

**PROCEEDINGS  
OF THE  
OREGON ACADEMY OF SCIENCE**



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**PROCEEDINGS OF THE  
OREGON ACADEMY OF SCIENCE**

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# THE OREGON ACADEMY OF SCIENCE

## Keynote Address

*Dr. Jack Barth  
Oregon State University, COAS*

*“SEVERE HYPOXIA IN OREGON’S COASTAL OCEAN:  
MECHANISMS AND IMPACTS”*

Dr. Jack Barth is a Professor of Physical Oceanography at the Oregon State University College of Ocean and Atmospheric Sciences. He received his B.S. in Physics from the University of Colorado in 1982, and obtained his PhD in 1988 from Woods Hole Oceanographic Institute. Dr. Barth’s published acumen include over fifty empirical papers, he served as co-Director for the Center of Coastal Margin Observation and Prediction at OHSU, and also on the Global Ocean Ecosystems Dynamics Northeast Pacific Program Executive Committee, the National Science Foundation (NSF) Coastal Ocean Processes Steering Committee, and currently serves on NSF’s Ocean Research Interactive Observatory Networks (ORION) Observatory Steering Committee. His research includes the study of marine biophysical interactions, the California current, wind strength and upwelling, ocean bottom topography and various coastal studies.

Dr. Barth has pioneered the use of undersea gliders to estimate ocean current velocity, measure chlorophyll concentrations, suspended particulates, temperature, salinity, and oxygen concentration to monitor oceanographic conditions including biological productivity.

# THE OREGON ACADEMY OF SCIENCE

## Outstanding Scientist Award

The Oregon Academy of Science's Outstanding Scientist Award is awarded in recognition of significant research contributions to the natural, physical, or social sciences, notable reputation in science education, and meaningful contributions in the application of science research. Recipients of this award must have been Oregon residents during the time they made the distinguished contributions for which they are recognized. Past recipients of the Outstanding Scientist Award are listed below

1949	F. L. Griffin	1963	E. A. Gilillan
	A. R. Moore	1969	Ira S. Allison
	E. L. Packard		Frank M. Beer
1950	A. A. Knowlton		A. A. Groening
	Thornton Munger		James A. Macnab
	Warren D. Smith	1970	James J. Brady
1951	Stanley W. Jewett		Bert Christensen
	Morton E. Peck		E. Ebbighausen
	J. Hugh Pruett		Ralph W. Macy
1952	Helen M. Gilkey		Cecil R. Monk
	L. E. Griffin		Leo F. Simon
	Ethel I. Sanborn	1971	Andrew Moursund
1953	W. P. Boynton		Loren McKinley
	Olaf Larsell		Homer G. Barnett
	Rosalind Wulzen		Stephen Shelton
1954	Leo Friedman	1972	Samuel N. Dicken
	Alonzo W. Hancock		Helen M. Gilkey
	Willibald Weniger		R. Sinnhuber
1955	W. J. Kroll 1973		George Birrel
	F. W. Libbey		Harold J. Evans
	W. E. Milne		Anton Postl
1956	E. T. Hodge		Lloyd W. Staples
	R. R. Huestis	1974	Larae Dennis
	E. J. Krause		Joel Hedgspeth
	J. P. Mehlig		Thomas P. Thayer
	Harry B. Yocum		Norman S. Wagner
1957	L. S. Cressman		Aaron C. Waters
	Leo Isaac 1975		John Allen
	Adolph Kunz		Ralph Badgley
	E. E. Osgood		Ewart Baldwin
1958	Phil F. Brogan		Winthrop Dolan
	Vernon Cheldelin		William Rockie
	Samual L. Diack		Howel Williams
1959	Walter Dyke	1976	Harold Enlows
	Henry P. Hansen		Paul Elliker
	Alex Walker		Paul Weswig
1962	Joe Chamberlin	1977	Robert Coleman
	F. Gilchrist	1978	W. Taubeneck
	Earl Gilbert	1979	G. Bodvarsson
	Arthur F. Scott	1980	Kensal Van Holde
	Edward S. West	1981	Ernst Dornfeld

## THE OREGON ACADEMY OF SCIENCE

### Outstanding Scientists

(Continued)

1982	Howard Vollum
1983	Carl E. Bond
1984	Arthur J. Boucot
1986	Paul Lutus
1987	Linus Pauling
1988	Lewis Schaad
1990	C. Melvin Aikens
1991	Jack Ward Thomas
1992	Beatrice Epperson
1993	Lynwood W. Swanson
1994	Jane Lubchenco
1995	Michael Posner Paul Slovik
1996	A. Morrie Craig
1997	William G. Loy
1998	Gertrude Rempfer
1999	LeRoy Klemm
2000	Kent L. Thornburg
2001	Geraldine L. Richmond
2002	Carl Wamser
2003	Joseph D. Matarazzo
2004	M. Aslam Khalil
2005	Ewart M. Baldwin
2006	David C. Johnson James D. White
2007	Richard Ellis

## 2006 THE OREGON ACADEMY OF SCIENCE

### Outstanding Scientist Awards

**Professor Richard Ellis** has been a member of the Willamette University faculty since 1990. He moved to Oregon after receiving his B.A. in Politics from UC Santa Cruz, and his M.A. and Ph.D in Political Science from UC Berkeley in 1989. Dr. Ellis teaches in the area of American politics, including the presidency, political development, and the initiative process. He also teaches courses in liberalism, privacy, and patriotism. A well written man, Dr. Ellis has published 12 books on the history of the American presidency and American political culture. His most recent book, *To the Flag: The Unlikely History of the Pledge of Allegiance*, won the 2005 Langum Prize in Legal History.

## THE OREGON ACADEMY OF SCIENCE

### Outstanding Teacher Award

The Oregon Academy of Science's Outstanding Teacher Award is awarded to Oregon teachers with a demonstrated record of excellence in teaching in any of the subject areas represented in the Academy. Recipients of this award must have been Oregon residents during the time they made the distinguished contributions for which they are recognized. Past recipients of the Outstanding Teacher Award are listed below.

1992	Bea Epperson
1993	Stephen Boyarsky
1994	Roy Chambers Andrea Hyslop Elizabeth Nirschel Jan Heaton
1995	Ford Miyashita
1996	Edith Anderson Pamela Lopez
1997	Mary Omberg Terry Favero
1998	Rosa Hemphill Joel Kuyper Diane Nelson
1999	Dwight Kimberly Bill Lamb
2000	Becky A. Houck Richard Duncan
2001	Patty Toccalino Kathleen Wickman
2002	David Damcke
2003	Kenneth M. Doxsee James E. Hutchison Ralph Schubothe
2004	Gwen Schusterman John Gibbs Chris Murray
2005	Richard P. Taylor Gail Gederman
2006	Peter Langley
2007	Tamina Toray Dan Jamsa

# THE OREGON ACADEMY OF SCIENCE

## Outstanding Teacher Award *Higher Education*

***Dr. Tamina Toray***  
***Western Oregon University***

**Dr. Tamina Toray** of Western Oregon University is honored this year with the OAS, Outstanding Teacher Award for higher education. Dr. Toray's associate and friend Dr. Eric Cooley has described Tamina as possessing "the highest teaching qualities that we can expect in higher education". She is known for utilizing unique methods and commanding respect from her students as a teacher. She has worked as a therapist and instructor for the past 25 years, the last 15 of which she has been at Western Oregon University, where she has taught various developmental psychology and veterinary courses, including compassionate end-of-life care and lifespan development. Dr. Toray has published two book chapters and seven manuscripts, and currently has two in progress. She received the award for "Most Valuable Teacher" from Colorado State, and an award for Who's Who in Death, Dying, Suicide, and Bereavement Community by King's College, and has been nominated four times for Western's Teacher of the Year Award. Her research focuses on the impact of loss and grief across the lifespan, adolescents and adults, bonds between humans and animals, stress and coping, and eating disordered behaviors in young adults. Dr. Toray received her B.S. in Human Development and Family Studies from Colorado State University 1980, then went on to receive her M.A. in Counseling at Truman State University in 1982 and her Ph.D. in Family Studies at Oregon State University in 1992.

## Outstanding Teacher Award *K- 12*

***Daniel Jamsa***  
***Grant Community Middle School***

**Mr. Daniel Jamsa** is an accomplished teacher of Middle School Science. He is passionate about environmental stewardship, and encourages his students to be environmentally conscious. His students have received the Discovery Channel Young Scientist award, the Bush Garden Award, and the Presidential Environmental Youth Award for their project on saving the endangered Blue Fender Butterfly. Mr. Jamsa has a deep investment in education techniques. He has been nominated twice for Oregon Teacher of the Year. His students submit

20-30 projects per year at the Oregon Junior Academy of Science; and his students have received three special awards and placed 2<sup>nd</sup> and 3<sup>rd</sup> numerous times in the Intel Science Expo. Other examples of his class' projects to date include relating forest research to community needs, and activities associated with the Salem clean water festival. Mr. Jamsa is one of those special teachers who generate relevance and interest in his students, inspiring them and equipping them with the tools to better their environment.

## BIOLOGY

### Section Chairs:

**Dwight Kimberly**  
*George Fox University*

**Jeff Duerr**  
*George Fox University*

### BIOLOGY- ORAL PAPERS

THE ROLES OF 14-3-3 $\gamma$  AND CHK1 IN REGULATING THE HYPOXIA-P53 PATHWAY. Rebecca DUBY<sup>1</sup>, Yetao Jin<sup>2</sup>, Hua Lu<sup>2</sup>, Department of Biology, George Fox University, Newberg, OR, <sup>2</sup>Department of Biochemistry and Molecular Biology, Oregon Health and Sciences University, Portland, OR 97239.

In response to various physiological stresses (i.e. DNA damage, hypoxia) the tumor suppressor protein, p53, is activated to induce cell growth arrest and/or apoptosis. While little is known about the molecular mechanisms governing hypoxia-induced p53 activation, many of the proteins which have been identified in the UV-p53 pathway (Figure 1), have also been found to be activated or upregulated in response to anoxia, suggesting that they may play a role in the hypoxia-p53 pathway. The objectives of this study, consequently, were: (1) to confirm that p53 activation is accompanied by hypoxia induced 14-3-3 $\gamma$  expression and MDMX S367 phosphorylation, (2) to establish ChK1 as the kinase responsible for this phosphorylation, and (3) to determine that the interaction between 14-3-3 $\gamma$  and MDMX is induced in response to anoxia. U2OS osteosarcoma cells were cultured in an anoxia chamber and harvested at different time points as indicated. (For the second assay, a portion of the cells were treated with UCN-01, a ChK1 specific inhibitor, prior to incubation). For assays one and two, cell pellets were lysed for SDS-PAGE and WB analyses with antibodies as indicated. In the third assay, the cell pellets were utilized for IP with anti-14-3-3 $\gamma$  antibodies followed by WB with antibodies against 14-3-3 $\gamma$  and MDMX. The results confirmed that 14-3-3 $\gamma$  is expressed and S367 MDMX is phosphorylated (Figure 2), that ChK1 phosphorylates S367 on MDMX (Figure 3), and that 14-3-3 $\gamma$  interacts with MDMX (Figure 4). Altogether, these results provide the first steps towards establishing a working model for the molecular mechanisms which govern hypoxia-induced p53 activation.

CHARACTERIZATION OF A NOVEL FIBRINOGEN HEMOSTATIC AGENT IN ANIMAL INJURY MODELS. Isaac S. Edwards<sup>1</sup>, David H. Farrell<sup>2</sup>, Martin A. Schreiber<sup>2</sup>. <sup>1</sup>George Fox University, Newberg, OR <sup>2</sup>Oregon Health & Science University, Portland, OR 97239-3098.

A common result of traumatic injury is the activation of enzymes that cause the clot to dissolve, which can lead to uncontrolled bleeding. Prior research on the blood clotting factor fibrinogen has shown that fibrinogen isoform  $\gamma A/\gamma'$  is naturally resistant to these enzymes. The objective of this study was to study the physiology of this novel fibrinogen as a hemostatic agent in a rat liver injury model. In our initial experiments, rats were injected with 30U/kg defibrinating enzyme batroxobin via tail vein. Initial results showed untraceable levels of fibrinogen four hours post injection, but subsequent tests gave inconsistent results. Due to the irreproducibility of this step, we decided to use a dilution coagulopathy method for lowering circulating fibrinogen levels. To induce coagulopathic conditions, 3 ml of blood was drawn from the saphenous vein of anesthetized rats and replaced with 9 ml 0.9% saline. After a 70% liver resection, the rats remained viable for at least an hour. We have therefore optimized the animal model system. We have also purified sufficient quantities of  $\gamma A/\gamma'$  fibrinogen for the animal studies. 8g of unfractionated human fibrinogen was dissolved in Tris-PO<sub>4</sub> buffer and run across a column of DEAE-cellulose to separate the  $\gamma A/\gamma'$  fibrinogen isoform. The purity of the  $\gamma A/\gamma'$  fibrinogen was verified with SDS-PAGE. Purified fractions were concentrated to ~20mg/ml and stored for future use. Present and future work will include a comparison of  $\gamma A/\gamma'$ , unfractionated fibrinogen, cryoprecipitate and lactated Ringer's solution on blood loss using the liver injury model.

RESPIRATORY EVAPORATIVE WATER LOSS DURING HOVER FLIGHT IN HUMMINGBIRDS. Philip W. Getsinger<sup>1</sup> Donald R. Powers<sup>1</sup>, Bret W. Tobalske<sup>2</sup>, and Susan M. Wethington<sup>3</sup> <sup>1</sup>Biology Department, George Fox University, Newberg, OR; <sup>2</sup> Biology Department, University of Portland, Portland, OR; <sup>3</sup>The Hummingbird Monitoring Network, Patagonia, AZ.

The evaporation of water across body membranes is an important method for heat dissipation in vertebrates. Being among the smallest vertebrate endotherms, hummingbirds (family Trochilidae) have extremely high metabolic, respiratory, and evaporative water loss rates. Hummingbirds also engage in hover flight, which carries the highest energy costs of any form of vertebrate locomotion. Presumably, this sort of flight would also result in high evaporative water loss, including specifically respiratory evaporative water loss (REWL). This study aimed to obtain the first REWL measurements for free-living hummingbirds during unencumbered hover flight, and determine the impact of REWL on the daily water budgets of the birds. In addition, environmental factors were taken into consideration, and the effect of varying flight speed was studied using captive birds in a wind tunnel. All measurements were

obtained using a negative-pressure, open-flow respirometry system attached to a drip-free feeder at which the birds hover fed. REWL rate while hovering was as much as 50 times higher than REWL measured in resting birds, and 2 times higher than a measurement of captive budgerigars during forward flight. We also identified a potential link between operative temperature and REWL.

GENERATION OF TRANSGENIC *ARABIDOPSIS THALIANA* FOR THE CONSTITUTIVE EXPRESSION OF CELL-TO-CELL MOVEMENT PROTEIN OF *SPRING BEAUTY LATENT VIRUS* Ekaterina Basargin<sup>1</sup>, Ashley Kamimae-Lanning<sup>1</sup>, and Trenton Smith, Department of Biology and Chemistry, George Fox University, Newberg, OR

*Spring beauty latent virus* is a *Bromovirus* that infects *Arabidopsis thaliana*. This virus' (+)-strand RNA genome contains four genes on three separate RNA strands. Each of the two longest RNAs contain one gene, and together their products are involved in viral replication. The shortest RNA in the genome encodes a cell-to-cell movement protein (called 3a) and the virus' coat protein. As part of a project to generate lines of transgenic *Arabidopsis* which express each viral protein separately, we cloned the 3a gene into the pCB-NoXba binary plasmid. We used this construct with *Agrobacterium*-mediated gene transfer to transform *Arabidopsis thaliana* of the Landsberg ecotype, and have evidence that the technique succeeded in producing at least one transgenic line. We are currently working to confirm this line and assess levels of 3a gene expression by Northern blot analysis. We want to determine whether expression of this gene product may have any effect on RNA interference, which is among other things an antiviral defense mechanism. In order to investigate this question, we plan to use this line in a genetic cross with *Arabidopsis* plants which have been transformed with a construct that serves as a reporter for RNAi. We will also analyze the RNA of the 3a transgenic line for any effect on levels of known micro-RNAs, which are used by a form of RNA interference for developmental gene regulation.

MAP KINASE ACTIVATION DURING PROGRESSIVE DEHYDRATION IN TWO SPECIES OF AMPHIBIAN: *BUFO MARINUS* AND *RANA CATESBEIANA*. Kia Nicholson and Jeffrey M. Duerr. Department of Biology, George Fox University, Newberg, OR 97132.

Comparative vertebrate studies into physiological responses to adverse conditions can yield great insight into the design of robust systems and the provide fundamental knowledge of stress adaptations. The classically studied cellular stress response is the mitogen-activated protein kinase (MAPK) pathway. In mammals, there are four known MAPKs: JNK, p38, BMK, and ERK. p38 is a MAPK which responds to environmental stresses such as heat, oxidation, ionizing radiation, and hyper-osmotic shock. The ERK MAPK is known to respond to growth factors and other mitogens by

triggering cascades which activate transcription (Cowan and Storey, 2003). JNK is known to be activated when an organism is confronted with osmotic stress, heat shock, and UV exposure. Generally JNK activation leads to apoptosis, although occasionally it may trigger cell survival pathways. The effects of dehydration on anuran amphibian blood flow rates have been previously investigated and suggested that a terrestrial toad (*Bufo marinus*) possessed a greater tolerance of dehydration as measure by cardiovascular performance relative to a more aquatic species (*Rana catesbeiana*). The initial goal of this study was to examine the effect of progressive dehydration on MAPK family activation in cardiac tissue from two species of anuran amphibians: *Rana catesbeiana* and *Bufo marinus*. Western blot analysis indicated that the pERK increase by three-fold in *Bufo* and 2-fold in *Rana*. pJNK levels remained unaffected in *Bufo* whereas in *Rana* they initially decreased, but then rebounded to baseline levels. pp38 did exhibit any change in phosphorylation levels over the range of dehydration examined. The physiological consequences of ERK activation in response to osmotic stress in anuran cardiomyocytes remains to be investigated.

CARBACHOL REGULATION OF ERK AND THE TRANSCRIPTION FACTOR ELK-1 IN MCF-7 BREAST CANCER CELLS. Andrea Wagner and John M. Schmitt, Department of Biology, George Fox University, Newberg, OR 971132.

Cancer has numerous molecular, biochemical and physiological hallmarks including uncontrolled cell growth and proliferation. Previous studies on MCF-7 breast cancer cells have shown that both intracellular calcium levels and the extracellular signal-regulated protein kinase (ERK) is activated downstream of the G-protein coupled receptor (GPCR) agonist, carbachol. Calcium/calmodulin regulate the calcium/calmodulin-dependent kinase (CaM Ks) family of proteins that have been proposed to regulate ERK and transcription. Our goal was to determine the mechanism of carbachol activation on ERK and the transcription factor Elk-1 in MCF-7 cells. Our results suggest that 10  $\mu$ M carbachol treatment of MCF-7 cells triggers ERK1/2 phosphorylation (pERK) and activation within 5 minutes. Interestingly, inhibition of the CaM Kinase family of proteins with the selective inhibitor KN-93 blocked carbachol activation of ERK. Similar to ERK regulation, Elk-1 was phosphorylated in response to carbachol treatment in an ERK- and CaM Kinase-dependent manner. Carbachol treatment of MCF-7 cells triggered nearly a 4-fold increase in cell proliferation by 96 hours, a result that was completely blocked by the muscarinic m3-subtype GPCR inhibitor, 4-DAMP. Consistent with these results, blockade of either CaM Kinase or ERK (with U0126) activities resulted in the inhibition of cell growth. Taken together our results suggest that carbachol treatment of MCF-7 cells activates ERK, the transcription factor Elk-1, and cell growth in a CaM kinase-dependent manner.

BIOGEOGRAPHY OF THE AMERICAN PIKA (*OCHOTONA PRINCEPS*) IN OREGON AND SOUTHERN WASHINGTON. <sup>1</sup>George W. Batten III, <sup>1,2</sup>Luis A. Ruedas, <sup>1</sup>Department of Biology and <sup>2</sup>Museum of Vertebrate Biology, Portland State University, Portland, OR 97201-0751.

The heat intolerant American pika (*Ochotona princeps*) lives exclusively at high altitudes in Western North America in a highly discontinuous range, in effect living on sky islands. *Ochotona princeps* are hypothesized to have colonized much of the Western U.S. by migrating from higher latitudes during a Pleistocene glacial period. The most recent glacial period, the Wisconsinian, allowed secondary contact between some populations before the recession of the ice 10,000 years ago forced members of the species to seek refuge on mountaintops, where now they are found in isolated populations. Based on morphology, four subspecies are recognized in Oregon, but this taxonomy has not been corroborated by genetic analysis. In view of the foregoing, the hypotheses tested in this study were: 1) The formation of the Columbia Gorge 19,000 years ago was a vicariant event leading to the evolution of genetically distinct populations of pikas north and south of the Columbia River; and 2) The recession of Pleistocene and Recent glaciers isolated pika populations in the Oregon Cascade Range from populations in the ranges of Eastern Oregon, resulting in genetically distinct populations. Specimens were collected from sites in Oregon, Washington, and Canada and tissue samples were acquired from museum collections. The Cytochrome *b* gene was sequenced from all individuals the sequences aligned, and analyzed using parsimony and maximum likelihood techniques. The results of these analyses so far appear to be indicative of a distinction between pika populations in the Cascade Range from those in the Eastern Ranges of Oregon.

MOLECULAR CHARACTERIZATION, PHYLOGENETICS, AND CO-EVOLUTION OF PACIFIC NORTHWEST *HANTAVIRUS* AND DEER MICE (*PEROMYSCUS*). <sup>1</sup>Philip D. Jones, <sup>1</sup>Laurie J. Dizney, <sup>1,2</sup>Luis A. Ruedas, Ph.D., <sup>1</sup>Portland State University, Department of Biology; <sup>2</sup>Museum of Vertebrate Biology; Portland, OR, USA.

Sin Nombre Virus (SNV), principally hosted by the deer mouse, *Peromyscus maniculatus*, is the primary etiological agent of hantavirus pulmonary syndrome (HPS) in the United States. HPS, with known pathogenicity only to humans and currently incurable, affects the lungs leading to respiratory failure and death in approximately 38% of hospitalized patients. In the Americas, the deer mouse has been co-evolving with hantaviruses for approximately 20–30 million years, since the first murids crossed the Bering Land Bridge, differentiating into the Sigmodontinae found in the New World today. Currently, evolutionary relationships among deer mouse species is unclear, and therefore so too is the associated viral phylogeny, with twelve quasispecies in the genus *Hantavirus*

presently characterized in North America. To improve our understanding of these relationships and the epidemiology of HPS, specimens of both host and virus have been collected from around Portland, OR, and across North America. Analyses of ND3, ND4, ND4L, and Arginine tRNA mouse mitochondrial genes have yielded genetic divergence estimates in the range of 4% between local deer mice relative to specimens from the type locality, Newfoundland. Sequencing and phylogenetic comparison of the regional viral G1/G2 glycoprotein coding gene have shown 8% genetic distance from Sin Nombre type specimens (New Mexico), suggesting that the deer mice in Oregon are a species distinct from those in Newfoundland, and that the local virus minimally constitutes a new strain.

MORPHOLOGICAL VARIATION IN THE DEER MOUSE, *PEROMYSCUS MANICULATUS*, IN OREGON. Steve A. Woodley, Museum of Vertebrate Biology, Department of Biology, Science Building II, Room 246, Portland State University, Portland, Oregon 97207-0751

Certain organisms share demographic qualities making them more suitable for studying morphological variation over an array of geographical scales. *Peromyscus maniculatus*, spanning virtually every ecological niche in Oregon, is one such species among mammals. In this work, I examined *P. maniculatus* in eleven cranial and four external measurements. A *t*-test revealed significant differences between specimens in eastern and western Oregon separated by the Cascade mountain range. Further analyses showed coastal populations with consistently larger cranial and external measurements versus eastern Oregon and Willamette Valley counties. Several geographical and environmental factors are considered as possible causes of these different biological characters, in particular latitude, elevation, precipitation, and temperature. I propose that further research should be conducted in the region in order to determine the mechanism or mechanisms driving the observed patterns of variation in this species.

