feel has increased my overall understanding of the research process and will continue to benefit me through the rest of my intended career.

Shane Bench - WSU Undergraduate Research Student



THE EFFECT OF PERSPECTIVE ON MISCONCEPTIONS IN PSYCHOLOGY: A TEST OF CONCEPTUAL CHANGE THEORY

Poster Display

Elly Alvarado, Lauren Rankin, Jack Kettering and Melissa Ward (Eric Amsel)

Psychology

2008 UCUR Participant

The Psychology as a Science questionnaire was given to 227 Introductory Psychology students who responded from their own (Self) or their Professor's perspective. Scores were higher (reflecting a stronger belief in psychology as a science) in the Professor than Self condition. The results disconfirm Conceptual Change theory which supposes that students would have the same misconceptions about Psychology irrespective of the condition of testing.

WHO IS AFFECTED BY INSTRUCTIONAL SET?: A DUAL PROCESS ACCOUNT

Poster Display

Shane Bench (Eric Amsel)

Psychology

The present study examines the interaction between internal regulatory factors (metacognitive awareness of processing strategies) and external situational factors (instructional set) on the use of analytic (deliberate and conscious) or experiential (intuitive and automatic) processing systems. Eighty-one college students were given 12 versions of the ratio-bias task in which participants were presented with two equal gambles (1/10 v 10/100) and asked if they had a preference for one gamble (experientially-based response) or had no preference (analytically-based response) between them. Tasks were systematically varied in instructional set of Perspective (Self v Logical Person) and task Framing (Winning v Losing). Participants were additionally assessed for their ability to distinguish analytic from experiential responses on the ratio-bias task (regulatory status). The results revealed that those with partial metacognitive insight into the two response types (Conflicted Regulators) were more affected by Framing and Perspective than participants with complete insight (Competent Regulators) and those with little insight (Poor Regulators). The results suggest that situational factors may particularly affect those with emerging understanding of the dual processes underlying their reasoning.

MERCENARIES OR MARKETERS: THE STATUS OF AND JURISDICTION OVER PRIVATE MILITARY CONTRACTORS

Oral Presentation

Colby Bone (Nancy Haanstad)
Political Science and Philosophy

The practice of employing private contractors can be seen in the majority of U.S. military operations throughout the 20th Century. Traditionally, these contractors were employed only for auxiliary purposes such as food and laundry service, and technical/logistical support. Additionally, according to military protocol, contractors were never allowed to carry out mission critical operations nor were they to engage in combat. The war in Iraq has brought about a revolution in the use of private contractors. No longer are contractors exclusively employed by the Department of Defense, as agencies such as the State Department and USAID have also begun hiring private contracting firms such as Blackwater USA to provide security for diplomats and other high-ranking officials. Private contractors, unlike military personnel, are not subject to the Uniform Code of Military Justice or the Military Extraterritorial Jurisdiction Act. International law also contains no legal restraints for private contractors, as they do not fit the traditional definition of mercenary. Moreover, the Bush administration has engineered an exemption for private contractors within Iraqi civilian law. Because this lack of legal consequences for private contractors has only recently been recognized, current attempts to rectify the situation remain ambiguous or insufficient.

FARRAGUT POW'S

Poster Display

Derreck Calkins (Kathryn MacKay)
History

*Weber State University Undergraduate Research
Scholarship*

The purpose of this project is to discover the overall what the overall experience was of German Prisoners of War who spent time at Farragut Naval Training Station. Construction of Farragut Naval Training Station began in late 1941 as a direct response to the Japanese attacks on Pearl Harbor. For nine months over 22,000 men worked on the construction of the base. They generally worked 10-hour shifts during 13 of every 14 days. During these nine months, more than 776 buildings were constructed. These buildings included mess halls, libraries, movie theatres, living quarters, and chapels. During the time that Farragut was operational more than 300,000 Naval Recruits were trained there. It temporarily became the largest city in Idaho when it was operating at full capacity. Sometime in early 1945 as the war in Europe was beginning to wind down more than 750 German Prisoners of War were relocated to Farragut from other camps in the United States. Many of these German prisoners were as young as 16 or 17. Most of them had been captured in battles that took place in North Africa. After being captured, they spent time in camps in Egypt and then eventually they were shipped to the United States. While at Farragut these Prisoners mowed lawns, trimmed shrubbery, washed laundry, and worked in Officers Clubs.