AN EXTENSIVE LOOK AT SIX CANDIDATE GENES AS IMPLICATED IN THE DEVELOPMENT OF CONGENITAL HEART DEFECTS. 1Ashley C. Ballard, 2Cheryl Maslen, 1Amelia Ahern-Rindell, 1Biology Department, University of Portland, Portland, OR 97203, 2Genetics Department, Oregon Health and Science University, Portland, OR 97239.

Atrioventricular septal defect (AVSD) is a serious congenital heart defect characterized by: a ventricular septal defect, an atrial septal defect, and a common atrioventricular valve. These defects lead to regurgitation of the blood into the ventricles due to faulty valve formation and mixing of oxygenated and deoxygenated blood through the common AV valve. AVSD is one of the most serious and life threatening forms of heart anomalies accounting for five percent of congenital heart defects. AVSD can be assumed to be a

multigenetic disorder since mutations found in *CRELD1*, *CRELD2*, and *GATA4* increase an embryo's risk of acquiring this disorder, but are not causative for it. Six other candidate genes have been shown in mouse and zebrafish embryo models to be important in the formation and patterning of the heart. These genes are *HEY2* and the bone morphogenetic proteins (*BMP*) 2, 4, 5, 6, and 7. The objectives of this study were to analyze these six candidate genes in DNA samples of patients who have known mutations within *CRELD1*. Polymerase chain reaction was used to duplicate the exons of the genes of interest. After being sequenced, the exons were run on a computer software program, Mutation Surveyor 2.61, designed to search and find alterations in amplified and sequenced DNA by comparing it to the known cDNA sequence found on the NCBI website. Alterations found were compiled in a database to be used for future research to determine if these alterations are important in increasing an embryo's risk of developing AVSD.

CHARACTERIZATION OF THE GENETIC MUTATION CAUSING OVINE GM<sub>1</sub> GANGLIOSIDOSIS USING NORTHERN BLOTTING. Charmaine Brown, Amelia Ahern-Rindell. University of Portland, 5000 N Willamette Blvd, Portland, OR 97203.

GM<sub>1</sub> Gangliosidosis is an autosomal recessive lysosomal storage disease in which a reduction in beta-galactosidase activity causes a buildup of GM<sub>1</sub> ganglioside in the lysosome. This disorder has been observed in humans, dogs, cats, cows, and sheep. The ovine form of GM<sub>1</sub> Gangliosidosis is unique in that there is a deficiency of both beta-galactosidase and alpha-neuraminidase. Previous complementation studies have indicated that the mutation causing the ovine disease is in the same gene as that causing the disease in other species, the *GLB1* gene. The objective of this study is to identify the type of mutation present in sheep affected with this disease as either missense or nonsense. The presence or absence of the Beta-gal mRNA transcript would identify the mutation causing disease as either missense or nonsense, respectively. It is hypothesized that the mutation is a missense mutation. This hypothesis is based on previous studies that indicate a gene dosage effect in sheep that are heterozygous at this gene. In addition, known mutations in other species, including humans, are almost entirely missense mutations. mRNA was extracted from fibroblast cells grown in culture as well as lung and liver tissue homogenate. Northern blotting was used to analyze the mRNA samples which were separated by size using gel electrophoresis. The membranes were probed using end-labeling techniques. Results thus far are inconclusive. Trials using random prime-labeling techniques with probes created from the human *GLB1* sequence are currently underway.

HABITAT CHARACTERISTICS OF FOUR CLEAR WATER UPPER TRIBUTARIES IN THE SANDY RIVER BASIN: SALMON POPULATIONS AND HUMAN HEALTH Amy Card and Sarah Webber, Department of Biology, University of Portland, 97203

Salmonids require specific environmental conditions for growth, development, and reproduction depending on the species. Tributaries of the Sandy River Basin, which show varying degrees of appropriate habitat for salmonids, were used as sampling sites for salmon habitat measurements. Our goal was to correlate the differences between habitat variables and salmonid population size. We measured stream velocity, discharge, pH, dissolved oxygen (DO), fecal coliform and *Enterococcus* levels. pH and DO showed no evidence for a limitation based on these variables. Temperatures, measured in units of 7 Daily Average Maximum (DAM), were found to vary considerably between streams. Clear Fork had the highest average temperature of all the streams and showed 7 DAM temperatures within the 13-16 °C critical range for nearly two weeks which poses a substantial negative biological threat. Lost Creek crossed this threshold for only one 7 DAM value furthest downstream. Still Creek 7 DAMs never reached above 11 °C and were the lowest recorded temperatures among the four streams. Camp Creek 7 DAM values reached the critical range twice. Clear Fork showed low levels of Fecal Coliform contamination while Lost Creek exhibited contamination by *Enterococcus* at all sites. Still Creek showed only slight bacterial contamination. Camp Creek exhibited the highest level of Fecal Coliform contamination from both dry weather and wet weather sampling. *Enterococcus* was found at every location and the highest numbers were found near Government Camp. According to our data, Lost Creek and Camp Creek exhibited the best salmon habitat of the four, while Clear Fork and Camp Creek showed poor habitat.

DETERMINATION OF C<sub>4</sub> AND CAM PHOTOSYNTHESIS IN *GRAHMIA COAHUILENSIS* (PORTULACACEAE). Lonnie J. Guralnick & Amanda Cline, Division of Natural Science & Mathematics, Western Oregon University, Monmouth, OR 97361

The Crassulacean acid metabolism (CAM) pathway has an initial CO<sub>2</sub> fixation step which occurs at night which is thought to be an adaptation to live in environments where water availability is restricted. CAM has apparently evolved independently in over 30 different plant families. The Portulacaceae is small plant family whose members show photosynthetic diversity in that some members are C<sub>3</sub> plants; others are C<sub>4</sub> plants which show some CAM characteristics, some are facultative CAM plants (switching between C<sub>3</sub> and CAM photosynthesis). Previous work has looked at the evolution and distribution of CAM in the Portulacaceae. The only genus known to have C<sub>4</sub> photosynthetic members is the genus *Portulaca*. Previous research indicates that the genus *Portulaca* evolved the C<sub>4</sub> pathway after evolving the CAM pathway. *Grahmia*

*coahuilensis* is a member of the *Portulacaceae*. Previous reports have indicated that this genera and *Ananampseros* genera may also contain C<sub>4</sub> photosynthetic members of the family. This would indicate a multiple origins of C<sub>4</sub> photosynthesis within in this family. However, the placement of *Grahmia* as a C<sub>4</sub> plant is not well supported in the literature. This studied hopes to ascertain the true photosynthetic characteristics of C<sub>4</sub> and CAM photosynthesis. Preliminary data indicate that *Grahmia* is a facultative CAM species. The carbon isotope composition was found to be -24.5 ‰ which places it toward the C<sub>3</sub> range. The titratable acidity levels are high which may mean that CAM can be induced by drought. Further studies are needed to determine the actual photosynthetic characters of this genus.

HIMBACINE BLOCKS THE NEGATIVE CHRONOTROPIC EFFECT OF HAWTHORN (CRATAEGUS OXYCANTHA) EXTRACTS Satin Salehi, Shannon R. Long, Kristi Crofoot, and Theresa M. Filtz Oregon State University, college of Pharmacy, Corvallis, OR, USA

Several species of hawthorn plant (*Crataegus spp.*) are recognized as sources of medicine in different countries. In Germany, hawthorn preparations are used for the treatment of cardiovascular diseases such as heart failure. Recently, we demonstrated that hawthorn extracts cause a negative chronotropic (decreased contraction rate) effect in a cultured neonatal murine cardiomyocyte assay. Our long-term goal is to reveal the mechanism underlying the negative chronotropic property of hawthorn. M<sub>2</sub>-muscarinic cholinergic receptors are the predominant receptors in mammalian heart associated with decreased rate. Our primary hypothesis is that hawthorn extract decreases the rate of cardiomyocyte contraction via muscarinic receptor activation. We tested several different preparations of hawthorn extract (commercial HeartCare® tablet extract, crude ethanolic extract of dried leaves and stems, or size exclusion column fractions of partially purified leaf and stem extract) and found that all decreased the rate of atrial cardiomyocyte contraction. However, differential effects were noted on atrial versus ventricular cardiomyocytes in culture. Ethanolic extract of dried leaves and stems had a positive chronotropic effect on ventricular cardiomyocytes, suggesting the presence of multiple cardioactive components in the complex extract. We treated the atrial and ventricular cardiomyocytes with the M<sub>2</sub>-receptor selective antagonist, himbacine, prior to challenge with hawthorn extract preparations. Himbacine significantly blocked the negative chronotropic effect of hawthorn extract preparations. Our results suggest that decreased contraction frequency caused by hawthorn extracts in a cultured neonatal murine cardiomyocyte assay may be mediated by muscarinic receptor activation. We are attempting to isolate the himbacine-sensitive, negative chronotropic component of hawthorn extracts.

## POSTER PRESENTATIONS

WILLAMETTE VALLEY PRARIE RESTORATION: BASELINE MONITORING AND SEED COLLECTION. Leslie Grimes, Department of Biology, Linfield College, McMinnville, OR 97128.

Wetland prairies are seasonally flooded ecosystems, comprised of mainly herbaceous plants with a scattering of trees. One of the few remaining wet prairies in the Northern Willamette valley is located in Yamhill County. Deer Creek Park includes over ten acres of wet prairie, five acres of wetland, four acres of upland prairie and one acre of a dense stand of tufted hairgrass. The two objectives of this study was to establish a baseline monitoring protocol for assessing the wet prairie restoration project at Deer Creek Park, and to collect seeds of native plants for use in revegetation of the wet prairie. To accomplish the first objective, three vegetation zones were sampled to determine the percentage of natives and non-natives. Non-natives dominate the upland area forming 77% of the ground cover, and natives cover only 20% of the ground. In the part of the wet prairie that is dominated by a stand of tufted hairgrass, natives cover 46% of the ground, non-natives cover 34% of the ground, and 20% is bare ground. In the wet prairie natives makeup 23% of total ground covered, 76% of ground is covered by non-natives with only 1% bare ground. Fifteen species of upland and wet prairie plants were collected including; *Heracleum lanatum*, *Wyethia angustifolia*, *Carex stipata*, *Juncus ensifolius*, *Camassia quamash* and *Deschampsia cespitosa*.

PATTERNS OF MEADOW USE BY RESIDENT ELK (*CERVUS ELAPHUS ROOSEVELTI*) AT HENRY HAGG LAKE, OREGON. Edmond Alkaslassy, Pamela T. Lopez, Erika Horner, Adam Kojima, and Amanda Pittman, Department of Biology, Pacific University, Forest Grove, OR 97116.

Henry Hagg Lake was created in 1975 when a dam was constructed across Scoggins Creek. The lake flooded meadows in the valley floor that were used by resident elk for foraging during the winter months. To mitigate the loss of these meadows, new meadows (pasture) were created above the new water level. The meadows (n=8) vary in size (from 3.5 acres to 29.5 acres), in proximity to the paved road that surrounds the lake, and in composition and state of vegetation (from a mowed mix of non-native and unpalatable species to recently disked and planted with non-noxious grasses and clovers). Each meadow was sampled for elk scat using a plot survey and a transect survey every two weeks from November 2006 through February 2007. Variation in elk presence at the eight meadows and factors affecting that variation will be discussed.

CONSERVATION IMPLICATIONS OF CONSERVATION: HEALTHY ECOSYSTEMS ARE GOOD FOR YOUR HEALTH. <sup>1</sup>Laurie J. Dizney, <sup>1</sup>Philip D. Jones, <sup>1,2</sup>Luis A. Ruedas, <sup>1</sup>Portland State University, Dept. Biology, Portland, OR 97207-0751, <sup>2</sup>Museum of Vertebrate Biology, Portland State University, Portland, OR, 97207-0751.

In recent years, there has been a surge of newly emerging infectious diseases affecting humans, such as Ebola, West Nile Virus, SARS, Avian Influenza, and Hantavirus. These are all zoonotic diseases—diseases carried by wildlife—that periodically spill over and spread in human populations. As human populations expand and come into more frequent contact with wildlife, these spillovers will inevitably increase in number. Can such events be predicted or prevented? This research investigated the inverse relationship between natural biodiversity and the incidence of zoonotic disease, specifically *Hantavirus*. The three-year study was conducted in five natural areas around Portland, OR that varied in size and vegetation. Small mammals were live-trapped using a web sampling grid, in order to achieve accurate density measurements, as well as consistency with other studies. Blood samples were tested for hantaviral antibodies using ELISA. Population density was calculated using the program DISTANCE. Statistical analyses were undertaken using SAS and SPSS. We sampled 5052 specimens and found *Hantavirus*-positive deer mice (*Peromyscus maniculatus*), the natural host, in all parks. Using non-linear regression, we have found a strong significant negative relationship between site biodiversity and percent infection rate: that is to say, as biodiversity decreases, the prevalence of Hantavirus in the ecosystem increases, and exponentially so when diversity becomes very low. This result has clear implications for both human health and conservation efforts: by managing natural areas to maximize biodiversity, zoonotic diseases and their associated risks to humans can be minimized.

AN INVESTIGATIVE LABORATORY FOR INTEGRATED PLANT AND ANIMAL PHYSIOLOGY AT THE SOPHOMORE LEVEL. Scott Hawke, Stasinios Stavrianeas, and Gary Tallman, Willamette University, Salem, OR

*Physiological Dynamics in Animals and Plants* is an integrated, sophomore-level course required of all biology majors at Willamette University. Early course lectures emphasize differences in macro-physiological mechanisms used by plants and animals for internal transport and gas exchange, energy transduction, and nutrient and food processing. Subsequent lectures emphasize commonalities in cellular physiological mechanisms such as regulation of membrane electric potential and signal transduction. The laboratory for the course begins with six weeks of standard exercises that introduce students to basic techniques of plant and animal physiology. Over the final eight weeks, teams of students carry out research investigations of their own design. Each team must develop a testable hypothesis; design experiments to test the hypothesis; collect

and analyze data; present the results of the project in a symposium at the end of the course; and write a paper summarizing the study. The assessment plan for the laboratory includes pre- and post-course student self-assessment, student assessment of lab team members, and assessment of students by professors. Desired student learning outcomes are development of an ability to acquire data with a computer; overcome technical problems in the lab; correct flawed experimental designs; solve scientific problems; recognize and analyze patterns among data; critically evaluate experiments; draw reasoned conclusions from data; interpret physiological studies; and draw appropriate parallels between plant and animal physiology. As of December 2006, nearly 140 students have completed the assessment program; preliminary results of the assessment will be presented. The use of course equipment in a variety of other courses and various K-12 outreach programs will also be discussed. The laboratory is funded by grant 0309545 from the Course, Curriculum and Laboratory Improvement Program of the National Science Foundation.

## **CHEMISTRY**

### **Section Chair:**

**Jeff Baldwin**

*Western Oregon University*

THERMOSENSITIVITY OF LIPOSOMES OF VARYING DPPC AND DSPC LIPID COMPOSITIONS. Kelly C. Peng, Department of Chemistry, Linfield College, 900 SE Baker St., McMinnville, OR and Lin Ai Tai, Center of Nanomedicine Research, National Health Research Institutes, Miao Li County 350, Taiwan, R.O.C.

The lipid composition of liposomes can be modified for controlled drug release at specific temperatures. The liposomes were synthesized from cholesterol, 1,2-dipalmitoyl-sn-glycero-3-phosphocholine (DPPC), 1,2-distearoyl-sn-glycero-3-phosphocholine (DSPC), and encapsulated an aqueous solution of a carboxyfluorescein dye. Liposomes of varying DPPC and DSPC lipid compositions (heated to specific temperatures ranging from 32-62°C) were analyzed with a Cary Eclipse fluorescence spectrophotometer and a 90 Plus Particle Size Analyzer for liposome leakage and particle size. It was found that liposomes composed of DPPC to DSPC volume ratios of 15:0, 10:5, 5:10, and 0:15 had phase transition temperatures of 37°C, 41°C, 48°C, and 52°C, respectively. These results suggest that liposomes with a majority DPPC composition resulted in a lower temperature release of

carboxyfluorescein dye in comparison to those that had a majority DSPC composition.

BUILDING A GREEN ALTERNATIVE TO A COMMON PHYSICAL CHEMISTRY EXPERIMENT: WEAK ABSORPTION BANDS IN THE MODERATE-RESOLUTION INFRARED SPECTRA OF CARBON DIOXIDE. Catherine C. Clark, Christopher R. Braden, Dr. Jim Diamond, Department of Chemistry, Linfield College, 900 SE Baker Street, McMinnville, OR 97128

In order to demonstrate the potential for CO<sub>2</sub> gas to replace HCl gas in a traditional physical chemistry experiment, FTIR spectroscopy was performed on CO<sub>2</sub>. Interference by water was reduced via application of such techniques as inclusion of P<sub>2</sub>O<sub>5</sub> in the gas cell, allowing for the resolution of bands resulting from rotational-vibrational coupling necessary in determining molecular constants.

EXPERIMENTAL DESIGN FOR EXPLORING MRP PROTEIN INHIBITION BY CHLORDECONE. Crystal Carson, Department of Environmental and Molecular Toxicology, Oregon State University, Corvallis, OR 97331.

Chlordecone is a synthetic organochlorine insecticide. Organochlorines are resistant to biotic and abiotic degradation. They are generally thought of as neurotoxic agents; however, they also play a role in liver toxicity. These compounds are highly lipid soluble which allow them to readily pass through biological membranes and accumulate in the tissues. MRP's are drug resistant proteins with the ability to extrude several classes of drugs from the cell, lowering the effective drug concentration inside the cell. It has been shown that with low doses of Chlordecone the excretion of drug metabolites were markedly impaired. The present study was conducted to determine the mechanism of how Chlordecone decreases drug metabolite excretion. C57/BL male mice were injected with 15mg of Chlordecone/kg body weight by IP injection and the control mice were injected with corn oil. On day 14 the mice were fasted for 4 hours and liver samples were collected. The protein levels in each liver sample were evaluated using western blotting techniques. This study was inconclusive on how Chlordecone decreases drug metabolite excretion. The proteins of interest were not detectable in either the control or the Chlordecone treated mice. The concentration of the MRP proteins might have been too low to detect. If the experiment were to be repeated, immunoprecipitation could be used to increase the concentration of the proteins of interest. A positive control should also be used to test the specificity of the antibodies to the proteins.

CYCLOADDITION OF ALKENES TO A CATIONIC RHENIUM OXO COMPLEX: LIGAND BASED THERMODYNAMIC CONTROL. Josh Albus, Abigail Joyce and Kevin P. Gable, Department of Chemistry, Oregon State University, Corvallis OR 97331.

A variety of  $LReO_3$  complexes are formed by alkene extrusion from rhenium diolates. Computational modeling predicts that ligand modification resulting in a cationic rhenium complex will reverse the thermodynamic preference for fragmentation and allow a net [3+2] cycloaddition of alkenes to  $LReO_3^+$  cations, where L = tris-(3,5-dimethylpyrazolyl)methane. Experimentally, this is borne out. At 80°C, K for cycloaddition is measured as: to norbornene,  $>200 M^{-1}$ ; for styrene,  $1.6 M^{-1}$ ; for Z-cyclooctene,  $11 M^{-1}$ . Progress will be reported toward establishing that the change from neutral to cationic system is a primarily enthalpic change.

STRUCTURAL CHARACTERIZATION OF THE ADDUCT BETWEEN NORBORNENE AND A RHENIUM OXO COMPOUND. Abigail Joyce and Kevin P. Gable, Department of Chemistry, Oregon State University, Corvallis OR 97331.

Norbornene, a strained alkene, reacts to completion with  $LReO_3^+$  (L = tris-(3,5-dimethylpyrazolyl)methane) as the perrhenate salt to form a [3+2] diolate adduct. Structural analysis by 1-D and 2-D NMR techniques establishes the structure definitively. An upfield shift and a change in coupling constants for the vinyl hydrogens establishes the reaction chemistry, and as expected, the addition occurs to the exo face of norbornene. COSY and HSQC experiments establish full assignment of all proton and carbon signals for the norbornyl fragment, as well as identifying the symmetry-unique pyrazolyl protons on the proximal pyrazole group. Finally, nOe experiments reveal a through-space interaction between a pyrazole methyl and the carbinol protons, completing the structural assignment.

HEMOGLOBIN ADSORPTION TO FUSED SILICA: PH DEPENDENCE. Victoria M. Black, Marylesa M. Wilde, and Michael A. Everest, Department of Biology and Chemistry, George Fox University, Newberg, OR 97132.

The pH dependence (pH 6-11) of adsorption and desorption of human hemoglobin on fused silica was studied using evanescent-wave cavity ring-down spectroscopy. As pH increases, human hemoglobin adsorbs less readily and desorbs more readily from the silica surface. Because adsorption is significantly attenuated at pH values just above the pI of hemoglobin we propose that electrostatic attraction is a major determining factor in the adsorption properties of this system.

SURFACE-ENHANCED RAMAN SCATTERING OF *p*-NITROBENZOIC ACID ON MIXED SILVER-GOLD NANOPARTICLES. Fan Shi, Rachel Kaneta and Brian D. Gilbert, Linfield College, Department of Chemistry, 900 SE Baker St., Unit A468, McMinnville, OR 97128.

We have studied the surface-enhanced Raman scattering (SERS) of *p*-nitrobenzoic acid (PNBA) on mixed silver-gold nanoparticles. The Ag-coated Au and Au-coated Ag nanoparticles were prepared by deposition of Ag or Au through chemical reduction on Au or Ag colloids. We report the experiment of surface-enhanced Raman scattering (SERS) of PNBA on  $\text{Ag}_{100-x}\text{Au}_x$  and  $\text{Au}_{100-y}\text{Ag}_y$  surfaces.

SIMULTANEOUS TUNING OF THE SIZE AND FUNCTIONAL GROUP CONTENT OF GOLD NANOPARTICLES (GNPs) IN A SINGLE SYNTHETIC STEP BY MEANS OF THIOSULFATE LIGANDS. Samuel E. Lohse, Jennifer A. Dahl, James E. Hutchison, Department of Chemistry, University of Oregon, Eugene, OR, 97403.

Although researchers continue to develop increasingly sophisticated synthetic methods to control noble metal nanoparticle (MNP) size and functionality, even the most efficient of current methods require separate synthetic procedures to tailor core diameter and control particle functionality. By combining core diameter and functional group tuning in one step, nanoparticle synthesis becomes more rapid and less resource intensive. One synthetic method which potentially provides control over nanoparticle core size and functionality is the use of Bunte salts (thiosulfates) as thiolate equivalents in nanoparticle synthesis. Bunte salts containing a variety of functionalities can be produced using a general synthetic reaction, and under reducing conditions, eliminate a sulfite to form a thiolate attachment to the surface of gold nanoparticles. Gold nanoparticles displaying three useful, water-soluble functionalities ( $-\text{NR}_3^+$ ,  $-\text{O}(\text{CH}_2)_2\text{OH}$ , and  $-\text{COO}^-$ ) were prepared using Bunte salt ligands. It was found that by varying the Ligand:Au ratio in the reaction mixture, GNPs of different sizes could be prepared. The sizes of particles produced can further be tailored by changing the length of the carbon chain in the ligand employed. The decrease in core diameter with the increase in L:Au ratio was followed by UV/Vis Absorption Spectroscopy. Transmission electron microscopy (TEM) analysis of the nanoparticle solutions demonstrated that GNPs with core diameters as small as  $1.9 \pm 0.7$  nm could be produced by this method.

# ECONOMICS

## Section Chair:

**Hamid Bahari-Kashani**  
*Western Oregon University*

MANAGING REVENUE VOLATILITY OVER TIME FOR THE STATE OF OREGON. Fred Thompson, Atkinson Graduate School of Management, Willamette University, Salem, OR 97301.

Predicting growth in tax revenue is a mug's game. It is never done well and in some cases it cannot be done at all. Instead of asking "What will happen?" the question ought to be "Given that we can't predict the future, what is our best move today?" This question is especially pressing in Oregon. Oregon's state tax structure is among the most progressive, income-elastic systems in the US. Highly progressive, high-growth tax sources are necessarily highly volatile. Fortunately, modern financial economics gives us set of tools that can be used to manage volatility. These tools are based on mean-variance analysis, analysis of covariance, the use of stochastic processes to model movements in financial variables, and optimal control theory to formulate solutions to those processes. These tools include tax portfolio analysis, hedging and self-insurance strategies, and optimal spending, saving, and borrowing rules, in the context of present value balance. This paper shows how these tools can be used to inform fiscal decision-making using Oregon data and evidence. It concludes that Oregon cannot significantly reduce volatility in revenue growth by tinkering with its tax structure -- at least not without also reducing progressivity, that hedging is probably not practical, that Oregon could rely on a rainy day fund of sufficient size to mitigate the adverse consequences of cyclical revenue shortfalls (if it had one) or meliorate them via a program of countercyclical borrowing, and that Oregon's revenue growth trend is faster than outlay growth under existing spending rules.

# **GEOGRAPHY**

## **Section Chairs:**

**Jeff Baldwin**  
*Western Oregon University*

**Joseph Poracsky**  
*Portland State University*

**A BRIEF SURVEY OF FREE GIS DATA SOURCES AVAILABLE OVER THE INTERNET.** Robert A. Bong, Department of Geography, Portland State University, Portland, OR 97207-0751.

A wide variety of geographically relevant information in the form of aerial and satellite photography, maps and numerical data sets, has been available, for a fee, over the Internet for some time. However, in recent years an increasing number of sites are offering this information at no cost to the user. Google Earth and TerraServer are the more familiar of these. While the selection is restricted and certainly not of the quality found in commercially available data sets, with a little searching and careful selection, free data sets can be successfully employed in some types of research. This presentation describes a sample project that uses satellite and aerial photography from both Google Earth and TerraServer. An existing gap of several years between two photographic sets was utilized to study residential housing growth in Bend, Oregon. The process used to carry out the project and some of the difficulties encountered is discussed, along with an overview of free GIS data.

**AIR PHOTO ASSESSMENT TO DETERMINE STRUCTURAL LOSS DUE TO HURRICANE KATRINA IN PASS CHRISTIAN, MISSISSIPPI.**

Daniel R. Craver, Department of Geography, Portland State University, Portland, OR 97207-0751.

Pass Christian, Mississippi is one of four cities on Saint Louis Bay of the Gulf of Mexico nearly obliterated by the storm surge of Hurricane Katrina on August 29, 2005. Quantifying structural loss may be partially achievable by studying aerial photography from before and after the storm. To accurately attribute value by square foot to structures identifiable in the photos, a land use map was first developed with pre-storm imagery using common land use land cover classification. Attributing loss in value to a point layer and converting to a raster using ESRI ArcMap software allows us to model the city's structural loss in dollars as a continuous data set.

Ground knowledge attained during debris removal inspection work in the fall of 2005 aided photo interpretation. Various ancillary data sets from Harrison County and Federal Emergency Management Agency allowed post-analysis to assess accuracy of mapping and discover trends.

USING DAILY ROUTES TO COMPARE URBAN PERCEPTIONS IN ST. PETERSBURG, RUSSIA. Megan L Dixon, Department of Geography, University of Oregon, Eugene OR 97403-1251, mldixon@uoregon.edu.

This paper will present early results of fieldwork in St. Petersburg, Russia. Through interviews that included drawing and discussion of daily routes from home to work and back, the research sought to explore perceptions of rapid urban development. Interview subjects included longtime Russian residents as well as Chinese migrants ranging from businessmen to students. Background research included observation of public spaces, location of Chinese restaurants and stores, and expert interviews with specialists in urban planning and transportation. The paper will present a summary of similarities and differences in Russian and Chinese perceptions of the city. Chinese perceptions are clearly constrained by the phenomenon of anti-foreigner activity in the city, but these perceptions also offer an “expert” commentary on recent Russian development in light of most migrants’ experience in rapidly developing China. In addition, the paper will offer hypotheses about using daily routes as a way to elicit residents’ city knowledge, zones of loyalty and narratives of sense of place.

COLLABORATIVE PROCESSES, POWER AND PLACE: A CASE STUDY OF FOUR SOUTHERN WILLAMETTE VALLEY WATERSHED COUNCILS. Samuel H. Fox, University of Oregon, Eugene OR 97412.

Watershed partnerships are an established environmental management model in the U.S. Watershed partnerships take many different forms, and a key difference in structure has been demonstrated to be their status as citizen-centered or agency-centered (Moore and Koontz 2003; Bidwell and Ryan 2006). Moore and Koontz conducted focus groups and a survey with Ohio watershed partnerships to categorize them by member composition and group accomplishments. Bidwell and Ryan interviewed 29 established watershed council coordinators in Oregon to investigate the connection between the affiliation of a watershed council and its outcomes. Oregon hosts a diverse array of watershed councils united under a common set of statewide guidelines. It thus provides an excellent natural laboratory for investigating the implications of the difference between agency and citizen centered watershed councils. I identified four local watershed councils (two agency-centered, two

citizen-centered) and engaged in archival research, participant observation, and semi-structured interviews to illuminate the similarities and differences of their collaborative processes, expressions of power, and their recognition of place attachment. These processes are the means by which the structure of the council creates outcomes, the expressions of power are under-examined in the literature on watershed partnerships, and the concept of place attachment is being newly applied to collaborative management (Manzo and Perkins 2006). This research will thus enhance these bodies of knowledge by illuminating these key linkages. Preliminary results will be shared, and the potential implications of these similarities and differences will be discussed.

USE OF COLOR AND SHADED RELIEF TO EFFECTIVELY REPRESENT CLIMATE VARIABLES. Michael D. Halbleib, Christopher Daly, Strand Ag Hall 326, PRISM Group, Oregon State University, Corvallis, OR 97330.

Color is a very effective method of communicating spatial information. It can be used to emphasize points of interest through contrast, it can be used to represent different categorical values, and its visual appeal can be used in intuitive ways to emphasize and more easily communicate information about variables contributing to the understanding of the data represented. As humans we tend to intuitively associate red, yellow, and green colors with warmer temperatures and drier regions, while blue, purple, and gray tend to imply cooler temperatures and wetter regions. The intensity of the color can also communicate some of the same information with darker hues implying a more intense meaning. When making maps of temperature or precipitation we try to take advantage of these natural associations and create a color-ramp for the map that uses a flow of warm to cold colors, while staying away from the more intense saturated colors so that the eye is not distracted, and then apply it to a shaded relief map. The shaded relief adds a representative element of terrain that communicates a sense of how high the elevation is at any given point on the map and can also help explain the rate of change in the temperature variable. Using these tools together creates an effective method that communicates a sense of location, elevation, and climate variable for our maps of the continental United States.

THE WISDOM OF IN-SECURITY: THE GEOGRAPHIES OF CONFLICT AND THE STATUS OF SECURITY IN THAILAND'S RESTIVE SOUTH. Demian Hommel, Department of Geography, University of Oregon, Eugene OR 97403-1251, dhommel@uoregon.edu.

Since January 2004, bombings and assassinations have become an almost daily occurrence in southern Thailand. While this unrest is almost always treated as a *Muslim* issue, evidence indicates that

terrorist “hot spots” are also areas showing some of the highest rates of poverty, hunger and unemployment. My preliminary research suggests that human-centric security perspectives are the most effective means of understanding the roots of conflict in this region. However, data about underlying human security variables—factors like food, medical, environmental and political security at individual and community scales—remain to be consolidated and analyzed along with national security concerns in Thailand. For example, Thai authorities and scholars know where poverty rates are high and where separatist violence is most active. Yet they have generally failed to consider these factors together or recognize the relationship between the two. My project will serve as a model for integrating and analyzing multiple security threats in order to better understand and alleviate conflict.

MEASURING WIRELESS INTERNET ACCESS: WI-FI IN THE HOUSE.  
Jon Jablonski, Map & Aerial Photography Library, 1299 University of Oregon,  
Eugene, OR 97403.

Recent literature describes global cities being wired cities, but how does internet access vary across the cityscape? Are some communities adopting broadband and wireless technologies at rates greater than others? Why? Using a consumer-grade ‘hotspot’ detector, a pilot study was conducted in 2006 that measured the presence of 802.11b and g (wi-fi) networks in a sample of neighborhoods in Chicago, Illinois and Vancouver, British Columbia. This paper describes a novel measurement technique in which the density of wi-fi hotspots is mapped according to census block groups, which allows comparison to common demographic factors such as income, age, and ethnicity. An evaluation of the technique’s efficacy will be presented by comparing the data to the Pew Internet & American Life Project’s annual *Demographics of Internet Users* report. Results indicate that the Pew Center’s data is accurate if one assumes that wi-fi is growing at a rate similar to other, earlier, home internet technologies. Preliminary results indicate that adoption of residential wi-fi is largely independent of demographic factors. The paper will conclude with field observations that indicate cultural factors are the driving force for variance in wi-fi penetration. This paper makes the argument that the study of internet activity is a significant research problem in contemporary geography.

DISTRIBUTION OF PLANT AND ANIMALS MOVED ACROSS THE  
OCEANS BEFORE COLUMBUS. Carl L. Johannessen, Department of  
Geography, 1299 University of Oregon, Eugene, OR 97403.

Ninety-eight species of plants were transported across the oceans before 1492 CE. Eighty-five of these were taken from their origin in

America to Asia and fifty of those to India. Eighteen plants and twenty-two diseases were carried mainly to the Americas from the Old World. Several larger animals were carried by ships and rafts across the oceans as well. The tables of these lists will be available to analyze. We show other species for which we do not yet have adequate evidence to be totally confident about, but some indications are present to suggest that they will ultimately show transport with sufficient research. All of these are documented in a book manuscript (Sorenson, John L. and Carl L. Johannessen, 2006, *Biology Verifies Ancient Voyages*).

SPATIAL AGGREGATION OF THE “LIKES” IN NEIGHBORHOODS. Sriram Khé, Geography Department, Western Oregon University, Monmouth, OR 97361, khes@wou.edu.

News reports of violence in Baghdad refer to neighborhoods in the city as being Shia or Sunni, and that people there have an immediate understanding of the spatial distribution of sectarian differences. Such spatial arrangements are no different from those of “socially different” populations in India. This presentation will be a discussion of the distribution of population in a small town in India, Sengottai, where religious and caste differences are immediately and spatially evident. Even in larger cities, such as in Chennai, it may not be too difficult to discern the underlying religion based spatial aggregation of population. The presentation will conclude with remarks on how these are inconsistent with standard urban economic models, which suggest that under market conditions, and everything else being equal, use of land is determined by economic rents.

PORTLAND CONNECTIONS. Richard Lycan, Population Research Center, Portland State University, Portland, Oregon 97207-0751.

Migration flows from one place to another are (1) a reflection of how individuals and households react to changing circumstances and (2) a major influence on how regions change over time. This paper examines the patterns of migration between the Portland, Oregon metropolitan area and other regions of the United State over time and across various socioeconomic groups. The data utilized are from the 1960 to 2000 decennial censuses and are based on the question asked at census time, for example in April 2000, “Where did you live in 1995?” The question was on the long form questionnaire asked of approximately 15% of households and is subject to sampling error. The analysis showed that since the 1970 census Portland has been a net benefactor of migration from nearly all areas of the United States, especially from California. The one exception has been net losses of population to Phoenix and Las Vegas. There are significant differences by age, race, and economic status and these will be

discussed in the paper. Special maps were designed to illustrate the flow patterns.

PARTICIPATORY GIS: POSSIBILITIES AND LIMITATIONS IN MOZAMBIQUE. Ingrid L. Nelson, Department of Geography, University of Oregon, Eugene, OR 97401, [inelson1@uoregon.edu](mailto:inelson1@uoregon.edu).

PGIS approaches are still largely built upon notions of public process and participation prevalent in the global North. What are the potentials and limitations of PGIS methods “traveling” into non-western and “underdeveloped” contexts? The 1997 Land Law in Mozambique initiated a process of participatory community land registration. Land registration and PGIS remain inextricably linked because community land rights, once delimited, are seen by development organizations as enabling further community-led projects requiring PGIS (such as community-based natural resource management). Based on semi-structured interviews and secondary source analysis conducted in 2006 that explored institutions using GIS in Mozambique, I found a deep chasm between top down technocratic GIS institutions and communities engaged in usufruct land rights mapping. Given the progressive and participatory nature of the 1997 Land Law, and the concurrent expansion of GIS technologies in Mozambique, this paper explores the possibilities for and limitations of PGIS methodologies successfully bridging this gap in the near future. This research also explores what the Mozambican context can contribute to an improved understanding of PGIS and Critical GIS theory and praxis.

THE MEDICAL DISTRICT PHENOMENON. Peter D. Paul, Department of Geography, Portland State University, Portland, OR 97207-0751.

The Medical Center phenomenon is something that is familiar to everyone. We know that Health Care and Medical Services are a growing element of the American economy. We are also aware that it affects the geographical organization of the city. However, census data, with its emphasis on where people live, does not generate data about medical centers. This paper represents an preliminary exploration of the spatial aspects of the Medical Center phenomenon and the district around it, based on accurate recording of observations about the phenomenon, in ways that permit comparisons between urban centers. Using North Dakota as an example, this paper discusses how Medical Districts are organized on a statewide basis, their spatial structure within urban areas, the kinds of elements that define a medical district, and some of the dynamics of their development. After comparing urban areas in North Dakota, the

paper will examine how the analysis of this phenomenon may apply in a larger Midwestern urban center.

MAPPING PORTLAND'S SOUTH PARK BLOCKS. Joseph Poracsky, David Banis, Peter Paul, Wayne Larimer, Department of Geography, Portland State University, Portland, OR 97207-0751.

The South Park Blocks in downtown Portland represents a unique and well-known feature that has played, and continues to play, a major role in molding the distinctive character of its surrounding neighborhood. A just-published map prepared in the Geography Department's Center for Spatial Analysis and Research (CSAR) seeks to portray the area's richness and diversity. This presentation outlines the production of the map. *South Park Blocks: Portland's Cultural, Historical and Educational Center*, includes all or part of some 71 blocks. The map area is oriented diagonally on the paper from upper left to lower right and portrays the surrounding buildings in a perspective view, shown as if observed from a viewpoint within but high above the Park Blocks and looking at each block diagonally at a 45 degree angle. This 3-dimensional, *axonometric perspective*, allows the buildings to be shown to scale in all 3 dimensions. All the buildings above the diagonal of the Park Blocks read "correctly" while those below the diagonal appear upside-down. Rotating the map 180 degrees reverses the views. The map was published in December 2006. Proceeds from sales will go initially to recovering printing and distribution costs, and any additional proceeds will go to supporting additional experiences for students in map production.

AJAX AND TAX LOTS. Mark Scott, P.O. Box 17, Ocean Park, WA 98640.

In 2007 a number of technologies promise to raise Geographic Information Systems (GIS) applications to new levels of power and usability. One of the recent developments capturing the attention of GIS users online is AJAX (Asynchronous JavaScript and XML). The purpose of this presentation is to demonstrate how ordinary static taxlot data can be given new life and vitality, using an AJAX approach. AJAX is not a technology, rather it is an approach to web applications that incorporates a number of technologies, including JavaScript, HTML, Cascading Style Sheets (CSS), XML and XSLT, XMLHttpRequests and the Document Object Model (DOM). The demonstration data used was obtained from Cowlitz County, Washington. These data consist of tax lots, street center-lines and a 2006 one-meter raster image. Software used for the demonstration includes ESRI ARCGIS 9.1 and ImageMapper 10. The example will demonstrate that relatively inexpensive raw data can look and perform at a level well above what its cost might suggest.

CHINA AND JAPAN: THE IMPLICATIONS AND POSSIBILITIES OF THE EAST CHINA DISPUTE. Joel Daniel Stewart, Department of Geography, Portland State University, Portland, OR 97207-0751.

Tension is growing between the two most economically powerful nations in East Asia. A source of this tension rests in the claims made by both China and Japan to sovereignty over the Daioyu/Senkaku Islands. Neither nation has great concern for these uninhabited islands themselves, but rather for what lies beneath them. Hydrocarbon resources exist in great abundance under the seabed floor in the vicinity of these islands. Naturally, China and Japan each want as large a share of the resources as they can acquire. However, each nation's interests conflict with the other. Consequently, China and Japan find themselves in an increasingly hostile situation.

## **GEOLOGY**

### **Section Chair:**

**Scott Burns**

*Portland State University*

MAKING STORMWATER WORK FOR YOU: OWENS CORNING, CITY OF PORTLAND BUREAU OF ENVIRONMENTAL SERVICES, AND FRIENDS OF TREES' INNOVATIVE PARTNERSHIP FOR SUSTAINABILITY. Jennifer Berry, RG, City of Portland, Bureau of Environmental Services, Portland, OR 97204.

Owens Corning is a roofing manufacturing company with a facility located in Portland's NW Industrial area, an area that is heavily dominated by impervious surfaces. Currently, stormwater runoff from this site discharges directly to the Willamette River via the City's storm collection system. The City of Portland Bureau of Environmental Services, Owens Corning, and Friends of Trees are partnering on a sustainable stormwater project to put all that water to a better use. Scheduled to be completed in Summer 2007, this project will help treat approximately one million gallons of annual stormwater runoff from this site. The project involves installing vegetated swales to manage stormwater runoff from both the roof and the parking lot. An environmental site assessment and geotechnical survey with percolation test were conducted as part of the design to determine if the neighborhood could handle the increased groundwater infiltration. This project is funded by Metro's Nature In the Neighborhoods Grant, Owens Corning, and EPA's Innovative Wet Weather Program Grant for sustainable stormwater management. This project offers a unique opportunity to illustrate private, public, and community based forces working together towards sustainability

and enhanced watershed health to help restore habitat in an area that lacks green space. It serves as a model for other property owners that are interested in employing innovative stormwater management techniques that are green for the earth and green for the business.

WAS *TRICERATOPS* LIKE A BISON, RHINO OR HIPPO? Richard Bykowski, Gregory Retallack, Department of Geological Sciences, University of Oregon, Eugene, OR 97403.

Recent discoveries of complete *Triceratops* limbs have reignited interest into its locomotion and lifestyle. Gilmore and Dodson see *Triceratops* with its limbs in a sprawling posture where as Bakker and Paul propose an erect posture with the limbs held beneath the body as in a modern rhino or bison, capable of galloping at high speeds across open range habitat. Retallack suggested that *Triceratops* might have been more like the modern hippo than bison or rhino, based on the discoveries of fossils in wetland habitat paleosols. Measurement of the distal and proximal limb bones of *Triceratops horridus*, *Hippopotamus amphibius*, *Bison bison* and *Rhinoceros unicornis* showed *Triceratops* had limb proportions more like the hippopotamus than the rhinoceros or bison. This suggests *Triceratops* was not cursorial galloper, but more short-limbed and in habit like the hippo. Measurements of the proportion of the eye orbit above the skull table may have *Triceratops* closer to the hippo than the bison or rhino. In addition, *Triceratops* appears to have large orbits for its size, more like the hippo than the bison or rhino. Thus, *Triceratops* may have shared a similar aquatic niche to the modern hippo, but is unlike the rhino or bison in key features of the limbs and orbits.

MOVEMENT OF IRON AND ALUMINUM IN A SERIES OF PALEOSOLS ON A PARABOLIC DUNE AT CAPE KIWANDA, OREGON. Karen R. Carroll, Mary Dietrich, and Scott F. Burns, Department of Geology, Portland State University, Portland, OR 97201.

Four paleosols within a parabolic dune at Cape Kiwanda, Oregon were studied to ascertain Fe and Al concentrations and to determine if translocation of Fe and Al was occurring. If these elements are moving through these young soils, then spodosol development would result. Citrate-dithionite and acid-oxalate methods were used for Fe and Al extraction. The methods were compared to determine accuracy. An Atomic Absorbance Spectrometer was used to ascertain Fe and Al concentration. As soil development age increases past 1000 years, Fe and Al increase in the soil. The horizons within each paleosol were compared. No leaching is occurring between Ab and Bb horizons; there are no E horizons present. Al leaching is found between the upper Bb and lower Bb horizons and indicates that

Al leaching begins prior to 820 years of soil development. Leaching of Fe does not begin until some point after 1420 years of soil development.

GLACIATION OF THE DAVAATIIN AREA IN THE HANGAY MOUNTAINS, CENTRAL MONGOLIA. 1Brian D. Coggan, 1Robert J. Carson, 2Karl W. Wegmann; 1Department of Geology, Whitman College, Walla Walla, WA 99362; 2Department of Earth and Environmental Sciences, Lehigh University, Bethlehem, PA 18015.

The Davaatiin region contains a wide variety of glacial features including giant moraine complexes and ancient glacial lakes. Although the modern ELA for this region is approximately 4000 m and above all but the highest peaks, the ELA at the Last Glacial Maximum was 2800 m. Extensive valley glaciers from five drainages merged into the Davaatiin glacier system, which ranged in elevation from 3494 m to 2200 m and covered an area of 355 km<sup>2</sup>. Geomorphic evidence for this glacier includes erosional landforms like cirques, hanging valleys, and U-shaped valleys, as well as depositional features like medial, lateral, and end moraines and meltwater channels. Kettles indicate that there were areas of ice stagnation during retreat. Surface boulder frequency counts on five end moraines support the idea of two major glaciations in the Hangay. The glacier flowed over a low plateau to block an unglaciated portion of the Chuluut Gol. The presence of possible ice-rafted boulders and fine-grained lacustrine sediment suggests that a large lake formed above the ice dam. Downvalley, elevated fluvial channels and more ice-rafted boulders imply that this lake may have drained catastrophically in one or more jökulhlaups. Glaciolacustrine sediment from a moraine-dammed lake in Botgon Gol yielded a calibrated radiocarbon date of 13155 ± 70 years BP. Dropstones in the sediment indicate that there must have been a glacier calving ice into the lake at this time. Further study into Central Asia's past and present glacier systems is important in unraveling how they behave with a changing climate.

PALEOSEISMIC ANALYSIS OF THE EGIIN DAVAA FAULT, HANGAY MOUNTAINS, MONGOLIA. 1Juliana Williams, 2Emily Parker, 3A. Bayasgalan, 4Karl Wegmann, 1Bob Carson, 5Richard Walker. 1Dept. of Geology, Whitman College, Walla Walla, WA 99362, 2Dept. of Geology, Colorado College, Colorado Springs, CO 80903, 3School of Geology and Petroleum Engineering, Mongolian University of Science and Technology, Ulanbaatar, Mongolia, 4Dept. of Earth and Environmental Sciences, Lehigh University, Bethlehem, PA 18015, 5Dept. of Earth Sciences, Oxford University, Oxford, UK.