THE RELATIONSHIP BETWEEN NOVELTY SEEKING AND HARM AVOIDANCE PERSONALITY TRAITS AND RISK TAKING BEHAVIOR

Poster Display

Le'Wanda Croft (Matthew Schmolesky)

Psychology

WSUSA Undergraduate Research Fellowship Travel Grant Recipient

2008 NCUR Participant

This study focused on the personality traits: novelty seeking and harm avoidance and how they correlate to risk taking in individuals in northern Utah. Data were gathered from undergraduate Introductory Psychology Students. The researchers used Cloninger TCI self-exam questionnaire (2004) to determine the subjects' personality traits. The researchers developed a survey to measure the frequency of risk taking behaviors across a range of activities involving drugs, sex, adventure sports, diet, and driving habits. The researchers adapted the Physical Risk Assessment Inventory to measure the cognitive appraisal of risk associated with these activities. The research indicated that the 36 subjects (21 females/15 males) had novelty seeking and harm avoidance scores similar to the national averages (Cloninger et al., 1994). Novelty seeking and harm avoidance scores were negatively correlated. Regarding risk-taking behavior, the majority of the subjects had never smoked cigarettes before and the average frequency of cigarette smoking was low. There was a moderately strong negative correlation between cigarette smoking risk assessment and activity. There was a weak positive correlation between novelty seeking and smoking cigarettes. This research provides further evidence that physical risk-taking behaviors (like cigarette smoking) are related to the personality traits of novelty seeking and harm avoidance.

MENTAL MODELS OF ON-LINE LEARNING: AN INTERVIEW STUDY OF UNIVERSITY DECISION-MAKERS

Poster Display

Monica Guzman (Eric Amsel)

Psychology

Thirteen university administrators (deans, associate deans, and chairs) were interviewed regarding their beliefs and knowledge about on-line learning. Their quantitative responses suggested that they recognized strengths and limits in the pedagogical effectiveness of on-line courses and their qualitative responses revealed complex models of on-line course success, which involve multiple interacting variables.

THE EFFECT OF LIGHT THERAPY ON COGNITION IN MEDICAL LAB SHIFT WORKERS

Oral Presentation

Nathan Hadley (Lauren Fowler)
Psychology

*WSUSA Undergraduate Research Fellowship Travel Grant
Recipient
2008 NCUR Participant
2008 UCUR Participant*

In the medical care industry there are many who work various shift work schedules in order to meet the constant demands of patient care. Working these shifts can affect the body's circadian rhythms (24 hour, internal biological cycle). Among these shift workers are hospital laboratory technicians who are continuously running tests and analyzing samples for departments throughout the hospital. Critical care and diagnosis of many patients depends upon the accurate performance of these technicians. This study looked at the use of light visor therapy and the effects of fatigue on cognitive performance in hospital laboratory shift workers. Exposure to bright light has been shown to be effective in resetting circadian rhythms. Participants ($n = 6$) were tested across a two week period both with and without light visors. The light visors produce a blue green light of 1200 lux and were worn for thirty minutes. Cognitive performance was assessed with SYNWIN, a computerized multitasking assessment that is part of the AUTOMATED NEUROPSYCHOLOGICAL ASSESSMENT METRICS (ANAM 2001). SYNWIN was given both prior to and following the light visor therapy. The data were analyzed with a 2×2 (shift x light therapy) repeated measures ANOVA. Prior to implementing light visor therapy, there were significant cognitive performance differences between the day and grave shift workers. Following the light visor therapy, cognitive performance of grave shift workers improved but was not statistically significant ($p < .10$). A larger sample is needed for further research. Even though the results were not statistically significant following the light visor therapy, clinical significance was demonstrated and the visor is currently being used to enhance performance in the laboratory where the study was performed.

PERSONALITY AND COGNITIVE FACTORS RELATED TO RISK TAKING BEHAVIOR

Poster Display

Brent D. Hatch (Matthew Schmolesky)
Psychology

*WSUSA Undergraduate Research Fellowship Travel Grant
Recipient
2008 NCUR Participant*

Weber State students were evaluated for personality and cognitive risk factors. Participants were administered the Cloninger Temperament and Character Inventory to measure personality. Participants were also administered the Physical Risk Frequency and Assessment Surveys to measure risk taking behavior and perceptions across a wide variety of activities common to the Wasatch Front. Cheek cells were also harvested for future analysis of the DNA that encodes biological mechanisms thought to be involved with Novelty Seeking. The data showed that participants who engaged in risky activities were, on average, high Novelty Seekers, low Harm Avoiders, and were less likely to judge activities as being risky. In addition, those who perceived casual sex as being risky were less likely to engage in casual sex, and were more likely to participate in religious activities. However, those who engaged in casual sex were more Harm Avoidant than those who did not engage in it. While the relationships among personality type, risk frequency, and risk assessment were generally expected, we had not anticipated some of the relationships, specifically, with casual sex. Moreover, the findings regarding religiosity suggest a risk protection role that may be of interest for future research in this population.