The Hangay Dome, a zone of upwarping and moderate extension in central Mongolia, is bordered by the Baikal Rift zone to the north, a

system of left-lateral strike-slip faults to the south, and a system of right-lateral strike-slip faults to the west. The Egiin Davaa fault in the Hangay Mountains is a northeast-striking normal fault, with an upthrown southeastern block, typical of faults in the southern part of the Hangay Dome. The fault, at least 80 km long, consists of three strands which are progressively younger to the southwest. Only the southwesternmost strand ruptured in the last earthquake, producing a scarp with five segments. Of these segments, the dominant three strike at N61°E, and the two minor segments strike between N15°E and N20°E. The N61°E segments experienced almost entirely normal motion, whereas the two minor segments experienced oblique motion. The fault is associated with Quaternary basalts, including a complex of four small cinder cones located at one of the bends in the fault. The recent scarp crosses alluvial fans along most of its length, but where it cuts bedrock the estimated dip is 43° NW. The average displacement along the 42-km-long recent scarp is approximately 3 meters, with a range of 1 to 5 meters. Although previous researchers proposed that this scarp was produced by an earthquake 300 to 500 years ago, radiocarbon samples collected from two trenches across the scarp suggest that the last earthquake occurred between 4355 and 6840 radiocarbon years ago. Based on comparison with the older expression of the fault to the northeast, where glacial drift is offset by approximately 8 to 10 meters, the recurrence interval is estimated to be approximately 2 to 3 meters of displacement about every 5000 years.

FORMATIONAL CONTACTS AND STRUCTURAL LINEATIONS IN WESTERN CASCADE VOLCANIC ROCKS OF SOUTHWESTERN OREGON: INTERPRETATION OF REMOTE SENSED IMAGES. Dana L. Hutchins, Elizabeth M. Carrington, Julie Anne Locke, Dept. of Geology, Southern Oregon University, Ashland, OR 97520.

Complex stratigraphic and structural patterns are evident in Oligocene volcanic rocks of southwestern Oregon. A roughly 80 km<sup>2</sup> study area near the Oregon-California border includes the largely volcanoclastic Colestin Formation which overlies mudstones and minor sandstones of the Cretaceous Hornbrook Formation and is overlain by volcanic rocks of the Roxy Formation. To resolve complex regional relationships, depositional contacts and structural lineations were identified using ENVI 4.3 software to interpret ASTER and Landsat Thematic Mapper (TM) satellite images. Principle Component Analyses (PCA), supervised and unsupervised classifications, and band math functions produced images allowing identification of formational boundaries and stratigraphic units consistent with previously mapped contacts. Spectral tools, combined with field checking, allowed further refinement of probable compositions within the Colestin and Roxy Formations. In addition, interpretation of directionally-filtered remote images revealed many

large- and small-scale structural lineations that statistically plot as two different trends: N.48°E. and N.49°W. The northeast-trending lineations are consistent with faults generated by eastward tilting of the Klamath Mountains while the northwest-trending lineations are consistent with lineations typical of Basin and Range extensional faults. Though limited in scope, this study demonstrates the usefulness of remote sensing in detecting formational boundaries, rock types, and structural features in a stratigraphically complex region.

GEOCHEMICAL, PETROGRAPHIC, AND DEPOSITIONAL OBSERVATIONS IN EARLY TUFFACEOUS DEPOSITS OF THE WESTERN CASCADES GROUP IN SOUTHERN OREGON. Jim Ficke, Toni Smith, and Dr. Jad D'Allura, Southern Oregon University, Ashland, Oregon 97520.

Volcaniclastic deposits of Early Oligocene to Early Miocene age in southern Oregon lack distinct marker beds, but pyroclastic rhyolitic to dacitic tuffs provide a means to differentiate rock packages, identify mineralogical and geochemical changes, estimate accumulation rates, and approximate pressure and temperature conditions after burial. This study organizes pyroclastic outcrops into four stratigraphic groups, including the Chocolate Falls tuffs at the base of the Colestin Formation (newly dated at 33.13 +/- 0.39 Ma); the Siskiyou Pass tuffs (previously dated at 27 to 29 Ma); the Soda Mountain tuffs (previously dated at approximately 25 Ma); and the Early Miocene Lincoln Creek tuffs (newly dated at 23.28 +/- 0.39 Ma). Analysis of ferromagnesian mineralogy indicates that tuffs of the upper Colestin to lower Siskiyou Pass units may have originated from a more hydrous source than earlier and later tuffs. Geochemical variations indicate a minor increase in alkalis in the Soda Mountain units relative to adjacent deposits. Estimations of accumulation rates suggest an increasing rate of volcanism from approximately 0.22 km/Ma between the Chocolate Falls and Siskiyou Pass tuffs, to nearly 0.66 km/Ma up-section to the Lincoln Creek tuffs. A revised calculation of bed thickness was used to estimate minimum temperature and pressure at the base of the pile to be 140°C and 0.11 Gpa (1.1 kb), which agrees closely with zeolite occurrence in some samples as determined through XRD analyses. Although geochemical and mineralogical trends observed in the tuffs are not robust, they do provide a basis for future investigations.

ALPINE WETLAND SOIL CHARACTERISTICS AND PLANT ECOLOGY. Susan Garland, Department of Environmental Science and Resources, Portland State University, Portland, OR 97207.

Alpine wetland tundra soils and plant communities differ from arctic tundra in several significant ways but have been infrequently investigated and remain poorly characterized. This study characterized soils in detail at several wet tundra plant community types found on Niwot Ridge in the Front Range, Colorado. Our objective was to determine whether plant communities could be used as indicators of the underlying soil types or whether the soils were more accurately indicated by other variables such as geomorphic surface, distance from melting snow banks, aspect, or slope. Plant communities were surveyed in representative one-meter quadrats in September 2004. Soil profiles were excavated from each surveyed quadrat to the limit of soil development or until rock refusal. Plant communities were grouped using Principal Components Analysis. Soils were characterized using particle size analysis, organic carbon content, color, structure and pH. Soils were typically sandy loam or coarser throughout the profile. Results showed a wide variation in organic matter content, varying from approximately three to 65 percent in surface horizons. Where plants were present, soil profiles were acidic, ranging between approximately 4.2 and 4.9. Although wet at the surface, many of the soils were well-drained in underlying mineral layers. Ordination resulted in five plant communities. Results show that these communities can be used as rough predictors of soil characteristics. Indicator values improve when models include the geomorphic surface and catena position.

ANALYSIS OF THE 2006 WATER YEAR ON THE SOUTH FORK LITTLE BUTTE STREAM, JACKSON COUNTY, OREGON: MICROCLIMATE COMPLEXITIES AND FLASHINESS IN FLOOD STAGE GENERATION. 1Charles L. Lane, 2Debra Whittall, 3Shavon Haynes, 1Department of Geology, Southern Oregon University, Ashland, OR 97520, 2United States Department of Agriculture Forest Service, Washington, D.C. 2004-1158, 3Office of the Jackson County Watermaster, Medford, OR 97501.

The South Fork Little Butte basin occupies 130 mi<sup>2</sup> in Jackson County, Oregon. The United State Bureau of Reclamation (USBR) maintains permanent gaging stations at two locations in the basin: one at the mouth of the South Fork, and one located approximately seven river miles upstream (Gilkey Station). The Gilkey Station is located at the mid-basin point with respect to collection of precipitation input (54% of the basin lies above the Gilkey Station). Additionally, the USBR maintains a gaging station at Lake Creek, Oregon, immediately below the confluence of the South and North forks. Water Year 2006 (October 2005 – September 2006) produced two major flood events, the larger one during January-February, and the second during April-May. The first event was essentially restricted to the lower basin. The second flood event was a product of basin-wide precipitation with over half the total discharge coming through the Gilkey Station. Analyses which include the Lake Creek

gage indicate that the majority of flow below the confluence of the North and South forks is produced by the South Fork basin. Our concern is for the flashiness of precipitation response within the lower South Fork basin, and for the large discharges produced from the lower basin. Given the developed nature of the lower South Fork basin, and the developed nature of the Little Butte system below the confluence of the North and South Forks, more attention is warranted with respect to microclimatic complexities in this portion of Jackson County.

**A DIGITAL LANDSLIDE INVENTORY FOR THE COWLITZ COUNTY URBAN CORRIDOR.** Mark Scott, Ocean Park, Washington 98640.

The purpose of this presentation is to demonstrate how geologic data can be effectively disseminated to and utilized by the lay-public, using a combination of GIS and internet map applications. The example used is the Digital Landslide Inventory for the Cowlitz County Urban Corridor, located within the State of Washington. A landslide study by Karl W. Wegmann in 2006 developed a digital, map-based, geographic information systems (GIS) inventory and database for identified deep-seated and shallow landslides within the Cowlitz County urban corridor. The study also delineated features such as escarpments, and shallow and deep-seated landslides. Geospatial data and a small-scale county maps were produced and made accessible to the public on the Internet. Although the inventory and related documents are publicly available, use and interpretation of the information has been challenging for the public. This presentation demonstrates exactly how static data can be better integrated into planning and lot development procedures by placing them into a web-based GIS application that also serves other important geographic, planning and cadastral information to the user. The public is more likely to use and understand complicated geologic information if it is presented in a familiar geographic context and enhanced by being packaged with essential property information.

**PRELIMINARY DATA FROM THE OLIGO-MIOCENE MENAGERIE WILDERNESS FLORA OF THE WESTERN CASCADES.** Jeffrey A. Myers, Department of Earth Science, Western Oregon University, Monmouth, Oregon 97361, Robert Rosé, Sweet Home, Oregon.

The previously unnamed Oligocene-Miocene Menagerie Wilderness paleofloras occurs in fluviolacustrine beds of the Little Butte Volcanics of western Oregon, east of the town of Sweet Home, and has been collected by Robert Rosé of Sweet Home. Because the Menagerie Wilderness flora is directly associated with datable volcanics, it documents the development of early Neogene plant communities in the west. Few other paleofloras of this age are

known. The assemblage contains diverse moist subtropical/warm temperate taxa including: *Acer*, *Alnus*, *Betula*, *Cercidiphyllum*, *Exbucklandia*, *Hydrangia*, Lauraceae, *Platanus exaspera*, *Quercus "consimilis"*, *Sequoia/Metasequoia*, *Trochodendron*, Ulmaceae, several ferns, and many other unidentified taxa. The mix of deciduous and evergreen dicots, many with closest modern relatives in warm temperate Southeast Asia, is typical of middle Tertiary Mixed Mesophytic Forest communities of the Pacific Northwest. However, conifers (Taxodiaceae and Pinaceae) and maples are poorly represented, although they dominate Middle Miocene assemblages of the region. The flora also appears to be far less diverse than the middle Miocene Collawash and Mollala floras from the Western Cascades southeast of Portland. The flora more closely resembles the early Oligocene Rujada and Willamette floras of the Western Cascades near Eugene, with which it shares a number of species, and which are also dominated by unlobed oaks, birches, and sycamores. This suggests that the Menagerie Wilderness flora predates tremendous burst of speciation that led to diverse Mixed Mesophytic Forest of the middle Miocene.

**GEOMORPHIC ANALYSIS OF THE LUCKIAMUTE WATERSHED, CENTRAL COAST RANGE, OREGON: INTEGRATING APPLIED WATERSHED SCIENCE WITH UNDERGRADUATE RESEARCH AND COMMUNITY OUTREACH.** Stephen B. Taylor, Earth and Physical Sciences Department, Western Oregon University, Monmouth, Oregon 97361.

Mountainous watersheds form an important setting for local ecological interactions and water resource development. As such, the understanding of hydrogeomorphic variables is critical for designing sustainable conservation plans. This study involves geomorphic analysis of the Luckiamute River basin ( $A_d = 815 \text{ km}^2$ ) in the central Oregon Coast Range. The Luckiamute is being used as a model watershed for undergraduate research and service learning at Western Oregon University. Long-term studies include fluvial geomorphology, environmental geology, conservation biology, and hydrology. This research model is placed in the context of community outreach via collaboration with the local watershed council. Bedrock map units in the Luckiamute are grouped into four lithospatial domains, these include the Spencer-Valley Fill (East), the Siletz River Volcanics (S), the Yamhill-Intrusive (N-NW), and the Tyee (W-SW). Fourth-order subbasins were selected from each bedrock domain for subsequent terrain analysis. Averaged morphometric parameters for the above bedrock domains include, respectively: (1) hypsometric integral (0.30, 0.40, 0.48, 0.29), (2) basin ruggedness (0.2, 1.2, 1.1, 1.6), (3) total drainage density (1.4, 2.3, 2.0,  $2.4 \text{ km}^{-1}$ ), (4) Shreve magnitude (14, 49, 31, 55), (5) channel gradients (0.04, 0.13, 0.18, 0.14), (6) stream power index (69, 1909, 2534, 1133), (7) hillslope gradients (3.2, 12.7, 11.9, and 14.5 degrees), and (8) hillslope profile curvature (0.004, 0.008, 0.007,

0.011 m/deg). The Tyee Domain is more finely dissected by low-order stream channels, associated with more rugged hillslopes, and is most prone to slope failure. These data suggest that bedrock lithology exerts a strong control on hillslope morphology, style of hillslope process, and sediment-transport efficiency.

ASSESSMENT OF RECENT REMEDIATION EFFORTS TO NEUTRALIZE ACID MINE DRAINAGE AT THE BLUE LEDGE MINE, SISKIYOU COUNTY, CALIFORNIA. 1Marco A. Wikstrom, 1Jara A. Johnson, 1William S. Elliott, Jr. 2Peter Jones, 1Department of Geology, Southern Oregon University, Ashland, OR 97520, 2North Medford High School, Medford, OR 97504.

The Blue Ledge Mine exploited a polymetallic massive sulfide deposit, producing over 60,000 tons of waste rock, most of which remains at the mine site. Geochemical data collected bi-weekly from effluent in the adits and the surface waters around the mine have established a seasonal trend in the metal concentrations, pH, and total dissolved solids. During the dry months, there is an increase in acidity of standing pools of water in the adits with the lowest pH measured at 1.58. There is also an increase in the dissolved concentrations of As, Cd, Cu, Fe, Pb, and Zn in run-off and within standing pools in the adits. Precipitation events cause AMD to be flushed into nearby Joe Creek, lowering the pH and inducing toxic metal loading. In September 2006, the Environmental Protection Agency and U. S. Forest Service performed remediation efforts at the site. The waste rock piles were terraced and material moved to create a settling pond and direct AMD into a run-off channel. Rip-rap in the run-off channel consists of marble boulders that are already coated with iron precipitates. Unfortunately, monitoring of water chemistry of AMD from the Blue Ledge Mine indicates minimal impact of the remediation. This may be due to the overwhelming release of AMD from the disturbance of the waste rock during remediation and/or the size of the rip-rap. Future monitoring of the geochemistry of AMD from the site will enable us to evaluate the stabilization of the system and the development of future remediation designs.

USE OF LIDAR DATA IN THE CASCADE-SISKIYOU NATIONAL MONUMENT, SOUTHERN OREGON: DETECTION OF SLOPE FAILURES IN VOLCANIC ROCKS. Jad A. D'Allura, Southern Oregon University, Ashland, Oregon 97520.

Slope failures in the heavily vegetated Cascade-Siskiyou National Monument of southern Oregon are clearly revealed by use of LiDAR (Light Ranging and Detection) data. The Monument is largely underlain by Oligocene volcanic flows and volcanoclastic units of the Western Cascades Volcanic Series. The 1m resolution LiDAR data accurately reflect X, Y, and Z (where Z=elevation) "bare earth"

geographic coordinates showing details that include not only typical morphology of debris flows, slumps, and earth flows but also huge displaced blocks of resistant volcanic flow material, most of which are hidden by thick tree or bush cover. These blocks, by virtue of their size, might be misinterpreted as outcrop. Field studies of selected areas verify the presence of slope failures indicated by LiDAR data. In addition, those studies reveal that failure commonly occurs at the base of resistant rock units (such as flows, dikes, sills, or well-indurated volcanoclastic units) underlain by pyroclastic or epiclastic material weakened by alteration to smectite clays. LiDAR analysis of earth material reveal areas of instability, small ponds of water, and location of springs as well as allowing first approximation of underlying bedrock composition (resistant lava flow units; volcanoclastic sequences; dikes) based on resistance, morphology, and continuity. Such data is extremely valuable for reconnaissance, detailed mapping, and verification purposes.

PALEOSEISMIC ANALYSIS OF THE EGIIN DAVAA FAULT, HANGAY MOUNTAINS, MONGOLIA. 1Juliana Williams, 2Emily Parker, 3A. Bayasgalan, 4Karl Wegmann, 1Bob Carson, 5Richard Walker. 1Dept. of Geology, Whitman College, Walla Walla, WA 99362, 2Dept. of Geology, Colorado College, Colorado Springs, CO 80903, 3School of Geology and Petroleum Engineering, Mongolian University of Science and Technology, Ulanbaatar, Mongolia, 4Dept. of Earth and Environmental Sciences, Lehigh University, Bethlehem, PA 18015, 5Dept. of Earth Sciences, Oxford University, Oxford, UK.

The Hangay Dome, a zone of upwarping and moderate extension in central Mongolia, is bordered by the Baikal Rift zone to the north, a system of left-lateral strike-slip faults to the south, and a system of right-lateral strike-slip faults to the west. The Egiin Davaa fault in the Hangay Mountains is a northeast-striking normal fault, with an upthrown southeastern block, typical of faults in the southern part of the Hangay Dome. The fault, at least 80 km long, consists of three strands which are progressively younger to the southwest. Only the southwesternmost strand ruptured in the last earthquake, producing a scarp with five segments. Of these segments, the dominant three strike at N61°E, and the two minor segments strike between N15°E and N20°E. The N61°E segments experienced almost entirely normal motion, whereas the two minor segments experienced oblique motion. The fault is associated with Quaternary basalts, including a complex of four small cinder cones located at one of the bends in the fault. The recent scarp crosses alluvial fans along most of its length, but where it cuts bedrock the estimated dip is 43° NW. The average displacement along the 42-km-long recent scarp is approximately 3 meters, with a range of 1 to 5 meters. Although previous researchers proposed that this scarp was produced by an earthquake 300 to 500 years ago, radiocarbon samples collected from two trenches across

the scarp suggest that the last earthquake occurred between 4355 and 6840 radiocarbon years ago. Based on comparison with the older expression of the fault to the northeast, where glacial drift is offset by approximately 8 to 10 meters, the recurrence interval is estimated to be approximately 2 to 3 meters of displacement about every 5000 years.

PETROLOGY OF ASH-FLOW TUFFS ON THE EAST FLANK OF NEWBERRY VOLCANO, CENTRAL OREGON: FRAMEWORK FOR UNDERSTANDING THE EVOLUTION OF A SILICIC MAGMA SYSTEM. Templeton, Jeffrey H., Dept. of Earth and Physical Sciences, Western Oregon University, Monmouth, OR 97361.

Ash-flow tuffs provide an essential link in understanding the evolution of silicic magma systems, such as at Newberry Volcano in central Oregon. Whole-rock major and trace element data were obtained from four ash-flow tuff units on the east flank of Newberry, including the tuff of Tepee Draw (Qtp), dacitic tuff (Qdt), tuff of lower east flank (QTae), and tuff west of China Hat (Qaf<sub>3</sub>) (designations after MacLeod and others, 1995). Pumices and bulk-tuff samples from these units range from andesite to rhyolite (62.3-72.6 wt. % SiO<sub>2</sub>; normalized 100% volatile-free), and major oxides vary systematically with increasing SiO<sub>2</sub>. On REE diagrams, the samples display parallel trends, prominent Eu anomalies, LREE enrichment, and flat to slightly concave upward HREEs. Overall, Qtp, Qdt, and Qaf<sub>3</sub> are compositionally and petrographically similar. QTae differs in thin section and has consistently lower Ba, Rb, Th, Nb, and Ta contents. This, together with its older age date (2.75 Ma), indicates that QTae is not related to Newberry. Qtp (0.3-0.5 Ma) is the most widespread unit on the east flank and represents the earliest caldera-forming eruption from Newberry. Qaf<sub>3</sub> is correlated with Qtp, based on comparison of rhyolite pumices in each unit. Qdt is younger than Qtp, owing to the occurrence of Qdt at higher elevations in the same drainage systems. Though Qtp and Qdt differ in lithics, detailed mineralogy, and select trace element contents, they are petrogenetically related. As such, Qtp and Qdt represent eruptions from the same evolving magma system at discrete times in its progression.

ENVIRONMENTAL STUDIES IN THE LUCKIAMUTE WATERSHED, CENTRAL COAST RANGE, OREGON: INTEGRATING APPLIED WATERSHED SCIENCE WITH UNDERGRADUATE RESEARCH AND COMMUNITY OUTREACH. 1Stephen B. Taylor, 2Bryan E. Dutton, 1,2Katherine Noll, and 3Michael Cairns, 1Earth and Physical Sciences Department, Western Oregon University, Monmouth, OR 97361, 2Department of Biology, Western Oregon University, Monmouth, OR 97361, 3Luckiamute Watershed Council, c/o Western Oregon University, Monmouth, OR 97361.

Mountainous watersheds are fundamental landscape elements that form an important setting for local ecological interactions, human occupation, and water resource development. They also represent the foundational components for mass sediment transfer from continental regions to ocean basins. As such, the understanding of hydrogeomorphic variables is critical for designing sustainable water resource and habitat conservation plans. From the perspective of undergraduate training in the Natural Sciences, watersheds represent the ideal natural laboratory for student application of quantitative techniques to multivariate systems with interdependent process-response mechanisms. The proposed field trip involves a 2.5-hour road tour of the Luckiamute River basin in the central Oregon Coast Range (Figure 1). The Luckiamute is in close proximity to the Western Oregon University (WOU) campus and is being used as a model watershed to integrate select components of applied research into a sequence of surface-process courses at WOU. Faculty and undergraduates are actively engaged with long-term studies in fluvial geomorphology, environmental geology, conservation biology, and hydrology. From a training perspective, this watershed-based curriculum: (1) incorporates research into the undergraduate science program at WOU, (2) engages students in socially-relevant watershed-based science, (3) improves quantitative skills via coursework, lab exercises and applied research, (4) develops problem-solving and scientific skills within a regional watershed setting, and (5) fosters an interconnected perspective of watershed processes across disciplines. The research model is placed in the context of community outreach via collaboration with the local watershed council. The proposed field trip, in conjunction with the 2007 annual meeting of the Oregon Academy of Science, will provide an overview of the regional geology and geomorphology of a central Coast Range watershed. It will also present a summary of long-term research and community service initiatives in the Luckiamute basin.

EARLY CRETACEOUS (APTIAN) ATMOSPHERIC CO<sub>2</sub> SPIKE  
INFERRED FROM STOMATAL INDEX OF FOSSIL *GINKGO* LEAVES.  
Gregory J. Retallack, Department of Geological Sciences, University of  
Oregon, Eugene, OR 97403.

Rapidly increasing atmospheric CO<sub>2</sub> levels and global warming are not restricted to the past century. At least 18 spikes well above pre-industrial CO<sub>2</sub> levels of 280 ppmV over the past 300 million years resulted from bolide impacts, flood volcanism or methane outbursts. This study examines a geologically rapid Early Cretaceous CO<sub>2</sub> spike using the inverse relationship between stomatal index (percent stomates/epidermal cells) and atmospheric CO<sub>2</sub> (ppmV) in living *Ginkgo biloba* (transfer function of Wynn, 2003, *New Phytologist* 157:391). Fossil cuticles of "*Ginkgoites*" *waarensis* (Port Campbell in Table 1) and "*Ginkgoites*" *australis* (other localities in Table 1)

were examined in cuticle preparations from the Melbourne Museum, Australia (courtesy of David Pickering and Thomas Rich). “*Ginkgoites*” *waarensis* is from the late Cenomanian Waare Formation (Sherbrook Group), but “*Ginkgoites*” *australis* is from the Aptian *Cyclosporites hughesi* pollen zone of the Wonthaggi Formation (Strzelecki Group). Geological ages below for “*Ginkgoites*” *australis* localities are from linear interpolation between the following tie points: correlation of organic-carbon isotopic minimum at San Remo with the 130.6 Ma marine *Faraoni* event and the minimum at Tree Trunk Point with the 124.2 Ma marine *Selli* event (Ferguson *et al.*, 1999, *Geological Society of America Special Paper* 332:59); and fission track ages of 128±8 Ma at Kilcunda, and 118±6-115±5 Ma at Koonwarra by N.M. Lindsay (1982, Melbourne University M.Sc thesis). Rise in atmospheric CO<sub>2</sub> observed at Eagles Nest-Tree Trunk Point coincides with a rise from 4.3±1.1 ‰ to 8.8±0.9 ‰ in δ<sup>18</sup>O<sub>SMOW</sub> of carbonate, which may correspond to mean annual temperature rise from -4±1.3°C to 1±1.0°C (Ferguson *et al.*, 1999, *op.cit.*). This 5°C temperature and 3300 ppmV CO<sub>2</sub> spike coincides with appearance of tree ferns (*Millerocaulis dunlopi* at Eagles Nest), dinosaurs (*Quantassaurus inexpectans* at Flat Rocks, theropod at Eagles Nest), monotremes (*Teinolophus trusleri* at Flat Rocks), placentals (*Ausktribosphenus nyctos*, *Bishops whitmorei* at Flat Rocks) and perhaps birds and angiosperms (un-named at Koonwarra). Frigid temperatures preceding the *Selli* event are indicated by clastic dikes (ice wedges), hummocks (thufur), coal-mantled stone-rolls (aapamires) and contorted bedding (permafrost-melt) in paleosols below Flat Rocks, at Kilcunda and in Wonthaggi coal mines, as expected for localities at paleolatitude ca 75°S. Dinosaurs (*Serendipaceratops arthurclarki*) and large temnospondyls (*Koolasuchus cleelandi*) near Punch Bowl lived under less frigid conditions of -1±1.3°C, judging from carbonate δ<sup>18</sup>O<sub>SMOW</sub> of 7.3±1.1 ‰ at San Remo (Ferguson *et al.*, 1999, *op.cit.*).

Table 1. Stomatal index of Cretaceous *Ginkgo* leaves from Victoria, Australia

Locality	Age (Ma)	Cell Count	Stomate Count	Leaf Count	Stomatal Index (± 1σ)	CO <sub>2</sub> (ppmV ± 1σ)
Port Campbell	≈ 94	940	71	1	7.21 ± 0.28	615 ± 112
Eagles Nest	123.5	3884	223	5	5.42 ± 0.18	3697 ± 1062
Trafalgar	125.0	850	78	1	8.31 ± 0.18	396 ± 20
Point Lydia	125.3	8318	843	5	9.15 ± 0.31	340 ± 11
Woolamai	130.0	1065	105	3	9.01 ± 0.07	349 ± 5

MECHANISMS AND PROCESSES OF SUSPENDED SEDIMENT TRANSPORT AND DEPOSITION IN HIGH ARCTIC PROGLACIAL LAKE LINNÉVATNET, SVALBARD, NORWAY. Benjamin B. Schupack<sup>1</sup>, Robert J. Carson<sup>1</sup>, Michael J. Retelle<sup>2</sup>, Al Werner<sup>3</sup> <sup>1</sup>Department of Geology, Whitman College, Walla Walla, WA 99362, <sup>2</sup>Department of Geology, Bates College, Lewiston, ME 04240, <sup>3</sup>Department of Earth and Environment, Mt Holyoke College, South Hadley, MA 01075.

High Arctic sedimentary processes in a distal, proglacial lake (Linnévatnet, Spitsbergen, Svalbard) were studied in July and August of 2006 to understand links between climatic controls and suspended sediment entering the lake. Linnévatnet, one of the largest lakes in Svalbard (4.7 km long, 35 m deep), contains sediments dating to the late Pleistocene. Previous studies have attempted to quantify annual sedimentation rates and calibrate the lake's lamination, however much remains unknown about the suspended sediment entering the lake from the south, and the unique seasonal mechanisms and processes of sediment deposition into the basin. Depth, temperature and transmissivity (turbidity) were recorded in water column profiles by a Seacat SBE 19 profiler. Vertical casts were lowered into Linnévatnet at static mooring sites over a three-week period. A local automated meteorological station recorded air temperature, wind direction and velocity, precipitation, and solar radiation. Additionally, an automated camera recorded images of the lake inlet to document changes in the inflow stream and the occurrence of surface sediment plumes. Preliminary results suggest that Linnévatnet displays density currents including overflows, interflows, and underflows. We observed sediment plumes with fluctuating breadths and depths, which may be constrained by meteorological conditions and local morphologies. The water column profiles displayed a relationship between inlet water temperatures and suspended sediment concentrations, however wind and wave action also played an integral role in sediment transport patterns. No density current stratifications were observed in any water column profiles during strong northerly winds.

FACING A GRAVE ISSUE: ASSESSMENT OF THE MOUNT CALVARY CEMETERY SHOPYARD LANDSLIDE, PORTLAND, OREGON, JANUARY 13, 2006. Adam Reese, Chris Rhea, Brian Block, Scott Burns, Department of Geology, Portland State University, Portland, OR 97201

On Friday, January 13, 2006, a large landslide event took place on the north facing slope of the Mount Calvary Cemetery near the facility maintenance shop yard. This landslide had an average scarp height of 18feet, a scarp width of 225 feet, and a total length of 680 feet. The approximate volume of material displaced by this landslide was calculated to be 18,302 cubic yards. Common to the West Hills of Portland, this landslide is classified as an earthflow. While onsite, faster moving liquefied soils characteristic of debris flows were

observed. Four major elements combined to allow this earthflow to occur including steep slopes associated with the position on the crest of the Tualatin Mountains, geologic factors associated with loess soils, climatic factors associated with rainfall volume and intensity of late December 2005 to early January 2006, and human factors associated with placing excavated fill on the upper slopes near the shop yard. The primary contributing factor seems to have been the increased water in the soil system, although the surcharging of the slope with placed fill also had a significant contribution. Landslides in the West hills constitute the majority of slides occurring in the Portland Metropolitan Area (Burns et al., 1998). Of the 705 landslides documented in this region during the winter 1996 season, 374 occurred in the West Hills (Burns et al., 1998). Of major concern regarding landslides in the West Hills, are the hazards to people and property located in their paths. Fortunately, no homes or structures were directly impacted by the landslide. Mitigation included tarps covering the scarp and upper slide, revegetation of the whole slide with grasses, and conifer trees on the lower ¾'s of the slide. The toe is buttressed by woody vegetation and should remain stable.

## **HISTORY, PHILOSOPHY & SOCIAL STUDY OF SCIENCE (HPSSS)**

### **Section Chairs:**

**Dave Boersema**  
*Pacific University*

**David DeMoss**  
*Pacific University*

READERS VS. BREEDERS? Dave Boersema, Dept of Philosophy, Pacific University, Forest Grove, Oregon, 97116.

Peter J. Richarson and Robert, in their book, *Not By Genes Alone*, argue that culture is and has been essential to human adaptation; indeed, it is as much a part of human biology as bipedal locomotion. This feature of culture, they claim, is a striking anomaly in the natural world and one that sets us apart from other species. In this paper, I question this last claim and do so via an investigation of the role of cooperation within an evolutionary biological perspective.

THE FORCES OF CULTURAL EVOLUTION. David DeMoss, Department of Philosophy, Pacific University, Forest Grove, OR 97116.

Culture is socially acquired information that can affect behavior. Culture evolves. Peter J. Richerson and Robert Boyd defend this thesis in *Not By Genes Alone* (Chicago 2005). They claim that “[h]uman populations carry a pool of culturally acquired information and in order to explain why particular cultures are as they are, we need to keep track of the processes that cause some cultural variants [i.e., ideas, skills, beliefs, attitudes, values] to spread and persist while others disappear” (59). These processes are the forces of cultural evolution: natural selection, biased transmission, guided variation, and others. My essay will sort out what these various forces are and how they are supposed to function, while raising a few critical issues about the clarity and explanatory power of Richerson and Boyd’s account of them.

WHAT IS “CULTURE” IN POPULATION THINKING? Jeff Gauthier, Department of Philosophy, University of Portland, Portland OR 97203.

In his critique of models of cultural evolution, Tim Ingold charged that, at least in their current state, such theories “do not so much advance our understanding of evolutionary processes as provide an excuse for the exercise of mathematical ingenuity.”<sup>1</sup> In *Not By Genes Alone: How Culture Transformed Human Evolution*, Peter Richerson and Robert Boyd set aside the mathematics and defend the view that human culture arose as an evolutionary adaptation that can itself adapt to the environment in ways that mimic (but are distinct from) genetic evolution. Richerson and Boyd argue that “population thinking” reveals a conformist bias and a success bias that effectively explain why certain adaptive forms of culture win out over others, and ultimately account for “variation in language, social customs, moral systems, practical skills and devices, and art.”<sup>2</sup> I argue that while Richerson and Boyd’s argument is interesting and suggestive, it fails to make a decisive case for an evolutionary explanation of culture. Specifically, the examples that Boyd and Richerson offer are insufficient to establish the broad claims that they make for the explanatory value of the model.

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<sup>1</sup> Tim Ingold, *Evolution and Social Life* (New York: Cambridge University Press, 1986), p. 364.

<sup>2</sup> Peter J. Richerson and Robert Boyd, *Not by Genes Alone: How Culture Transformed Human Evolution* (Chicago: University of Chicago Press, 2005).

NOT BY GENETICALLY BASED SOCIAL INSTINCTS: A CRITIQUE OF RICHARSON'S AND BOYD'S CO-EVOLUTIONARY ACCOUNT OF THE ORIGINS OF HUMAN ULTRA-SOCIALITY. Bill Rottschaefter, Dept of Philosophy, Lewis and Clark College, Portland, Oregon, 97219.

In their recent volume *Not by Genes Alone: How Culture Transformed Evolution*, Peter J. Richarson and Robert Boyd assert that culture is crucial for understanding human behavior and that culture is a part of biology. Specifically, they maintain that cultural factors that explain some of our behaviors have selected for parts of our genetic makeup. In particular, they examine the complex human trait of ultra-sociality -- our abilities to cooperate within tribal sized groups -- a trait that distinguishes us from our nearest primate relatives. They hypothesize that this trait is constituted by a set of genetically based capacities, tribal social instincts, which have coevolved with the cultural traditions that maintain and select for them. In this respect, they argue that our capacity for ultra-sociality resembles our linguistic capacity. In this paper, I explore Richerson's and Boyd's suggestion that our ultra-social capacities are like linguistic capacities, which have co-evolved with our socially transmitted social practices. I argue that the selective environments for human social capacities differ from that of our linguistic capacities in features that are important to their hypothesized status as an innately specified set of capacities, thus making it unlikely that our capacity for ultra-sociality is constituted by tribal social instincts, as Richerson and Boyd maintain. Positively, I suggest that our ultra-sociality is plausibly considered to be the result of a hybrid social skills mechanism of genetically structured, fine-tuned perceptual abilities supported by both down stream cumulative epistemic engineering of our social niche and developmental plasticity.

## **MATHEMATICS & COMPUTER SCIENCE**

### **Section Chair:**

**Timothy Thompson**  
*Oregon Institute of Technology*

IDENTIFYING LIE SUBALGEBRAS USING ROOT DIAGRAMS. Aaron Wangberg, Tevian Dray, Department of Mathematics, Oregon State University, Corvallis, OR 97331.

Although Lie algebras are usually classified using Dynkin diagrams, it is their root and weight diagrams which are most useful in applications to quantum mechanics when describing the properties of

fundamental particles. We show two methods that use root and weight diagrams to visually identify a given algebra's subalgebras. In particular, we apply these methods to algebras whose root and weight diagrams have dimension greater than 3, including the exceptional Lie algebras  $F_4$  and  $E_6$ .

STUDYING TRIANGULAR BILLIARDS USING TOPOLOGY AND ALGEBRA. Jason Schmurr, Department of Mathematics, Oregon State University, Corvallis, OR 97331.

Consider a polygonal region and a single particle moving in a straight-line trajectory within it. Suppose that when the particle collides with a wall of the region it reflects off the wall, with the angle of incidence equal to the angle of reflection. This seemingly simple model (sometimes called polygonal billiards) quickly leads to difficult questions, such as: what are the periodic trajectories in this system? If a trajectory is not periodic, will the particle eventually visit every open subset of the polygon? There is a highly successful and visual technique for studying such questions which involves "gluing" several copies of the initial polygon together to form a topological surface. Such surfaces often have high degrees of symmetry. It is of interest to know how different billiards surfaces are related: can different billiards tables lead to the same surface? Which of these surfaces are simply composed of several copies of other billiards surfaces? How do the symmetries of different billiards surfaces compare? The presentation will consist of a brief introduction to this topic and a presentation of preliminary research results regarding triangular billiards tables.

CAYLEY-SUDOKU TABLES. Keith Schloeman, Michael B. Ward, Jennifer Carmichael, Western Oregon University, Monmouth, OR 97361.

Cayley tables (group operation tables) form Latin squares. This is one of the conditions of the popular Sudoku puzzle. Every Cayley table can be arranged in a specific way to form at least one Sudoku table. Many group tables can be arranged into multiple distinct Sudoku tables. Specific examples provide insight into general methods of creating such tables. Other examples cannot yet be explained by a general method.

DISCOURSE IN THE CLASSROOM: THE EFFECTS OF PARTICIPATION IN THE OREGON MATHEMATICS LEADERSHIP INSTITUTE (OMLI) ON HIGHER EDUCATION FACULTY. Lindsay Dawson, Hallie Whyte, Julie Fredericks, Martha VanCleave, Mathematics Department, Linfield College, McMinnville, OR 97128.

The Oregon Mathematics Leadership Institute (OMLI) is a five-year NSF Math Science Partnership (MSP) grant project bringing together

higher-education faculty from across Oregon to instruct K-12 mathematics teachers. The focus of the OMLI project is on improving student discourse in mathematics. Our research focuses on the effect of participation in this project on student discourse in “regular” classrooms of the instructors. The instructors of the Discrete Mathematics summer institute course and their teaching during both the summer and the academic year are the subjects of our investigation. The OMLI Professional Development Observation Protocol was used by the researchers to document the quality and quantity of discourse in the classrooms. This presentation will provide a description of the OMLI PD Observation Protocol and discuss initial observations from the analysis of data gathered during observations of the summer 2006 OMLI Discrete Math team.

**THE REAL PROJECTIVE PLANE REVISITED: THIS TIME, THE LINES ARE HYPERBOLAS.** Derek Garton, Department of Mathematics and Statistics, Portland State University, PO Box 751, Portland, OR 97207-0751.

The use of planar ternary rings (PTRs) to coordinatize projective planes is a classic example of using algebraic objects as tools to study geometry. A slight complication in the use of these particular objects arises from the fact that there exist algebraically distinct PTRs that coordinatize isomorphic projective planes (that is, the projective planes they coordinatize are for all intents and purposes identical). In fact, the question of how to determine whether or not two PTRs coordinatize isomorphic projective planes remained unanswered until very recently. In 2004, however, A. Grari resolved the problem by using the PTR operations of comparison, inversion, and duality to formulate a precise algebraic condition that determines whether or not two PTRs coordinatize isomorphic projective planes. Even more recently, the discovery of a new PTR operation called linear inversion opened the way for a new proof of Grari’s result, one which gives further insight into the connection between PTRs and projective planes. Remarkably, the application of linear inversion leads to a new and interesting description of the familiar real projective plane: one in which most (but not all) of the straight lines are the union of a hyperbola and an isolated point.

## **PHYSICS**

### **Section Chair:**

**Scott Prahl**  
*St. Vincent Medical Center*

## PHYSICS – ORAL PAPERS

NONLOCAL OPTICAL EFFECTS ON THE FLUORESCENCE AND DECAY RATES FOR ADMOLECULES AT A METALLIC NANOPARTICLE. 1 Jason Vielma, 2 P.T. Leung, 1. Department of Physics, Portland, OR 97207-0751

A phenomenological model is implemented to study the decay rates of fluorescing molecules in the vicinity of a metallic nanoparticle, wherein the nonlocal optical response of the particle is accounted for via the hydrodynamic model for the description of the free electrons in the metal. These nonlocal effects are examined for each of the radiative rate and the nonradiative rate of the admolecule, respectively. In addition, the overall fluorescence rate which includes the enhancement ratio for the driving field intensity is also studied. It is found that for particles of very small sizes ( $< 10$  nm), the nonlocal effects in general lead to significantly greater fluorescence rates and smaller nonradiative decay rates for the admolecules, with the effects on radiative rates depending crucially on the orientation of the molecules. Furthermore, the effects are mostly noticeable for molecules close to the metal particle and in processes where higher multipolar interactions are significant such as those in nonradiative decay processes. Above all, these nonlocal effects can still be observable in the presence of large surface damping imposed on the metallic electrons due to the ultra small sizes of these nanoparticles. The relevance of these effects to some of the latest experiments is discussed.

ELECTRONIC AND MATERIALS CHARACTERIZATION OF  $\text{CuGaSe}_2$  SOLAR CELLS. Todd W. Curtis, J. Jedediah Rembold, Jennifer T. Heath, Department of Physics, Linfield College, McMinnville, OR 97128.

This study investigates the connection between electronic and physical properties of thin film solar cells with  $\text{CuGaSe}_2$  (CGS) active layers. These solar cells are particularly interesting because CGS films could provide a needed wide band gap layer in next generation tandem solar devices, if their electronic properties were better understood and improved. This study focuses on two sets of samples grown in different labs using slightly different growth procedures. Our samples have the structure  $\text{ZnO/CdS/CGS/Mo}$ , with an  $n^+$ -p junction created by the CdS/CGS interface. The CGS layers are grown using elemental evaporation. Drive level capacitance profiling and capacitance-voltage profiling allow us to determine the number of electronic defects in the bulk CGS layer and near the CdS/CGS interface. Lower bulk defect densities correlate with higher short circuit currents and generally correspond to higher solar cell efficiencies. Time of flight-secondary ion mass spectroscopy (TOF-SIMS) was used to analyze the chemistry of the films. The films were intentionally grown Cu-poor, with Cu/Ga ratios ranging from 0.56 to 0.9. This appears to improve the electronic properties of the completed device, although the mechanism is not currently understood. The films also include Na,

from the glass substrate, which is known to play an important role in film growth and interface formation. We found significantly different Na profiles in the samples from the two different labs. The Cu/Ga ratios and Na content were both spatially non-uniform, and appear to be correlated. The sample with the poorest electronic properties also exhibited the most non-uniformity.

SPECTRAL ANALYSIS OF THE OXIDATION OF WHOLE BLOOD BY ACETIC ACID. Amanda Dayton, Kirstin Engelking, Scott Prah. Dept. of Biomedical Engineering, Oregon Health & Science University, Portland, OR 97225.

Hemoglobin is composed of four globular proteins each attached to a heme group, a porphyrin ring with iron covalently bound in the center. Hemoglobin is the major oxygen carrying molecule in mammals. In oxy-hemoglobin the iron in the porphyrin ring is  $Fe^{2+}$  and can bind to oxygen, but in met-hemoglobin the iron is oxidized to  $Fe^{3+}$  and is unable to bind oxygen. Both oxidation to met-hemoglobin (and reduction of met-hemoglobin (by met-hemoglobin reductase) occur in healthy erythrocytes. It is proposed that glacial acetic acid oxidizes hemoglobin to produce met-hemoglobin, acetate ion, and  $H^+$ . In concentrations of 0, 0.1, 1, and 10% (v/v) glacial acetic acid (GAA) was added to whole bovine blood. Samples were kept at room temperature and pH was of each solution was recorded (pH: whole blood-7.2, 0.1% GAA-4.4, 1% GAA-4.1, 10% GAA-3.7). The conversion was monitored using spectrometry at 3.5 hours. Using 1mm optical fibers and an 8 inch integrating sphere, reflectance and transmission measurements were taken of 150 $\mu$ m thick samples between 425 and 700nm. The absorption and scattering coefficients were determined. The absorption coefficients were used to determine quantities of oxy-, deoxy, and met-hemoglobin in each experiment. These results will be presented.

USING REFLECTANCE MODE CONFOCAL MICROSCOPE TO DETERMINE THE ABSORBER CONCENTRATION IN THE TISSUE-LIKE PHANTOM. Yongji Fu, Ravikant Samatham, Kirstin Engelking, Amanda Dayton, Steven L. Jacques. Dept. of Biomedical Engineering, Oregon Health & Science University, Portland, OR 97225.

Drug uptake is very important for clinical practice, such as photodynamic therapy (PDT). Uptake of photosensitizer will be a key factor for the PDT treatment design and will affect the PDT results directly. Therefore monitoring photosensitizer uptake during the PDT becomes more interested for the researchers. A novel scattering and absorption coefficient measurement method based on reflectance mode confocal laser scanning microscope is presented. A light diffusion model was developed for reflectance mode confocal microscope. Phantoms with scatterers (polystyrene spheres) and an absorber (Toluidine Blue O, a photosensitizer for killing bacteria in

photodynamic therapy) were made to validate this method. The confocal signal of reflected optical intensity decreases as an exponentially  $S(z) = \rho e^{-\mu z} + B(z)$ . Where  $S(z)$  is the signal in the depth of  $z$  as normalized by oil/glass interface,  $\rho$  is the normalized reflectivity,  $\mu$  is the attenuation coefficient, and  $B(z)$  is background noise signal. The attenuation coefficient  $\mu$  can be expressed as,  $\mu(g, \mu_s, \mu_a) = (\mu_s a(g) + \mu_a)2G$ . Using the measurement with only scatterers and the measurement with scatterers and absorber, the absorption coefficient of the absorber can be determined. The absorption coefficient prediction was consistent for scattering-only cases. In scattering-dominated cases and absorber-dominated cases, the prediction error was less than 12%. With the absorption coefficient, the absorber concentration can be determined with known extinction coefficient.

NONLOCAL OPTICAL EFFECTS ON THE SURFACE ENHANCED RAMAN SCATTERING (SERS) FROM METALLIC NANOSHELLS. Zach Goude, Peter Leung, Department of Physics, Portland State University, P.O. Box 751, Portland, OR 97207.

A phenomenological model is implemented to study the SERS from a molecule in the vicinity of a metallic nanoparticle, wherein the nonlocal optical response of the particle is accounted for via the hydrodynamic model for the description of the free electrons in the metal. These nonlocal effects are studied as functions of the size and thickness of the nanoshell; of the scattering frequency; and of the molecule-nanoshell distance. It is found that the SERS enhancement ratio is in general lowered due to these effects, especially for shells of ultra small sizes ( $< 10$  nm) and/or thickness ( $\sim 1$  nm), and for molecules at very close distances from the nanoshell. The relevance of these effects to some of the latest experiments is discussed.

VERIFICATION OF KEPLER'S THIRD LAW BY OBSERVING THE MOTIONS OF THE GALILEAN MOONS OF JUPITER. Becca Johnson, Jed Rembold, Todd Curtis, Donald Schnitzler. Physics Department, Linfield College, McMinnville, OR 97128.

Verification of Kepler's Third law by measuring the orbital period and radius of each of the four inner satellites of Jupiter is presented here as an advanced laboratory experiment for physics undergraduates. This experiment is appropriate since Kepler's relationship is core in the mechanics course and key to the understanding of the history and philosophy of physics. For several weeks students obtained photographs using a small telescope and digital camera (Celestron Powerstar 8-PEC and Cannon EOS-20D). Satellite positions were obtained from the images by using Adobe Photoshop. Curve fitting in Origin revealed the radius and period of each satellite. Kepler's third law,  $T^2 = (4\pi^2/GM) r^3$ , was verified by graphing  $T^2$  versus  $r^3$  for the measured values. The data points were

found to lie on a straight line through the origin as predicted by Kepler's law. Units used for distance in this experiment are called "pictorial units" and can be related to meters by a conversion factor. This experiment is simplified greatly by the facts that the orbits of the Galilean satellites of Jupiter are nearly circular and that their planes are nearly parallel to our line of sight. This allowed us to examine the observed positions of each satellite as a sinusoidal function of time, which is intrinsic to the design of the experiment.