HISTORY OF THE 388TH BOMBARDMENT GROUP (HEAVY)

Poster Display

Stacy Heik (Kathryn MacKay)

History

*Weber State University Undergraduate Research
Scholarship*

My research question is: What is the history of the 388th Bomb Group (Heavy) and what is its legacy for the 388th Fighter Wing? The 388th Bomb Group was activated in 1942 at Gowen Field, Idaho; the then moved to Wendover Field, Utah, for training prior to being stationed in Knettishell, England (June 1943-August 1945). This bombardment group was the predecessor to the 388th Fighter Wing which is currently station at Hill Air Force Base in Ogden, Utah. The 388th Bomb Group (Heavy) flew the B-17 bomber and conducted 306 combat missions in World War II. One significant project that was assigned to the 388th Bomb Group (H) was called Operation Aphrodite. This project used B-17 and B-24 aircraft to test the feasibility of remote controlled flight. This is the only Bomb Group that conducted this mission in World War II. I hope to complete an accurate history of this Bomb Group using the most current information available, including declassified documents housed at the Air Force Historical Research Agency (AFHRA). My research is on going and I will be taking a week long trip to AFHRA, in Alabama beginning February 24, 2008.

GENDER IN MY SPACE?

Oral Presentation

Shelly Pace (Linda Eaton)

Sociology and Anthropology

*WSUSA Undergraduate Research Fellowship Travel Grant
Recipient*

2008 NCUR Participant

2008 UCUR Participant

Extant research based on theory of West and Zimmerman (1987) entitled, "Doing Gender" has found that men and women do perform their gender outwardly while interacting with others. This would indicate that individuals learn how to represent gender. With the increasing popularity of the internet and internet social interactions it has become apparent that social relationships are being reinforced and sometimes even established within the confines of cyberspace. Little study has been done to determine whether gender is being performed online. This observational study examined 47 different profiles on the popular internet server called MySpace to examine whether or not gender was being performed online. MySpace currently services over 200,000 profiles, many of which are made public by an overall search engine used in this study. The ease in which members are able to apply various personal touches in which the performance of gender can become apparent made MySpace preferred over other online social networks. Random selection was used according to most recent login to establish that our sample had active profiles. Specific user controlled items were selected for analysis, for example, the subject(s) in the main photo, listed sexual orientation, and the design of the background. Correlations were run to determine the relationship each item had with the professed gender. The research found gender being performed in several different ways as well as a gender overlap.

PARENTING PRACTICES AND THE DEVELOPMENT OF GUILT AND SHAME IN YOUNG CHILDREN

Poster Display

Susan Parker (Leigh Shaw)
Psychology

The family is the central context in which children are exposed to the standards and expectations for moral and social behavior. Thus, the family provides the emotional foundations of guilt and shame. Parental reactions to children's behavior help children define themselves in relation to others and to the rules that guide interpersonal relationships. Parents may engage in various styles of parenting strategies. Authoritative control is a parental strategy based on parental warmth, empathy, and the open expression of emotions. Parents may also respond to children's transgressions with love withdrawal. This strategy is characterized by parental expressions of anger, withdrawal of affection, and isolationism, in an attempt to control the child's behavior. Finally, parents may engage in an authoritarian response to children's transgressions in which they use restrictive, forceful methods of discipline and external threats or punishments.

When studying the authoritative, love-withdrawal or authoritarian styles of parenting, the child's behavior and level of internalized obedience are examined in relation to guilt and shame. Results show that authoritative parenting strategies are the most beneficial and positive for the child developmentally in inducing empathy-based guilt but limiting damaging shame emotions.