SCATTER OF LIGHT FROM ROUGH BIOLOGICAL SURFACES EXPERIMENTALLY CHARACTERIZED BY GONIOMETRY. Laurel Jones, Steven L. Jacques. Dept. of Biomedical Engineering, Oregon Health & Science University, Portland, OR 97225.

The scatter of incident by the surface of tissues is often an issue in designing optical devices for medicine and biology. In industry, the Harvey function is sometimes used to characterize rough surfaces of metals and other materials. In this work, the Henyey-Greenstein (HG) function, that originated in astrophysics and is widely used in biomedical optics (see website below), is shown to yield behavior identical to the Harvey function. The angular dependence of scattered light reflected from a tissue surface ( $R$ ) is the superposition of a Lambertian pattern of diffusely scattered reflectance plus a specular component of surface scatter that has been broadened according to the HG function:

$$R(q, q_i, g) = A \text{ Lambertian}(q) + B \text{ HG}(q, q_i, g),$$

where  $\text{Lambertian}(q) = \cos(q)$  and  $\text{HG}(q, q_i, g) = (1-g^2)/(1+g^2 - 2g \cos(q+q_i))^{3/2}$  and  $q_i$  is the angle of incidence relative to the normal that is perpendicular to the surface, and  $q$  is the angle of reflectance. If  $q_i = 45^\circ$ , then the specular reflectance from the surface is peaked at  $q = -45^\circ$ , such that the argument  $(q + q_i) = 0$  in the HG function. Experiments were conducted to characterize  $R(q, q_i, g)$  of various tissues by specifying the parameters  $A$ ,  $B$ , and  $g$  in the above expression. The factor  $g$  is the anisotropy of scattering, but in this case it is merely a descriptor for the angular spread of the specular reflectance from the surface. The importance of this work is that scatter of light by tissue surfaces can be easily characterized.

Website: <http://omlc.ogi.edu/classroom/ece532/class3/hg.html>

ROOM TEMPERATURE EXCITONS IN BaCuSF. Joseph Kinney, Robert Kykyneshi, David McIntyre, Janet Tate. Department of Physics, Oregon State University, 301 Weniger Hall, Corvallis, OR 97331.

BaCuSF is a p-type wide band gap semiconductor. A peak near 3.5eV is observed in the absorption spectra of thin films of BaCuSF. Due to the sharpening of this peak when the sample is cooled to lower temperatures, we suspect that this feature may be attributed to an excitonic state in the material. Absorption spectra, obtained at room temperature and 80 K using a grating spectrometer, will be presented and discussed.

Zn<sub>2</sub>In<sub>2</sub>O<sub>5</sub> AMORPHOUS THIN FILMS BY PULSED LASER DEPOSITION. Robert Kykyneshi, Janet Tate, Department of Physics, Oregon State University, Corvallis, OR 97331.

Zn<sub>2</sub>In<sub>2</sub>O<sub>5</sub> (ZIO) is a wide gap n-type semiconductor, with applications in transparent electronics. ZIO thin films are prepared by pulsed laser deposition from a sintered powder target of the same stoichiometry in ultra high vacuum. The effects of deposition parameters, such as laser fluence, substrate temperature and target-substrate distance, are studied via measurement of electrical, optical, structural and surface properties. The optimum deposition parameters for amorphous ZIO thin films yield a typical conductivity of 1400 S/cm and mobility of 12 cm<sup>2</sup>/Vs.

A TISSUE-ENGINEERED 3D MODEL OF LIGHT SCATTERING IN ATHEROSCLEROTIC PLAQUES. David Levitz, Monica T. Hinds, Ruikang K. Wang, Zhenhe Ma, Katsu Ishii, Noi Tran, Owen J. T. McCarty, Stephen R. Hanson, Steven L. Jacques. Dept. of Biomedical Engineering, Oregon Health & Science University, Portland, OR 97239.

The development of atherosclerotic plaques includes changes in the cellular and extracellular composition of the arterial wall. Although these changes in composition affect the manner in which light scatters in the vessel wall and thus affect any optical signal, experimentally determining how features of atherosclerosis affect optical signals has remained elusive. Using current tissue-engineering methods, we developed a 3D tissue construct model for assessing how certain features of atherosclerosis (the increased concentrations of lipids and macrophages) affect optical signals. The model is based on vascular tissue constructs made of smooth muscle cells (SMCs) and macrophages that are co-cultured inside a 3D scaffold matrix of collagen fibers with interspersed lipids. To make the scaffold matrix, powdered collagen was dissolved in acetic acid, homogenized, and neutralized by sequential dialyses to yield a soft gel of 2 mm thick collagen fibers in which cells were seeded. In "normal" constructs, only SMCs were seeded in the collagen gel; in "athero-like" constructs, both SMCs and macrophages (loaded or unloaded with lipid) were seeded in the gel. To demonstrate the use of this model, sets of slab-shaped normal and athero-like constructs were imaged by spectral domain optical coherence tomography (OCT) and quantitatively analyzed. 3D OCT image cubes were compared to 2D histology sections. Moreover, selected OCT frames were analyzed for morphological features of interest. Our results indicate that the cellular composition of the construct affects both the appearance of the construct as well visual features of the OCT image.

USE OF A FOCUSED ION BEAM IN THE FABRICATION OF A TRANSPARENT SAMPLE SUBSTRATE FOR UNIVERSAL

MICROSCOPY ANALYSIS. Derek Nowak, Mohan Vattipalli, Jon J. Abramson and Erik J. Sánchez. Department of Physics, Portland State University, P.O. Box 751, Portland, OR 97207.

Focused ion beam (FIB) systems originally developed for mask repair of semiconductor chips have matured over the last decade as a research tool for nanostudies. This technology allows for milling and deposition of material at the sub 20nm level, in a similar user environment as a standard scanning electron microscope (SEM). Using the delicate milling capability of a FIB, a region of interest on a sample is labeled via a milled reference grid. This allows a researcher to go between many different analytical microscopy tools and relocate objects on the nanometer scale. Presently transmission electron microscope (TEM) grid openings have spacing on the order 100  $\mu\text{m}$  on average; this technique can extend this dimension down to the submicron level. With a grid on the order of a few microns the use of optical, TEM, SEM, FIB, and atomic force microscopes are able to image the region of interest, with no special chemical process or conductive coatings required. To demonstrate Au nanoparticles of  $\sim 25$  nm in size were placed on a commercially available formvar and carbon coated TEM grid and later milled with a grid pattern. Demonstration of this fabrication for glass substrates for the purpose of sample location is also presented. This process is explained and demonstrated on all of the aforementioned analytical techniques.

OPTICAL PROPERTIES OF MUTANT VS WILDTYPE MOUSE SKIN MEASURED BY REFLECTANCE-MODE CONFOCAL SCANNING LASER MICROSCOPY. <sup>1</sup>Ravikant Samatham, <sup>2</sup>Paul Campagnola, <sup>1</sup>Steven L. Jacques. <sup>1</sup>Dept. of Biomedical Engineering, Oregon Health & Science University, Portland, OR 97225., <sup>2</sup>University of Connecticut Health Center, Farmington, CT 06030.

Separation of the two optical scattering properties, the scattering coefficient ( $\mu_s$ ) and the anisotropy of scattering ( $g$ ), has been experimentally difficult in tissues. A new method for measuring these properties in tissues uses reflectance-mode confocal scanning laser microscopy. The method was applied to 3 mouse tissues, one wild type (wt/wt), one heterozygous mutant (mut/wt), and one homozygous mutant (mut/mut), where the mutation is for *osteogenesis imperfecta*, a bone disease that affects collagen I structure. The mutation also affected the collagen fibrils of the skin. The measurements showed that the average scattering coefficient ( $\mu_s$ ) decreased with the presence of the mutant allele, varying as mut/mut < mut/wt < wt/wt. The anisotropy of scattering ( $g$ ) also decreased with added mutant allele, varying as mut/mut < mut/wt < wt/wt. Such behavior may suggest that the tropocollagen molecules are failing to organize into fibrils with the 70-nm periodicity that is putatively responsible for the Rayleigh scattering that dominates blue light reflectivity. Without the periodicity of refractive index fluctuation, the fibril structure becomes more optically homogeneous and

scattering decreases. The decrease in  $g$  (toward more isotropic scattering) could be due to the failure of the mutant fibrils to assemble into the larger 2-3  $\mu\text{m}$ -dia. collagen fiber bundles that yield forward scattering (Mie scattering).

LASER INDUCED NANOPARTICLE SYNTHESIS AND ANALYSIS.  
Mohan K. Vattipalli and Erik J. Sánchez. Department of Physics, Portland State University, P.O. Box 751, Portland, OR 97207.

Since the invention of lasers in the 1960s and coupled with increased sensitivity of the optical detectors presently, many exciting things have been demonstrated. One clear example is the coupling of light with metallic nanostructures in producing controllable geometries with the potential for new types of detection at much higher sensitivity than previously demonstrated. The focus of our research involves using Raman spectroscopy, wet-chemical nanoparticle synthesis, and novel lithography in order to analyze molecules on the nanometric level. Shape and size of the nanoparticle play a critical role in this sample identification. Creation of a highly localized field by triangularly shaped induced nanostructures may lead to a live detection on a single molecule level using either a Raman or fluorescence method. Integrating the concepts together should help with faster analysis of unknown molecules as well. Field enhancements of these complex geometries of nanoparticles are numerically modeled. Up-to-date work will be presented and will be discussed.

## **PSYCHOLOGY**

### **Section Chairs:**

**David Foster**

*Western Oregon State University*

**Heide Deditius Island**

*Pacific University*

EXPLORING THE RELATIONSHIPS BETWEEN STUDENT HARDINESS, ECONOMIC STRESS, AND INTENTIONS TO LEAVE SCHOOL. 1Leslie Allen, 2Dr. Robert Sinclair, 3Daniel Hahn, 4Lindsay Sears, 5Michael Cady, 6Samantha South, Department of Psychology, 1Portland State University, Portland, OR 97207.

Although it has long been recognized that college students face significant economic stress, little, if any, research has examined how differences in economic stress might affect important educational outcomes such as student retention. A large body of research has

established that certain individuals are more resilient to stressors than others. Hardiness is an individual difference trait comprised of three characteristics: commitment, challenge, and control. While researchers have illustrated that hardiness moderates the effects of stress on health outcomes and that hardiness has a significant relationship to turnover intentions, no research has examined whether hardiness moderates the relationship between economic stress and student intentions to leave school. Our study tests the hypothesis that student economic stress will relate more strongly to student intentions to turnover for individuals with low hardiness than for individuals with high hardiness. Data collection and analyses will be conducted in January 2007.

THE ROLE OF LANGUAGE IN UNDERSTANDING DEVIANCE AND SUBSTANCE ABUSE IN ADOLESCENCE. 1. Sebrina Anderson, M.S. 2. Bertram F. Malle, PhD. Department of Psychology, 1227 University of Oregon 97403.

For this study, three coding systems were used to examine different parts of language that could change in response to differing mindsets regarding engagement in deviant behaviors. The coding systems examined types of agent references used, stance taken on behaviors, and explanations given for behavioral events. Linguistic analysis was performed on transcripts of deviant and non-deviant adolescents who were talking about substance use. The general hypothesis for this exploratory study was that individuals would differ in the types of language that they used based on their previous engagement in behaviors that fell outside social norms. According to the data, deviant adolescents used more behavioral neutralizations (justifying, minimizing, blaming) and positive references to deviant behaviors and also identified fewer consequences for the behaviors than non-deviant adolescents. Unexpected results in this study indicated that deviant adolescents used more intentional references when explaining behaviors; they also talked more in first-person (I and We) than non-deviant adolescents when the statement was negatively valenced. This study provides support for the sociological Neutralization hypothesis, which indicates that deviant adolescents do not view themselves as outside of social norms and with therefore feel the need to “neutralize” deviant behaviors. Further, the results found also appear consistent with the Peer Contagion hypothesis which states that deviant adolescents will choose to talk with peers about their own deviant behaviors and that they will talk about them in a positive way.

SEX DIFFERENCES IN JEALOUSY: A REPLICATION OF BUSS' JEALOUSY PARADIGM. 1Jessica Carter, 2Michelle Ludwig, 3Andrew Rau, 1Division of Psychology, Pacific University, Forest Grove, OR, 97116.

Evolutionary psychology serves as a logical and convincing framework for studying jealousy between the sexes. According to evolutionary psychology, males risk paternal uncertainty, waste of resources, commitment, and time if their mates engage in coital interaction with another male. Females on the other hand, risk withdrawal of their mates' resources and loss of personal biological energy, if their mate is a philanderer. As explained by evolutionary theory, sexual and emotional jealousy may have evolved in response to the unpredictable situations mentioned above. This study aimed to replicate Buss' jealousy paradigms (1992) in three new jealousy-evoking (sexual vs. emotional) situations: sequence of presentation, evocative wording, and vivid narratives. The participants were students from a liberal arts university. It was anticipated that the findings would support those of the Buss study, wherein males find sexual infidelity more emotionally evocative than emotional infidelity and that females contrast the sexual jealousy of the males (emotional infidelity is more evocative) with more robust results based on the vividness of imagery. The results will be presented.

PERCEIVED PREJUDICE AND DISCRIMINATION AMONG PEOPLE EXPERIENCING HOMELESSNESS. Kimberley A. Cox, Southern Oregon University, School of Social Sciences, 1250 Siskiyou Boulevard, Ashland, OR 97520.

Perceptions of discrimination and prejudicial attitudes were measured among 60 homeless adults from ethnically diverse backgrounds. The primary goal of this research was to examine the relationships between perceptions of discrimination and prejudicial attitudes and coping responses and homelessness. Participants were recruited from four transitional housing facilities and one drop-in social service center located in an urban city. Interviews were conducted to collect sociodemographic information, homeless history, and to assess participants' perceptions of discrimination and prejudicial attitudes in various life domains; for example, employment, public settings, and medical care facilities. Prejudice and discrimination were defined as negative attitudes and being prevented from doing something or being hassled or made to feel inferior, respectively. Results revealed that the majority of respondents perceived the greatest discrimination and prejudicial attitudes on the street or in public settings (53%), followed by experiences of seeking employment and housing. The majority of respondents reported active coping responses in reaction to discrimination and prejudice, including trying to do something about it and talking to other people as coping mechanisms. Further analysis revealed gender differences in coping styles—males were much more likely than females to keep experiences of discrimination and/or prejudice to themselves (84% vs. 16%, respectively). Interestingly, participants did not perceive their homeless status as the primary reason for their experiences of discrimination or prejudice. Rather, results indicated that the majority of respondents

perceived that they experienced negative attitudes and unfair treatment for multiple reasons—gender and sexual orientation appear to compound the marginalization that homeless people experience.

**INTERGENERATIONAL TRAUMA IN AFRICAN ADOLESCENT MALES: HOW YOU CAN HELP.** Paul R. Davis, Division of Psychology, Southern Oregon University, 1250 Siskiyou Blvd, Ashland, OR 97520

The research conducted is designed to educate teachers and helping professionals about the conditions that may affect many vulnerable African American adolescents in the United States of America today. Life can be difficult for many, especially if they suffer from the emerging phenomenon, “Intergenerational Trauma”, perhaps unaware of the silent ramifications of this affliction. This research paper examines intergenerational trauma from various perspectives. The paper investigates the sources of the problem. It explores the African American worldview. Practitioner discomfort in working with African American youth is also emphasized. The main focus is on solutions and provides suggestions on how to help solve issues pertinent to the African American adolescent. This research provides an analysis of how and why this particular population has become displaced in the American culture and what can be done about it. The hypothesis of the research is that if society can understand the implications and impact of intergenerational trauma, progression and healing can begin, thus assisting these youth in better realizing their potentials to fully participate in society. Examples of historical events of intergenerational trauma are: Japanese internment camps, Jewish Holocaust experiences, exterminations of Australian Aborigines and Native Americans, and African American slavery. Effects of intergenerational trauma are described as: “depression, anger and/or aggression, biological effects of low cortisol levels, hyper-vigilance, disharmony, low self-esteem, cultural shame, loss of spirit, language and traditions, internalized oppression, and difficulty sharing and expressing emotions” (Ottenbaker, 2006, p1).

**MOTION ACTIVATED CHANGE BLINDNESS: A CURRENT PERSPECTIVE.** Seth M. Davis, Kay Livesay PhD. Linfield College Department of Psychology 190 SW Brumback St., McMinnville, Oregon, 97128

Prior research has shown the phenomena of change blindness to occur when visual information in a scene is blocked and the target is then changed. Change blindness with fluid motion is regarded as being highly unlikely if not impossible. This is due to the idea that the transformation of motion requires the integration of two separate perceptual systems, the motion in a scene, and the aspect that is changing. The visual information that is obtained when viewing motion uses a magnocellular pathway, which terminates in area V5 of the visual cortex, whereas most other visual information uses a

parvocellular neural pathway that terminate in a variety of areas making the integration more difficult. The current study seeks to challenge the commonly held belief that change blindness cannot occur with motion. Forty participants between the ages of 18 and 25 participated in the study. The experiment consists of four video clips, the first being a perceptual memory task; the other three, presented in random order, showed student experimenters, wearing a blue lab coat, crossing the screen. One of the three clips was digitally edited to have the lab coat change from blue to white at the midpoint. Results show that 36% of participants did not notice the change, which contradicts previous hypotheses. This evidence supports the theory that change blindness is a memory paradigm as opposed to an attention paradigm.

POSITIVE AND NEGATIVE PROCESSES IN VIOLENT RELATIONSHIPS ARE CONTEXTUALIZED BY LIFE ENVIRONMENT. 1 Lauren M. Denneson, 2 Kerth O'Brien, 3 Brian W. Weir, 4 Ronda S. Bard, 5 Carol Casciato, and 6 Michael J. Stark, Portland State University, Psychology Department; Cramer Hall 317, PO Box 751; Portland, Oregon 97207-0751

The disproportionate impact of negative interpersonal exchanges on well-being is well-established in the relationship literature (Rook & Pietromonaco, 1987; Major, Zubeck, Cooper, Cozzarelli, & Richards, 1997; Berscheid, 1983). This research, however, has not sufficiently accounted for the broader context in which these exchanges take place. Furthermore, many researchers of intimate partner violence are hesitant to address positive emotions within violent relationships. However, the current study proposes that positive experiences can exist alongside violence, and that context may play a role in how relationship processes impact women's well-being. As part of a larger project (Weir et al., 2006), 254 women experiencing intimate partner violence reported their experiences with violence, relationship processes, and psychological well-being. In addition to violence, participants reported positive experiences and emotions in their relationships. The women's life environments were characterized by several social and instrumental stressors (e.g., relationship tension, low income). Multiple regression analyses indicated that both positive relationship aspects and intimate partner violence (IPV) affected well-being, as measured by zest for life, satisfaction with life, depression, and anxiety. Controlling for the variance in well-being explained by life environment, IPV was not as successful in explaining variance in well-being as were positive relationship aspects. Results suggest the importance of recognizing positive experiences to understanding the full picture of the women's relationships. More generally, results suggest that to understand the effect of positive and negative processes on well-being, relationship scholars may also need to consider the broader context of the relationship.

EXAMINING ORGANIZATIONAL EFFECTIVENESS IN CROSS-CULTURAL SETTINGS. 1 Sonia Dhaliwal, 2 Andrea Richardson. Pacific University, School of Professional Psychology, 2043 College Way, Forest Grove, OR 97116.

The goal of this presentation is to assist employers and employees both outside and within an organization in increasing their understanding of how alternate forms of assessing Organizational Effectiveness in various cross-cultural settings work. While there are several popular meanings attributed to the term “culture,” it is generally agreed in organizational research that culture is reflected in the practices, values, beliefs, and underlying assumptions of formal and informal groups (Frost, Moore, Louis, Lundberg, & Martin, 1991; Quinn & Rohrbaugh, 1981, 1983; Schein, 1985). Diagnosing cultural characteristics within organizational effectiveness is challenging. The Organizational Cultural Assessment Instrument (OCAI) which consists of 4 dimensions: Clan, Hierarchy, Adhocracy and Market (Quinn & Rohrbaugh, 1981, 1983; Quinn & Kimberly, 1984) will be used to examine how Chinese-American owned business organizations and American owned business organizations differ in their levels of organizational effectiveness. In an effort to abet future empirical research on cross-cultural organizational effectiveness a proposed psychometric measure based upon the four dimensions of the Organizational Cultural Assessment Instrument will be discussed. The basic procedure for developing this psychometric measure will require assessing content validity in three main steps: 1 Operationally Defining “Organizational Effectiveness” in cross-cultural settings. 2 Determining which areas of organizational effectiveness are most viable and can best be captured by test items based upon the OCAI. 3 Comparing the structure of the proposed test (i.e., Likert Scale format) with the structure of the content domain (so test items fall within the boundaries of the content domain we are measuring).

THE GROUP DECISION MAKING PROJECT. David A Foster, Victor Savicki. Division of Psychology, Western Oregon University, Monmouth, OR 97361.

Recently, Ilgen and his colleagues conceptualized group performance using an input-mediator-output-input (IMOI) model. According to the model, inputs affect outputs via mediators which may include the processes a group uses to accomplish the task as well as emergent cognitive or affective states (e.g., cohesion). Group inputs include individual characteristics (e.g., personality, competence, etc.), team characteristics (e.g., cohesiveness), and task/situation characteristics (e.g., intellectual vs. decision tasks). The IMOI model also recognizes the cyclic, developmental processes of groups where group outputs for one task may serve as inputs for a second task. To effectively understand group performance, research focusing concurrently on all

aspects of the IMOI model is needed. Few studies, however, have examined the joint impact of inputs and mediators on outputs. Moreover, the studies that have attempted to do so mainly relied on self-reports of group processes rather than more objective behavioral observations. Furthermore, a majority of the group decision making research has been conducted in laboratory settings on groups that only exist for the duration of the experiment. Such “groups” rarely have the opportunity to go through key developmental experiences that may impact the processes they use for making decisions. The Group Decision Making Project addresses these gaps by examining the effects of inputs such as forming, competence, personality, performance feedback, and mediating group processes on group decision making performance. Key aspects of the project including experimental design, data collection and the development and implementation of a behavioral coding system will be discussed.

THE EFFECTS OF FORMING, MEMBER COMPETENCE, AND SELF-ESTEEM ON SMALL GROUP PROCESSES AND PERFORMANCE. Ashley Arnold, Phil Mathews, Eric Nicolarsen, Vic Savicki, David A. Foster, Jessica Marsh. Division of Psychology, Western Oregon University, Monmouth, OR 97361.

Accuracy of group decisions is seen as dependent on merging information of individual members to produce a result that is better than that of any member alone. The current study predicted a relationship between member self-esteem, task expertise, group forming and group performance. Data were collected from 63, three-person groups. Measures included the Rosenberg Self-Esteem Scale for individual self-esteem. Individual and Group Performance were assessed by comparing the decision against a known standard. Group Self-esteem Difference categories were calculated by comparing the self-esteem scores of the highest task performer with the lowest performer. Group Added Value was the residual of group performance with individual member performance statistically removed. Procedurally, participants either engaged in the forming task or read a brief paper on stages of group development. Afterwards participants completed two decision making tasks first individually, then as groups. An ANOVA showed a significant interaction between Forming and Self-esteem Difference ( $F(1,49)=4.159, p < .05$ ). Groups whose least competent member had higher self-esteem than the most competent member and did not engage in the forming task performed significantly worse compared to the other groups. Exploratory analyses of group processes revealed that members of these poorest performing groups used significantly more “I” statements compared to the other groups ( $F(1,24)=9.461, p < .01$ ) and that the least competent members of the poorest performing groups talked significantly more than the least competent members of the other groups ( $F(1,24)=9.461, p < .01$ ). Implications are discussed.