EVALUATING THE NORTHERN UTAH COMMUNITY CORRECTIONAL CENTER'S REENTRY APPROACH

Poster Display

Megan Parry (Julie Buck)
Criminal Justice

WSUSA Undergraduate Research Fellowship Travel Grant Recipient
2008 NCUR Participant
2008 UCUR Participant

Utah's community corrections were given their biggest boost in 2001 after both state and federal budget cuts left the Department of Corrections looking for creative solutions to overcrowding prisons, and the Northern Utah Community Correctional Center is no exception. The NUCCC provides transitional housing for both probationers as well as parolees, and offers a variety of programming options (Environmental Structure, Stabilization, Substance Abuse, and Sex Offender Treatment). The goal of this study is to determine the success of NUCCC, as well as to identify possible factors (e.g., variety and quality of the programs, staff commitment) responsible for this success. This study examined the recidivism rates for residents who successfully completed their program while at NUCCC (N=291). An examination of the records of residents of NUCCC for 2006 revealed the average age of the residents to be 33 years old (M=33.48, SD=8.95) with the average stay at NUCCC of 158 days (M=157.67, SD=120.60). A preliminary analysis of the residents who were successfully released from NUCCC in 2006 found the overall recidivism rate to be 61.87%. However, when the calculation is adjusted to only include new and active threats to society (chargeable technical violations, absconders, and new charges); the recidivism rate drops to 44.67%. Further analyses were conducted evaluating whether residents rates of reoffending differed depending upon the type of program they participated in (Environmental Structure, Stabilization, Substance Abuse, and Sex Offender Treatment). The results of this analysis yielded a significant difference between recidivism rates for Sex Offenders (26.2% recidivism), Substance Abuse (66%), Environmental Structure, (60%) and Stabilization, $\chi^2 = 30.04$, $df = 3$, $p < .05$, with the sex offender treatment program being the most successful.

WHAT DO PARENTS DISCLOSE TO THEIR ADOLESCENTS?

Oral Presentation

Ronald Partridge and Ben Nebeker (Todd Baird)
Psychology

2008 UCUR Participant

The construct of self-disclosure was first defined by Jourard. Since its inception, self-disclosure has been studied in terms of three major characteristics including: depth, breadth, and valence. When measured in the parent-child relationship literature, self-disclosure is almost exclusively considered as unidirectional with the focus being on the disclosures of the child to the parent, in terms of the child's disclosure without consideration of the parent's disclosure to the child. The current study seeks to better understand the dynamics involved in parents disclosing information about themselves to their children. It has three major goals. First, it will provide general descriptive data. Second, it will describe the functional aspect of parental self-disclosure. Finally, the outcome data will lead to a valid and reliable measure. In order to collect data, a parental self-disclosure questionnaire was designed and distributed to 93 undergraduate students at Weber State University. The purpose of the questionnaire was to collect descriptive data using both a qualitative and quantitative approach to assess adolescent's perceptions of the extent and helpfulness of their parent's disclosures. The results of this study will not only further our current understanding of parental self-disclosure but will also allow for a refinement in asking the right questions.

STRATEGIES AND MOTIVATIONS FOR DEEP LEARNING: GENDER DIFFERENCES AND ACADEMIC OUTCOMES

Poster Display

Shannon Ricks and Shane Bench (Eric Amsel)
Psychology

2008 UCUR Participant

Students have different strategies and motivations they bring to the task of learning in college. The present study explores the gender differences and academic outcomes associated with one such measure. The Revised Two-Factor Study Process Questionnaire (R-SPQ-2F) is a 20-item questionnaire that assesses students' strategies and motivations for learning as surface-orientated (i.e., focused on learning the specific and concrete material presented in classes) or deep-oriented (i.e., focused on learning the conceptual and general material presented in classes) (Biggs, Kember, Leung, 2001). The questionnaire was distributed to 74 student volunteers (28 males and 43 females) who received research credit for their participation. The students were enrolled in Developmental Math and Introductory Psychology classes. The internal consistency of the questionnaire was acceptable (Cronbach's alpha = .62). Females were more strongly oriented towards Deep ($M=3.7$ on the 5 point scale) than Surface ($M=3.4$) learning. Males were no different in their orientation ($M_s = \text{Deep vs. } M = 3.6 \text{ vs. Surface } M = 3.7$). The Deep Learning Strategies subscale predicted participants' final Mathematics and Psychology grades. The results suggest that deep learning is an effective learning style for faculty to promote in students and for students to adopt.

COLLEGE, DEPRESSION, & STRESS: THE INFLUENCE OF FINANCIAL STATUS AND LIVING SITUATION ON PSYCHOPATHOLOGY

Oral Presentation

Allesandra Salazar and Zachary Snow
(Theresa Kay and Dianna Rangell)
Psychology

The research concerns the relationship between college mental health and financial status and relationships in the home. The research was conducted at Weber State University during National Depression Screening Day in the fall of 2007. Surveys were given to voluntary participants, and included a questionnaire regarding financial status and living situations designed by the researchers, the Holmes-Rahe Life Stress Inventory, and the Depression Screening Tool. Participants were able to meet with counselors to evaluate their results. Researchers hypothesize that there will be a significant relationship between deprived financial status and living situations with depression, anxiety, stress, and risk behavior. Results will be analyzed by the time of presentation. This research has implications for all college students, particularly those at Weber State, who may be struggling with financial stress and relationship issues, with the added pressure of academia.

WHY PLAY SPORTS?

Oral Presentation

Allesandra Salazar, Luke Harris and Amber Hansen (Brenda Kowalewski)
Sociology and Anthropology

2008 UCUR Participant

This research is part of an ongoing longitudinal study that evaluates the effect of a youth development program called Youth Impact on a group of youth who attend the program. In this phase of the study, the research was focused on how sports participation relates to self-perception and behavioral problems. This project is comprised of two main research questions: 1) Does sports participation positively relate to higher self-perception scores, and 2) Does sports participation negatively correlate with fewer behavioral problems. Surveys and inventories were used. These included a sports participation survey that was designed and created by the researchers, the Harter Self-Perception Scale, and the Behavioral Problems Index. There were a total of 80 participants involved in this study ranging in age from 9 to 18. Participants were recruited from youth attending Youth Impact. The researchers hypothesized that a greater amount of sports participation will positively correlate with higher self-perception and will negatively correlate with behavioral problems. Evidence suggested no relationship with self-perception, and a minimal relationship with behavioral problems. Similar research regarding a larger sample may make for more meaningful data in the future.

THE HARTMAN COLOR CODE PERSONALITY TEST: VALID OR NOT

Oral Presentation

Annie Stonehocker (Todd Baird)
Psychology

This study considered the validity of the Hartman Color-Code Personality Profile using the Big Five Personality Inventory. Eighty-two High School and University students participated in the study. Study results indicated that both openness and neuroticism did not correlate with any of the Hartman colors. Additional findings are discussed.

YOUNGER AND OLDER ADOLESCENTS' RISK-TAKING INTENTIONS: RELATIONS WITH SOCIO-MORAL AND SOCIO-RELATIONAL JUDGMENTS

Poster Display

Kimberlee Taylor (Leigh Shaw and Eric Amsel)
Psychology

Weber State University
Undergraduate Research Scholarship
Denkers Undergraduate Research Travel Grant Recipient

Risky activities are more common in adolescence than in other periods of life (Arnett, 1992). Moreover, intervention programs designed to prevent or decrease risky behaviors during adolescence often have limited efficacy (Steinberg, 2007). These findings have led some to treat adolescent risk-taking as a meaningful, normative, and deliberative activity (Gibbons et al., 1998; Lightfoot, 1992; Shaw, Amsel, & Schillo, in press). Consistent with this view, Shaw et al. (in press) distinguished intention statuses (Avoidant, Opportunistic, Curious, Risk-Seeking) describing teens' own thinking about their risk-taking behaviors. The present study assesses younger and older adolescents' risk-taking intention status and its relation to socio-moral and socio-relational aspects of risk-taking. High-school (16-17) and college-aged (18-19 yrs old) teens completed a questionnaire that assessed their reasoning about alcohol use, drug use, and reckless driving. Participants made socio-moral and socio-relational judgments about each risk behavior. Results showed fewer Risk-Seeking status among younger ($M=.19$) than older ($M=.48$) teens. Teens' intention status was directly related to their perception of the risk behavior. More Avoidant teens judged the behaviors more negatively ($r = -.64$), while more Risk-Seeking teens judged the behaviors more positively ($r = .48$). These findings provide support for the claim that teen's intentions may be critically important in understanding the role of internal (socio-moral) and external (socio-relational) factors on risk behavior.