PREDECISION AGREEMENT AND DEVELOPMENT AS RELATED TO GROUP DECISION QUALITY. Travis Fox<sup>1</sup>, David A. Foster<sup>2</sup>, Vic Savicki<sup>2</sup>.  
<sup>1</sup>Pacific University School of Professional Psychology. <sup>2</sup>Division of Psychology, Western Oregon University, Monmouth, OR 97361.

Accuracy of group decisions is seen as dependent on merging information of individual members to produce a better result than that of any member alone. Previous research suggests that high levels of pre-decision agreement amongst group members often results in biased information searching by the group, possibly leading to poorer quality decisions. Additionally, research has shown that the development of socio-emotional relationships amongst group members may positively affect groups' ability to successfully utilize all of its informational resources. Consequently, this study examined the effects of both pre-decision agreement and development on the quality of group decision making. Data were collected from 63, three-person groups engaged in two intellectual, problem-solving scenarios. Group development was facilitated using a 2X2 experimental design, involving both forming and performance feedback. Pre-decision agreement was operationalized using Kendall's Coefficient of Concordance; an indicator of agreement amongst multiple raters. Hierarchical regression analysis, showed that forming ( $R^2 = .031$ ,  $F(1,57) = 3.85$ ,  $p < .05$ ), feedback ( $R^2 = .028$ ,  $F(1,56) = 3.56$ ,  $p < .06$ ), and pre-decision agreement ( $R^2 = .033$ ,  $F(1,54) = 4.44$ ,  $p < .05$ ) all accounted for significant variation in group performance (in the predicted direction) above and beyond that accounted for by individual performance. Additionally, there was a significant three-way interaction amongst forming, feedback, and pre-decision agreement ( $R^2 = .027$ ,  $F(1,51) = 3.83$ ,  $p < .05$ ). These results suggest that the negative effects of pre-decision agreement may be offset by establishing positive socio-emotional relationships amongst group members. Future research should examine the effects of these variables on group processes.

OCCUPATIONAL HEALTH DISORDERS OF PESTICIDES AMONG EXPOSED CHILDREN IN AGRICULTURE (MENOUIYA GOVERNORATE, EGYPT). 1Gaafar M. Abdel Rasoul, 1Mahmoud E. Abou Salem, 1Atef A. Mechael, 2Olfat M. Hendy, 3Diane S. Rohlman, 1Ahmed A. Ismail. 1Community, Environmental and Occupational Medicine Department, Faculty of Medicine, Menoufiya University, Egypt, 2Clinical Pathology Department, National Liver Institute, Menoufiya University, Egypt, 3Center for Research on Occupational and Environmental Toxicology (CROET), Oregon Health and Sciences University (OHSU), Portland, OR 97239, USA.

Nearly one third of the Egyptian work force is employed in agriculture. The cotton industry relies on children and adolescents, who work seasonally, to apply pesticides to the cotton crops. Although previous research has examined adult pesticide exposure in

Egypt, no research has examined the health effects in adolescents. The aim of this study is to examine the impact of pesticide exposure on children and adolescents spraying cotton fields. Male children currently applying pesticides between the ages of 9 and 15 (young, n=30) and 16 and 19 (older, n=20) were recruited for the study. They completed a neurobehavioral test battery, personality inventory, work, health, and exposure questionnaires, and medical and neurological screening exams. Blood samples were collected to measure Acetyl Cholinesterase. Children not working in agriculture, matched on age and education, also participated in the study. Multiple regression, controlling for age and years of education, found the applicator groups, both young and older, performed significantly worse than the controls on the majority of neurobehavioral tests. The applicators reported significantly more symptoms and had more neurological symptoms identified than the controls. A significant decrease in Acetyl Cholinesterase level was found in the applicator group compared to the controls. Working more days in the current season is associated with worse neurobehavioral performance and more reported symptoms. This study replicated the findings of research on adult cotton works.

A TIME-COURSE STUDY OF ACCESS TO SEMANTIC VS. LANGUAGE INFORMATION IN ENGLISH-SPANISH BILINGUALS. Marissa L. Gamble, Enriqueta Canseco-Gonzalez, Psychology Department, Reed College, Portland, OR, 97202.

A growing literature investigating the order and time course of various processing levels has indicated if and when a person accesses semantic, syntactic and phonological information during language production and comprehension. However, most studies have been carried out solely with monolinguals. Using the recording of event-related potentials (ERP), and in particular the N200 component, we investigated the time-course of access to two types of linguistic information in English-Spanish bilinguals. In particular, we carried out a dual task Go/Nogo paradigm asking participants to press with their left or their right hand (or refrain from responding) based on semantic (is this an animal or an object?) or language tag (is this word in English or Spanish?) information contained in a series of auditory words. The onset of the N200 (typically associated with inhibition of motor responses) was used as an indication of the initial access to these two types of information. A significant N200 effect in frontal regions indicated access to semantic information as early as 260 msec post-stimulus, while access to language tag information was not evident until 448msec post-stimulus. However, the mean amplitude and the peak latency of the N200 effect did not differ between conditions. We conclude that bilingual speakers process semantic information even before processing the specific language to which the word belongs. Results are discussed based on the potential

role of modality, as well as the specific processes associated with the N200 effect. Future studies clarifying these issues are proposed.

EXPLORING THE RELATIONSHIPS BETWEEN SUPERVISOR AGGRESSIVE HUMOR, ORGANIZATION BASED SELF-ESTEEM, AND SUBORDINATE INTENTIONS TO TURNOVER. 1Daniel I. Hahn, 1Department of Psychology, Portland State University, Portland, OR 97207.

While many recent studies have examined the antecedents of organizationally avoidable turnover, none have explored the possibility that the aggressive humor style of supervisors coupled with a low organization based self esteem (OBSE) may influence subordinate intentions to leave the organization. Utilizing a recently developed measure of humor styles, a measure of subordinate intentions to leave the organization, and a measure of organization based self esteem, we examine the possibility that such a relationship exists in a sample of 250 employed college students. Specifically, we hypothesize that supervisor aggressive humor will relate more strongly to subordinate intentions to turnover for individuals with low OBSE than for individuals with high OBSE. Data collection and analyses will be conducted in January 2007.

RELIABILITY GENERALIZATION OF THE BUSS-PERRY 29-ITEM AGGRESSION QUESTIONNAIRE. 1Heide Deditius Island Ph.D., 1Stephanie Miyasaki, 1Jessica Carter, and 2Baine B. Craft Ph.D., 1Department of Psychology, Pacific University, 2043 College Way, Forest Grove, OR and 2Department of Psychology, Seattle Pacific University, Seattle, Washington

A reliability generalization (RG) was conducted for the 29-item Buss-Perry Aggression Questionnaire (AQ). 63 empirical articles were evaluated for reliability data spanning a 14-year period with 58% yielding relevant, usable reliability estimates. One hundred and sixty seven reliability coefficients were evaluated from 37 published, empirical studies using the Aggression Questionnaire. The AQ is comprised of four factors, verbal aggression, physical aggression, hostility and anger, as well as a total aggression score. The average score reliability ranged from modest reliability at .72 for the factor of physical aggression to good reliability at .86 for the total aggression score.

CHILDHOOD PHYSICAL ABUSE, ADULT INTERPERSONAL RELATIONSHIPS AND THE THERAPEUTIC RELATIONSHIP: PROPOSAL FOR A RETROSPECTIVE NATURALISTIC STUDY.1 Amy Jenks, 2 Sydney Ey, PhD, Pacific University, Portland, OR, 97116.

Child abuse is a problem that affects a substantial number of children in the United States annually. In the past several decades, the developmental sequela of child abuse has been conceptualized from a developmental psychopathology perspective. According to this perspective, successful resolution of early developmental tasks increases the probability of mastering subsequent developmental

tasks. Affect regulation, which is learned through child-caregiver interactions, is now understood as one of the primary developmental tasks of early childhood. Child abuse can disrupt the acquisition of affect regulation in children. Research has shown that children who fail to learn affect regulation tend to have interpersonal deficits. However, little is known about the interpersonal functioning of adults abused as children. Research suggests that women with histories of child sexual abuse (CSA) have more difficulties with interpersonal functioning than women without histories of CSA. In addition, research suggests that interpersonal problems interfere with the quality of the therapeutic relationship. A study is proposed that investigates the relationship between child physical abuse, adult interpersonal functioning and the quality of the therapeutic relationship.

**CHILDHOOD OBESITY: CURRENT STATUS AND RECOMMENDED INTERVENTIONS.** Margaret E. Loberg, Brittany A. Keller, School of Professional Psychology, Pacific University, Portland, OR 97205.

Childhood obesity rates have risen substantially in the United States. Current rates of obesity are reported at 15.3 percent of children aged 6 to 11, and 15.5 percent of adolescents aged 12 to 19. Childhood obesity is an area of particular concern because of accompanying health, social, and psychological problems. Factors that contribute to childhood obesity include genetics, social learning, diet, eating habits, sedentary behavior, parent and peer influence, and environmental factors. An examination of current treatment recommendations was performed in order to identify effective treatment protocol. As a result of multi-factorial contributors, multiple treatment responses have been identified to be effective when utilized in combination. A combination of cognitive behavioral therapy, family therapy, and school interventions has been found to be effective. Behavioral interventions are helpful in changing eating and exercise habits. Cognitive interventions are useful in changing children's attitudes and beliefs toward eating, as well as toward themselves and their body image. Family therapy interventions draw from Social Cognitive Theory, and stress the delivery of change through parents by emphasis of a healthy lifestyle rather than on weight loss. School interventions have been found to be effective when following the Center for Disease Control guidelines, and are proposed to be an ideal environment in which to promote healthy lifestyle choices because of the amount of time children spend in the school environment.

**CONFLICT IN GROUP THERAPY: IDENTIFYING SOURCES OF CONFLICT AND EFFECTIVE MANAGEMENT.** Brittany A. Keller, School of Professional Psychology, Pacific University, Portland, OR 97205.

Conflict is inevitable when conducting group therapy and it can have a debilitating effect on the group; however, when managed effectively it can help the group make therapeutic progress. Conflict can arise from a number of sources including the perception of injustice, helplessness, or vulnerability within the group. Several guidelines have been identified to effectively work with difficult group members or the group as a whole. When dealing with an individual group member that is the root of conflict within a group the therapist should assess the group climate, try to transform the disruption into a constructive contribution, or guide the group to confront the person. Therapists that need to address conflict for the group as a whole need to be involved in directing the process, validate and explore the resistance, and be aware of their own reactions to the conflict. The therapist needs to ensure that he or she does not intervene too much when conflict arises as this can lead to a dependent group. It is important for the therapist to be flexible, open, and attuned to the group dynamic. The therapist can also anticipate and prepare for conflict when conducting prescreening of the group and assessing the personality style of the perspective group member.

**SHORT SKIRTS AND SEXUAL MOTIVES: COURTSHIP BEHAVIORS AND CLOTHING CHOICE AMONG ADOLESCENT FEMALES.** Matthew Koren, Jen Go, Natalie Troxel, Jennifer Henderlong Corpus. Department of Psychology, Reed College, Portland, OR 97202.

Previous research has studied the relationships among adult female clothing choice, sexual motivation, and sexual behavior. These studies have shown that provocative clothing tends to be associated with increased sexual motivation and sexual behavior. Similar work has not been done with adolescents, although some research has examined the development of female adolescent courtship signals. This work has shown that adolescent females present courtship signals with equal frequency in both single-gender and mixed-gender settings. However, current research has yet to examine the relationship between adolescent courtship behaviors and clothing choice. With this in mind, the present study sought to fill this research gap and study the relationship between adolescent courtship behavior and clothing choice by examining adolescent female courtship behaviors in relation to clothing choice in a mixed-gender setting. Twenty-two adolescent females were observed at an under-age (15-20 years of age) nightclub in a downtown metropolitan city. At timed intervals, one researcher coded each adolescent's courtship behaviors and another researcher coded her clothing choices. A Pearson correlation test resulted in a significant positive correlation ( $r = .47, p < .05$ ) between the two variables: a greater number of courtship behaviors were observed among adolescents who made more revealing clothing choices. Due to the correlational design, however, the causal nature of the relationship remains unclear.

WHEN SEX MIGHT NOT MATTER: GENDER ROLE IDENTIFICATION AND EMPATHIC ACCURACY. 1Sean M. Laurent, 2Sara D. Hodges, Psychology Department, 1227 University of Oregon, Eugene, OR, 97403-1227.

The stereotype that women are more empathic than men is commonly held, although empirical research has shown that this stereotype has little support. In objective measures (e.g. cognitive, physiological) of empathy, differences between women and men are often slight, mixed (i.e. sometimes women are more empathic, sometimes men are), or not apparent. To address these mixed findings, the authors hypothesized that aspects of psychological gender (i.e. femininity and masculinity) might predict empathic accuracy more strongly than sex. An experiment was conducted to assess the relationship between self-reported psychological gender and empathic accuracy (the ability to correctly infer the thoughts or feelings of a videotaped target person). Research subjects (N=194) were first randomly assigned to write down between 10-15 things about themselves that they considered masculine or feminine, or were asked to write about a control topic. Following this, subjects performed an empathic accuracy task, then were questioned about their stereotypical gender-role identification via self-report. Femininity was found to be positively related to empathic accuracy, while sex only predicted empathic accuracy in one model that contained gender-role variables. Masculinity and femininity also predicted empathic accuracy differently in the highest and lowest quartiles, and in the middle half of the sample based on empathic accuracy scores. In addition, the feminine condition also outperformed the masculine and control conditions in the most accurate quartile and the middle half of the sample, while the masculine and feminine conditions both performed more poorly than the control condition in the lowest quartile.

GROUP POSTVENTION FOR SUICIDE SURVIVORS ON THE COLLEGE CAMPUS. Margaret E. Loberg, Pacific University School of Professional Psychology, 2043 College Way, Forest Grove, OR 97116.

For individuals aged 15-24, suicide is the third leading cause of death following unintentional injury and homicides, respectively. A college campus with two thousand students will experience an average of 1 suicide every 4 years. Researchers report that friends of the survivor typically avoid the topic of death, thereby creating a curtain of silence that subsequently leads to survivor isolation. Stigma associated with suicide is linked to a withdrawal of social supports and abbreviation of post-death rituals such as funerals, often leaving survivors of suicide to feel as if they have no place to grieve. On the college campus, group therapy provides students with an opportunity to combat isolation. Postvention is defined as the effort to help survivors of traumatic death deal with their grief via the provision of a safe environment in which to experience disclosure and validation

of the experience, normalization of grief reaction, and validation of behaviors required for survival. Member and therapist characteristics and common themes of postvention groups were reviewed, and recommended postvention models discussed. Postvention models tend to follow a 7 stage semi-structured Psychological Debriefing format. The goals of the group are to reduce trauma, initiate the grief process, and prevent self-destructive behavior of survivors.

**WORK GROUP PERFORMANCE RELATED TO FEEDBACK AND MEMBER EXTRAVERSION.** 1Jordan Lutey, 2David A. Foster, 2Victor Savicki. 1School of Professional Psychology, Pacific University, Forest Grove, OR 97116. 2Division of Psychology, Western Oregon University, Monmouth, OR 97361.

Accuracy of group decisions is seen as dependent on merging information of individual members to produce a result that is better than any member alone. The following hypotheses predict a relationship between extraversion, task expertise, feedback, and group performance: 1) Groups in which members with the most expertise have higher extraversion will perform better than groups in which the member with the least expertise has higher extraversion. 2) Groups that receive feedback will show better objective performance than groups that do not. 3) Feedback will weaken the effects of the individual with the least expertise having higher extraversion on group performance. Data were collected from 63, three-person groups. Measures included the NEO Five Factor Extraversion Scale for individual extraversion. Group Extraversion Difference categories were calculated by comparing the extraversion scores of the highest task performer with the lowest performer. Participants completed two decision making tasks first individually, then as groups. An ANOVA showed both a main effect for Feedback ( $F(1,57)= 3.935, p= .052$ ) and an interaction between Feedback and Extraversion Difference ( $F(1,57)= 3.183, p= .080$ ). Groups that received feedback performed significantly better than those that did not. Extraversion Differences and Feedback conditions were supported in the hypothesized directions. The impact of extraversion on group decision making demonstrates that simple task expertise is not sufficient to explain how a group generates a decision. It is the combination of expertise and extraversion with feedback that provides more clarity concerning the groups' process.

**THE ADDITIVE EFFECTS OF CBT COMPONENTS TO EXPOSURE THERAPY EFFECTIVENESS.** Kathryn Marshall, Bevyn Rowland, Heidi Meeke, Traci Time, Johan Rosqvist, School of Professional Psychology, Pacific University, Portland, OR 97205.

There is evidence that exposure therapy is effective as a stand-alone intervention for the treatment of anxiety disorders. This finding contradicts common clinician assumptions that adding additional

therapy components increases the effectiveness of therapy. Cognitive-behavioral treatments for anxiety disorders that include components such as relaxation training and cognitive restructuring neither improve nor reduce treatment outcomes compared to exposure therapy alone. In fact, clients who are treated with exposure alone respond more quickly to treatment compared to CBT treatments with several therapeutic components. This indicates that exposure alone is a more efficient and specific intervention. However, it is suggested that despite not offering additional therapeutic outcome improvements, additional treatment components such as relaxation training and cognitive restructuring should be included with exposure in the treatment of anxiety disorders. It is postulated that these additional treatment components, when used before beginning exposure therapy, increase the therapeutic working alliance and in turn, buffer the initial negative impact of high emotional reactivity associated with beginning exposure treatment. The working alliance, or the quality and strength of the relationship between the client and therapist, is positively associated with favorable treatment outcomes. There is also evidence that establishing a strong working alliance early in therapy is important and that initial alliance is a consistent predictor of therapy outcome. The relationship between including additional treatment components prior to exposure therapy and the impact of including these on the working alliance should be further investigated.

THE EFFECTS OF COGNITIVE PROCESSING AND WRITTEN DISCLOSURE ABOUT TRAUMATIC EVENTS ON PHYSICAL AND PSYCHOLOGICAL WELL-BEING. Kathryn E. Marshall, Deborah Wise, School of Professional Psychology, Pacific University, Portland, OR 97205.

Traumatic life events are associated with negative health and psychological changes. A proposed intervention to alleviate the negative physical and psychological effects associated with traumatic events is to write one's deepest thoughts and feelings about the event. There is evidence that expressive writing leads to beneficial changes in physiological functioning, self-reported health symptoms, and psychological functioning. Some individuals who experienced a traumatic event alter their world-views such that their beliefs do not reflect reality and causes distress. The relationship between these unhelpful trauma-related cognitions and psychological distress is examined. Graduate students and community members wrote about either a traumatic life event or a neutral topic for twenty minutes during three writing sessions. Writing about traumatic events led to increased negative mood immediately after writing during the first and second, but not the third, writing sessions. This indicates that expressive writing decreases emotional reactivity in reaction to threatening stimuli, evidence that expressive writing may be similar to exposure-based psychological treatments. Trauma-related cognitions were related to

increased levels of anxiety and stress. This indicates that trauma-related cognitions play a part in the manifestation of trauma-related stress.

PARENTAL ATTRIBUTIONS AS AN INFLUENCE ON PERCEPTIONS OF CHILD TEMPERAMENT. Gabriela A. Martorell, Department of Psychology, Portland State University, Portland, OR 97207.

There has been increasing attention paid to the role of parental cognitions within caregiving relationships. One area of interest involves that of parental attributions. Bugental and her colleagues (e.g. Bugental et al., 1989) have conducted a series of studies illustrating that when adults feel as if they are at a power disadvantage with respect to children, they are highly reactive to potential social threat and challenge. However, this is a transactional model, and while parental attributions are a factor, the child's characteristics are also a factor. Specifically, low perceived power adults are highly reactive to children who are "difficult." This difficulty may take such forms as child unresponsiveness or negative affect. It is unclear, however, if low perceived power adults are responding to objective differences in child difficulty, or are instead *perceiving* the children as more difficult than other adults are. In the current study, we are investigating whether or not adult attributions of power within caregiving relationships influence perceptions of child difficulty. One hundred and sixty-three undergraduate students were asked to rate an edited videotape of either an "easy" or a "difficult" baby on a modified temperament scale. We predicted that low perceived power respondents who expected to interact with a child would rate the "difficult" baby in an exaggerated fashion when compared to the high perceived power respondents, and that no differences in child ratings would be found across respondent groups for the "easy" baby. Results indicate that perceived power does indeed have an influence on child difficulty ratings.

CREATING A MEASURE OF GROUP CREATIVITY. 1Talya Steinberg, 2David A. Foster, 2Victor Savicki. 1School of Professional Psychology, Pacific University, Forest Grove, OR 97116. 2Division of Psychology, Western Oregon University, Monmouth, OR 97361.

Creativity is a complex psychological construct that is extremely diverse and wide-ranging. Despite the abundance of literature addressing the concept of creativity, there has been no consensus on a clear objective definition of creativity. Because of a lack of a unifying theory of creativity, however, developing a reliable and valid index of creativity has been a daunting problem for researchers. To date, no reliable and valid method for measuring the creative process of groups has been established. The purpose of the present study is to fill these gaps by generating a reliable and valid protocol for measuring the creative processes of groups during decision

making tasks. The present study will examine the reliability and validity of four protocols for measuring the creative process of groups. The four protocols will be assessed by a 2X2 mixed factorial design utilizing two methods of measuring creativity (overall ratings of creativity within each dimensions or counting the frequency with which behavior occurred in each dimension) and two methods of observing creativity (watching video or reading transcript). Three different dimensions of the creative process will be assessed. These dimensions include: flexibility of ideas, integration of ideas, and production of new ideas. Data will be collected from 120 participants recruited from undergraduate psychology classes at a small university in the Pacific Northwest. Participants will be randomly assigned to one of the four protocols. Reliability and validity of each of the four approaches will be assessed.

**EXPOSING THE ANXIETY OF EXPOSURE THERAPY IN MENTAL HEALTH CARE PROFESSIONALS.** Heidi Meeke, Kathryn Marshall, Bevy Rowland, Traci Time, Johan Rosqvist, School of Professional Psychology, Pacific University, Portland, OR 97205.

There is evidence that cognitive-behavioral therapy (CBT) which includes exposure with response prevention (ERP) is an effective treatment for Obsessive-Compulsive Disorder (OCD) and other anxiety disorders. Unfortunately, there is a shortage of clinicians trained to employ exposure therapy due to common myths about exposure and a lack of research investigating effective ERP training. There are many practitioners from different orientations who treat individuals with anxiety disorders using other therapy methods such as Eye Movement Desensitization and Reprocessing (EMDR), group therapy, talk therapy, medication, and various forms of CBT without the use of exposure therapy. Unfortunately, there is little evidence that these treatments are as effective as ERP in diminishing the symptoms. There is a need for more clinicians to be trained in CBT and employ ERP for these purposes. A possible solution to this problem is that clinicians who practice from other modalities could learn ERP as an adjunct treatment to better serve the needs of their patient population. Such cross-theoretical training presents many challenges. These include clinicians' fears about ERP and the effect these fears might have on their patients. This presentation will address some of the challenges to such cross-theoretical training and offer solutions to these valid concerns.

**SPIRITUALITY AND RELIGIOUS COPING AS PREDICTORS OF DEPRESSION.** Alvaro Lara Gomez, Leanna Gross, Morgan Hutmacher, and Amanda Miles, Western Oregon University, Psychology Department, Monmouth, OR 97361.