TOMORROW IN IRAN

Oral Presentation

Brad Wahlstrom (Nancy Haanstad)
Political Science and Philosophy

The mere idea of democracy has been a taboo topic in Iranian underground religious, political, social, and cultural circles. The degree to which democracy can attain fruition in these settings is the focus of my future research paper. The general thesis is: “Can democracy gain further traction in Iran beyond what it has in the past?” The paper will map Iran’s religious, political, social, and cultural trajectory in the late 20th century to its present conditions in the early 21st century. The narrower question will ask: “What religious, political, and economic means do Iranians have to promote the application of a representative democracy?” Finally, the paper will analyze what existing mechanisms of Islamic religious interpretation and political reformation that are embedded in Iran to implement democratic concepts and to assert that for democracy to succeed in Iran it has to be manifested internally. The paper will conclude that the factors that contribute to the hindering of democracy in Iranian society range from religious, economic, political, and social (cultural) factors.

THE RELATION BETWEEN METACOGNITIVE AND COGNITIVE ABILITY ON ANALYTIC PROCESSING

Poster Display

Rick Walker and Shane Bench (Eric Amsel)
Psychology

2008 UCUR Participant

This study examined the role of metacognitive and cognitive abilities to process mathematical information. Three hundred and sixty-one students completed four Ratio-Bias Judgment (RB-J) tasks and reported their ACT mathematics and English scores. The RB-J tasks involved presenting participants with two equal gambles and asking them to pick one gamble, the other, or express no preference. The ACT scores served as measure of cognitive ability. To assess metacognitive ability, participants completed a Ratio-Bias Evaluation (RB-E) task in which they evaluated whether each RB-J response option (preference for 1/10, 10/100, and no preference) demonstrated analytic, reflective, mathematically-sound processing and well-reasoned analysis of the situation. On the basis of their RB-E performance, participants were categorized as having metacognitive Regulatory skills designated as Competent, Conflicted, Poor, Hesitant, or Inconsistent. Cognitive abilities (ACT Math and English) were categorized as high or low and entered into an ANCOVA with Regulatory Status to assess frequency of expressing no preference on the RB-J task. Only Regulatory Status predicted analytic performance. Analytic responses ranged from 2% (Flawed) to 55% (Competent). Additionally, a relation was found between students having higher ACT scores and being labeled Competent Regulators. Results suggest that cognitive abilities may not be directly related to mathematics performance, but part of the metacognitive skills necessary to responding analytically on mathematics tasks.

CULTURAL EFFECT ON INCUMBENCY TRENDS

Oral Presentation

Ann Western (Leah Murray)

Political Science and Philosophy

No matter if it's an election at a middle school or an election for president of the United States, someone always wins. In elections where there is an incumbent, that candidate usually wins. Many a dissatisfied voter wonders, "why?" Most political science scholars will agree that in American politics, no matter the level, there is some degree of incumbency advantage. What is debatable is what causes the incumbency advantage. Such works as *The Variable Incumbency Advantage: New Voters, Redistricting, and the Personal Vote* by Scott W. Desposato and John R. Petrocik and *Challenging Entry and Voter Learning* by Sanford C. Gordon, Gregory A. Huber, and Dimitri Landa examine elements of the incumbent advantage to explain why it exists. This paper offers an explanation for why the incumbency advantage in local politics is affected by the culture from which the incumbent was elected. I focused my study on the cities and towns of Weber County, Utah. Looking at the most current mayoral election results in the fifteen cities and towns does not offer a clear picture of the incumbency trend, so the study spans from 1980 to 2007. By categorizing the cities and towns into three cultural groups and comparing the data from each city, three distinct incumbency trends should emerge for each cultural group. This should show what affect culture has on the incumbency advantage and the cultural trend of incumbents in office.

THE EFFECTS OF ILLUMINATION, SEX, AND GENDER ROLE ON INTERPERSONAL SPACE

Oral Presentation

Tiffany Wilhelm and Lisa Araujo (Todd Baird)

Psychology

This study explored the effects of illumination, sex, and gender role on interpersonal space. Over one-hundred participants were each exposed to an illumination setting (light or dark) and a same sex or opposite sex dyad. The participants were placed in a room with a confederate and were allowed to sit anywhere in relation to the confederate, who was already seated. All lights were turned on for the high illumination setting, and only a single-bulb floor lamp was lit for the low illumination setting. The interpersonal space was measured by recording the distance between the dyad. Gender role was measured using the BEM Sex Role Inventory. The sex of the participant and sex of the confederate had no effect on interpersonal space preferences. Results indicated differences by gender role only. Specifically, participants who were identified as feminine had greater interpersonal space preferences when in the low illumination setting.