Correlational data has supported the connection between religion and spirituality, and positive mental health. This study addressed the

need for longitudinal studies by examining how well these variables predicted the change in depression reported by college students across a 20-month interval. Participants ( $N = 145$ ) completed the Beck Depression Inventory at Time 1 and Time 2, when they also completed measures of social support, stressful events experienced in the last 12 months, the Drinking to Cope Scale, the Spiritual Well-Being Scale (SWB), and a religious coping scale (Brief Rcope). Hierarchical regression predicting depression at Time 2 entered four variable sets: Depression at Time 1; negative events, social support and drinking to cope; the Existential Well-Being (EWB) and the Religious Well-Being (RWB) sub-scales from the SWB; and the three scales from the Brief Rcope. The final model produced a significant  $R^2$  value of .497 ( $p < .001$ ). All data sets produced significant increases in  $R^2$  except for the Religious Coping scales. In the final model, significant contributions were made by Time 1 Depression, negative events, and EWB. After controlling for initial level of depression and several commonly identified risk factors for college students (e.g., stress, social support), Existential Well-Being, which reflects feelings of meaning, satisfaction, and direction in life with no reference to a deity or organized religion, was associated with lower levels of depression. Religious well-being and coping did not add to the prediction of depression level. These results support continuing research attempts to evaluate religion-related variables in longitudinal studies of psychological outcomes.

ATTACHMENT, ETHNIC IDENTITY, AND SOCIAL COMPETENCE IN MINORITY ADOLESCENTS. Shannon Myrick, Department of Psychology, Portland State University. PO Box 751, Portland, Oregon 97207-0751.

As our society becomes progressively more diverse, processes such as the development of social competence become increasingly important. Traditional models of development presume a standard context that may no longer be present in today's society. The purpose of the present study is to explain the development of social competence in minority and non-minority adolescents from the perspective of an integrated and context specific model of development. Based heavily upon Garcia-Coll's (yr) model of \*what did she call it?\*, I argue that there are unique developmental contexts for adolescents, one of which involves minority and non-minority status (not sure if this sounds right). These variations in context may lead to differing importance of constructs such as attachment, acculturation, and ethnic identity development in the formation of social competence.

In the present study I surveyed 320 adolescents from an ethnically diverse middle school in the Portland, OR metro area. Based on an extension of Garcia-Coll's model, I argued that there should be differing relationships for minority and non-minority adolescents with respect to the variables of interest. Main hypotheses included

that (1) the relationship between attachment and social competence would vary based on the level of perceived discrimination; (2) the relationship between ethnic identity and social competence would be stronger for minority adolescents; (3) the relationship between acculturative status and social competence would be stronger for minority adolescents; and (4) that perceived discrimination would be negatively related to social competence for all adolescents independent of minority status. Multiple regression results indicated that minority status was not a strong moderator. Perceived discrimination, however, appeared to figure prominently in the development of social competence, and drove much of the differences in the outcome. The results suggest that further inquiry into contextual factors influencing social competence, contextual models of development, and the construct of perceived discrimination are warranted.

EMOTIONAL INTELLIGENCE AND HAPPINESS. Kaitlin E. Nirschl, Kelly B.T. Chang, Susan L. O'Donnell, Kasey Lix, Department of Psychology, George Fox University, 414 N. Meridian St., Newberg, OR 97132.

According to some models of Emotional Intelligence (EI), happiness is an aspect of EI. The model that defines EI as the mental ability to perceive, use, understand and manage emotions does not list happiness as a main component. However, if people are good at understanding and managing emotions, and if people want to be happy, then we would predict that they would manage to be happy. Therefore, our hypothesis is that EI (mental abilities) would correlate with happiness. If it does not, then either they do not want to be happy, they are not applying their abilities to "the pursuit of happiness," or happiness requires some ability (or external source) besides EI. We will administered EI and happiness tests to approximately 140 undergraduate students in four general psychology classes at George Fox University. The test that we used for EI in our research will be the Mayer, Salovey, & Caruso Emotional Intelligence Test (MSCEIT). It is made up of tasks meant to objectively assess Experiencing Emotions (perceiving and using emotions) and Reasoning Emotions (understanding and managing emotions). The test we used for happiness in our research was the Psychap Inventory (PHI), which examines an individual's status on certain aspects of happiness. PHI items consist of statements samplings characteristics known to distinguish happy from unhappy people. Results and implications will be discussed.

THE USE OF PROSODY IN SPEECH DISAMBIGUATION AND ITS RELATION TO MUSIC TRAINING. Kate Orwick, Linfield College.

Prosodic cues, such as phrasal pausing and word stress, help listeners to disambiguate speech. Prosody is used so a speaker can

communicate emotion and meaning in speech. However, not all listeners are equally sensitive to these cues. Some listeners are more likely to use prosodic cues to disambiguate speech than others (Cutler, Dahan, & Van Donselaar, 1997). Because there are fundamental similarities between prosody and music (for instance, they both share qualities such as rhythm, tone, pitch, amplitude, meter, stress, and phrasing) it is thought that trained musicians are more likely to be sensitive to prosodic information than non-musically trained persons. This difference would likely exist because of the detailed training in areas such as rhythm, meter, phrasing and stress that a trained musician receives. To test this hypothesis participants were identified as either musically trained or not musically trained using a music education questionnaire. Participants listened to sentences. Half of the sentences were ambiguous and could be disambiguated through the use of specific prosodic cues, such as phrasal pausing. Participants were given multiple-choice questions to assess sentence comprehension. Early results show that musically trained participants are more sensitive to prosodic cues for sentence disambiguation than non-musically trained participants.

**BEHAVIORAL AND ELECTROPHYSIOLOGICAL EVIDENCE FOR THE EFFECTS OF A WRITING TRAINING TASK ON ABILITY AND WRITERLY SELF-EFFICACY.** Danielle Osborne, Nori Valdez, Alvero Hernandez, Daniel Lima, Katherine Schmidt, Joel Alexander, Western Oregon University, Monmouth OR, 97361.

Writerly self-efficacy is a topic that has been studied and found to be an important component in improving writing skills. However application of these findings has yet to be made in campus writing centers. Participants included 45 students from 3 writing courses. Pre and post writing fluency tests along with self-efficacy surveys were used to evaluate writing improvement and writerly self-efficacy as a function of differential writing instruction. Control participants received regular instruction and experimental participants received regular instruction with the addition of a writing training task (the grammar game). The grammar game engages students in a task that is intended to increase their writing fluency skills through problems solving a writing task. Additionally, the control and experimental participants had beginning of the term and end of the term EEG recording of their brain activity while evaluating paragraphs for fluency errors. Findings indicate increased ability in the experimental group for identifying fluency errors/conventions, writing self efficacy and demonstrated changes in EEG bandwidths that correspond with greater cognitive relaxation during the paragraph evaluation task. These results imply that the inclusion of selective writing training tasks have a high utility in introductory writing courses given that beginning writers not only show increased ability, but also increased writerly self efficacy compared to students receiving regular instruction.

SMART RECOVERY®: A TRAINING OPPORTUNITY FOR STUDENTS.  
Mike Haderlie, Allison Osborn, Jennifer Rasmussen, Hank Robb\* Pacific  
University

SMART Recovery® (Self-Management and Recovery Training) was established over ten years ago as a network of groups for individuals who wish to abstain from addictive behavior but who do not wish to declare themselves powerless over their problems, turn their life over to a “Higher Power,” get a sponsor, or attend meetings for the rest of their life. It was initially based on procedures consistent with empirically supported CBT procedures and has endeavored to incorporate new procedures as they are developed and supported by psychological research. SMART Recovery® is not based on the idea that group facilitators must have had addictive behavior problems to be helpful to those with such difficulties. The meetings can be facilitated by anyone who is willing and knowledgeable. This has allowed students in the Clinical Psychology doctoral program at Pacific University to facilitate meetings over the past five years which, in turn, has allowed both an eventual increase in psychological service providers familiar with psychologically grounded principles in the treatment of addictive behavior and greater choice in self-help alternatives for the public. This presentation will provide both an overview of the SMART Recovery® principles and the experience of graduate student facilitators. \*Hank Robb can be reached at [robhb@pacificu.edu](mailto:robhb@pacificu.edu), 503 635-2489.

INDISPOSABLE OTHERS: HOW FAMILY, FRIENDS AND SIGNIFICANT OTHERS BECOME MEANINGFUL TO THE EXPOSURE THERAPY EXPERIENCE. Bevyn Rowland, Heidi Meeke, Kathryn Marshall, Traci Time, Johan Rosqvist, School of Professional Psychology, Pacific University, Portland, OR 97205.

Given the extensive supporting evidence (in both efficacy and effectiveness venues) of the cognitive-behavior therapy approach (CBT) to Obsessive-Compulsive Disorder, clinicians and clients alike certainly note the benefits of such preferred CBT treatment modalities. Recent research trends emphasize the neurobiological factors of OCD etiology and treatment, though often to the exclusion of psychosocial factors. Nonetheless, a few researchers suggest that family support and functioning are significant prognostic indicators for clients with OCD. Some data indicate that the qualitative functioning nature of the family system contributes to treatment resistance (especially family accommodation) erstwhile leading to increased familial distress and dysfunction. Further, trials of group behavior therapy (GBT) and multifamily behavior therapy (MBT) have shown significant promise in treating both the client with OCD and diminishing allied issues (family disturbance). These factors, taken together with recent data, make a strong case for the

investigation and employment of a more comprehensive model of OCD treatment. Emphasizing both neurobiological and psychosocial factors will ultimately address and ameliorate a greater range of symptomatic indices for both the individual client and the system of family members affected by the deleterious effects of OCD.

DOES A GATEKEEPER SUICIDE PREVENTION PROGRAM WORK IN A SCHOOL SETTING? EVALUATING TRAINING OUTCOME AND MODERATORS OF EFFECTIVENESS. Jody Witt, Dr. Tanya Tompkins, Psychology Department, Linfield College McMinnville OR, 97128.

Nationally, suicide is the third leading cause of death among 10 to 19-year-olds (CDC, 2004). Given that most youth who engage in self-injurious behavior suffer from psychiatric disorders and explicitly or indirectly tell others, enabling citizens to respond effectively is crucial. School personnel, given their access and relationship to youth, are important targets for gatekeeper training. This study sought to evaluate one widely used gatekeeper training program, QPR (Question, Persuade, Refer), in the school setting. During the 2005-2006 academic year a total of 78 school personnel ( $M = 43$  years) participated in a QPR training session and completed a paper-and-pencil questionnaire before and after training. Twenty-four control group participants ( $M = 50$  years), recruited through email and newspaper announcements, completed similar pre- and post-questionnaires online or via mail. The questionnaire was adapted from instruments previously used to evaluate gatekeeper programs and inquired about demographics and other domains (Table 1). Results were consistent with previous unpublished outcome evaluations of QPR (Davis, 2001), with participants demonstrating significant gains relative to controls across multiple domains (Figure 1). Age and professional role significantly moderated training effects on these same attitudes, with teachers and administrators demonstrating positive gains and support staff showing negative shifts in beliefs about addressing the problem of youth suicide. Consistent with the only published study investigating moderating effects of prior training (King & Smith, 2000), evidence of substantial pre-post changes in general knowledge, questioning, and self-efficacy for individuals with prior suicide prevention training and/or contact with suicidal youth was found.

“SO WHAT, I’M FINE SYNDROME” IN UNIVERSITY STUDENTS OF DIVORCE. Kathryn L. Thompson, Erin E. Machan, Nicolle M. Clemmer, Joel T. Simon, Alexis K. Van Brocklin, Tammy McCammon, Laci N. Allstot, Psychology Division, Western Oregon University, Monmouth, OR 97361.

U.S. divorce rates have been increasing (Love & Murdock, 2004). Most children of divorce have transient adjustment problems, and some have long-lasting problems (Evans & Bloom, 1996). At the college level, attachment to parents predicted students’ well being

with students from intact families reporting more secure attachment to parents (Love & Murdock, 2004). The current study compared university students from intact families ( $n = 110$ ) with students of divorce ( $n = 82$ ) on measures of attachment and academics. Students responded to the Parental Caregiving Style Scale (measures memories of caregivers) and the Inventory of Parent Attachment Scale (measures current perceptions of parents). Students also responded to the Adult Attachment Scale (measures self-perceptions of styles with partners) and reported GPA. A two-way MANOVA indicated that students of intact families differed significantly from students of divorce on a set of dependent variables including Mother and Father Caregiving Style scores, Inventory of Mother and Father Attachment scores, Adult Attachment score, and GPA (Pillai's Trace = .107,  $F(6, 183) = 3.661, p = .002$ ). There was also a main effect of sex of participant (Pillai's Trace = .073,  $F(6, 183) = 2.400, p = .029$ ), but the interaction of group and sex was not significant. Univariate ANOVAs indicated that the only significant sex difference was for GPA and that although students of divorce scored very similarly to students from intact families on measures assessing self-functioning (GPA and perceptions of themselves in romantic relationships), students of divorce reported less positive memories and perceptions of parents.

**A CASE STUDY OF PANDAS ONSET OCD: DISCREPANCY LEVEL OF FUNCTIONING AND SELF REPORT.** Traci Time, Kathryn Marshall, Heidi Meeke, Bevyn Rowland, Johan Rosqvist, School of Professional Psychology, Pacific University, Portland, OR 97205.

The purpose of this study is to evaluate the incongruity between the level of client functioning (e.g., activities of daily living) in contrast to client self-reports. Self reports are known for being problematic in assessing the validity of outcome. This becomes particularly apparent when there is a considerable difference between what the client can actually achieve and the client's personal sense of self-efficacy. This case study involves a client with PANDAS onset OCD, which is considered to be an "unresponsive" type of OCD using standard behavioral intervention, specifically cognitive behavioral therapy using in vivo exposure. PANDAS has a biologically based etiology; therefore, it is common for clients and their family members as well as many among the medical community to perceive that the "cure" must also be biological in nature (i.e. medical management, surgery). Behavioral intervention, although empirically supported, remains controversial and even skeptically perceived by this client and supporting family members, as well as the general public. Self reports of the client's Y-BOCS are compared with actual efficacy, depression and anxiety scores. A difference between a clinical conceptualization of the subjective units of distress scale (SUDS) and the client's experience appears present: evaluation difficulties occur when client SUDS floor is in mid-range, as with

this case study. The implementation of giving self-report evaluations after exposure therapy seems to confound client self-efficacy. Benefits and barriers to a systemic approach continue to be evaluated.

**SELF-EFFICACY AND COMMITMENT TO COLLEGE AS PREDICTORS OF ACADEMIC SUCCESS.** Noreen N. Valdez, Andrea I. Yale, Kristopher R. Clifton, Department of Psychology, Western Oregon University, Monmouth, OR 97361.

Expectancy-value motivational models emphasize a goal's personal desirability as well as beliefs about the likelihood of successfully reaching the goal. A mental health model of performance emphasizes the role of positive mental health in successful performance. This study applies these models to academic performance and the likelihood of continuing college. Participants ( $N = 145$ ) were entering freshmen who completed mental health measures during New Student Week (Depression, Optimism, and Impulsivity), then 20 months later completed measures of alcohol use, anxiety, self-efficacy and commitment to college. In predicting academic performance (GPA at the end of the sophomore year), hierarchical regressions were used with the students' high school GPA's and SAT scores entered as the first data set. The final model produced an  $R^2$  value of .672 ( $p < .001$ ). Significant  $\beta$  weights in the final model indicated that higher GPAs were associated with higher high school GPA and SAT's; less depression and less frequent use of alcohol; greater anxiety, higher academic self-efficacy, and greater commitment to college. When distinguishing between the 95 students still enrolled at the university and the 50 who had left before their junior year, Discriminant Analysis identified high school GPA, SAT's, commitment to college and the students' initial predictions about whether they would stay at the university. Even after controlling for past academic history and to some extent, ability; the cognitive variables of self-efficacy and commitment to college were effective predictors of academic outcomes. Mental health variables were also somewhat predictive of these outcomes.

**BARRIERS TO EXPOSURE THERAPY IN HOME-BASED TREATMENT FOR OBSESSIVE-COMPULSIVE DISORDER.** Jay Wilkinson, Amy Jenks, Alison Osborn, Mike Haderlie, and Lauren Hollrah, Pacific University, School of Professional Psychology, Portland, OR, 97116.

Exposure therapy is widely known as the most effective and efficacious treatment for acute anxiety disorders including obsessive-compulsive disorder (OCD). Research has found that home-based exposure and response prevention can improve treatment effectiveness for severe, refractory cases of OCD. In home-based treatment, clinicians frequently confront several unique challenges. Professional boundaries may be hard to maintain in the informality of the client's home. Also, clinicians can have difficulties maintaining a

professional identity. Distraction is another potential barrier. Effective exposure requires sustained attention. Family members and distractions can interfere with attention during exposure. This presentation will address these and other potential barriers to home-based treatments for OCD and suggest ways of overcoming them.

## SCIENCE EDUCATION

### Section Chairs:

**Karen Bledsoe**

*Western Oregon University*

POSITIVE EFFECTS OF PLTL WORKSHOPS: APPARENT LACK OF IMPACT OF DIFFERENTIAL STUDENT MOTIVATION, SELF-CONFIDENCE OR RESPONSIBILITY. Robert S. Turner, Jr., Western Oregon University, Biology Department, Monmouth, OR, 97361

For the last six years, Western Oregon University's Biology Department has used Peer Led Team Learning workshops to improve retention and student success in its majors' introductory sequence. Since we have never been able to generate all the peer leaders needed to accommodate all students in the sequence, we have assessed the impact of the PLTL workshops by comparing the grades and retention of students who take the workshops to students who do not. A frequently raised issue is that the positive effects of the workshops may result only from the better students electing to participate in the workshops. We previously detected no difference in the average SAT scores of PLTL and non-PLTL students. We now report extending our analysis of this issue by compiling, with the assistance of Dr. Karen Bledsoe, and administering a survey of student motivation, self-confidence and responsibility. This study detected no difference on this survey between PLTL and non-PLTL students, thus providing additional support for the conclusion that it is the PLTL workshops that account for improved student retention and performance.

INFLUENCING ABILITY TO LINK CONCEPTS IN SCIENCE AND MATHEMATICS TO EXPRESSED CAREER CHOICES: A STUDY OF BUILDING CONSTRUCTION TECHNOLOGY STUDENTS. 1Lawrence B. Flick, 1Leonard Cerny, 1Larry G. Enochs, 2Spencer Hinkle, 3 Tim Collins, 1Department of Science & Mathematics Education, College of Science, Oregon State University, Corvallis, OR 97331, 2Building Construction Technology, Portland Community College, Rock Creek Campus, Portland, OR 97229, 3Gresham High School, Gresham-Barlow Schools, Gresham, OR 97030.

This study followed a group of twelve high school students through a program designed to enhance their understanding of the role of science and mathematics in the fields of building construction engineering and skilled trades. Four lines of evidence point to the problem that students question that what is learned in high school is not important for their future. Mathematics and science courses are often the first courses to be affected by this view and this study raises questions about course content. The first source of evidence is a national survey of high school dropouts indicating that even those who were earning passing grades, they did not feel high school was of any future benefit. Second, only about 30% of all students complete the minimum course work required for post-high school education. The majority of these same students indicate that they are “planning to go to college.” Third, increasing graduation requirements in science and mathematics has not stopped a steady decline in high school completion rates for the past 25 years. Fourth, nearly one half of post-secondary students require remedial course work once they get to a college campus and only about 50% of all students complete a degree. Students in the current study were engaged in Framing Student Success as rising juniors through graduation. Data show some improvement in stating specific examples of how to use math and science knowledge. Changes in efficacy, interests, career goals, and parental and peer supports are discussed with implications for teaching science.

THE SEVEN ELEMENTS: COMPONENTS OF A MATH-ENHANCED LESSON IN CAREER TECHNICAL EDUCATION. 1Larry G. Enochs, 2Daniel Jansen, Department of Science and Mathematics Education, Weniger Hall, Oregon State University, Corvallis, OR 97331.

The National Research Center for Career and Technical Education (NRCCTE) has conducted recent studies involving the integration of high school algebra into Career Vocational Education courses such as horticulture utilizing their inherent contexts for “experiential” and “applied learning.” Their model assists students in the acquisition of skills required for both workplace success and entry into higher education. The Math-in-Career Technical Education model, developed by the NRCCTE, includes a seven-element pedagogy

component. The seven-element pedagogy was designed to move students gradually from a contextual understanding of mathematics to a more abstract or traditional understanding such as that often reflected in standardized tests. The seven-element pedagogy was designed to move students gradually from a contextual understanding of mathematics to a more abstract or traditional understanding such as that often reflected in standardized tests. This session will report on the details of the model and applications for other curriculum integration.

**MODELS OF CIRCUITS HELD BY FIRST-YEAR ELECTRICAL ENGINEERING STUDENTS IN A TASK-BASED LABORATORY COURSE.** Karen E. Bledsoe, Doctoral Candidate, Department of Science and Mathematics Education, Oregon State University, Corvallis, OR 97331.

Electrical engineering students enrolled in the second term of their first year's coursework at Oregon State University engage in a project-based laboratory in which they must understand electrical circuits in order to successfully build and program a robotic learning platform, the TekBot system. Seven case study students were observed in lab and interviewed as part of a larger research project. Data were analyzed from a phenomenological framework to develop mutually exclusive categories of description. From these data emerged four distinct models of electrical circuits held by these students: Linear, Circular Sequential, Transitional, and Holistic. In the linear model, current flows down a single wire from source to sink. In the circular sequential model, current flows from battery to bulb back to battery, but each component in the circuit may "use up" the current, or otherwise affect components "downstream" only. Students who were transitional recognized a holistic model as more fruitful, but fell back on the sequential model at times. Students with a holistic model viewed each component as affecting the circuit as a whole. Changes in student mental models over time and consequences for the students in their task-based lab context will be discussed.

**PRESERVICE TEACHERS' RESEARCH: COGNITIVE PROCESSES INVESTIGATION OF MATHEMATICS AND SCIENCE CONCEPTS.** Ronald Narode, Panel Moderator, Portland State University, Department of Curriculum & Instruction, Portland, Oregon, 97207-0751

Students in the Portland State University, Graduate Teacher Education Program conduct research into the cognitive processes of students in middle and high school mathematics and science as part of their teacher preparation. Topics range across much of the curriculum advocated in national and state standards and include, the relative motion of the moon and the planets, the function of the cell, molecular theory, kinematics, Newtonian dynamics, algebra translation tasks, geometry, and linear and non-linear functions, to

name a few. Carefully constructed interviews were recorded and analyzed to reveal preconceptions and alternative conceptions from students, many of whom have had instruction on the topics. Results have alerted prospective teachers to the relevant prior knowledge, imaginative thinking, as well as confused understanding that exist side by side in their students' minds. Interviews function on two important levels: they provide insight into what students actually believe and at the same time help teachers look critically at how they pose questions. A series of brief presentations will describe the most salient aspects of the research as well as indicate the instructional relevance of the findings. Audience questions and suggestions are welcome.

## **SOCIOLOGY, ANTHROPOLOGY AND POLITICAL SCIENCE**

### **Section Chairs:**

**Richard Mitchell**

*Department of Sociology (emeritus)  
Oregon State University*

**Dee Southard**

*Department of Anthropology  
Southern Oregon University*

**Adele Kubein**

*Department of Anthropology/Political Science  
Oregon State University*

### **SOCIOLOGY- ORAL PAPERS**

THE POWER OF CONTEXT: THE PROCESS OF IDENTITY CHANGE WHILE STUDYING ABROAD. 1Matthew J. Geraths, 1Portland State University Department of Sociology, Portland, OR 97207, 2Institut für Soziologie, Wilhelmstr. 36 (Hegelbau), Tübingen, Germany, D-72074.

Students are told that their time abroad will be "life changing." This research focuses on how being a student in a new cultural-context is part of that change. While studying in a new country the individual

has to confront the cultural differences in regard to what it means to be a student. By participating at the German university, Americans will be recognized as students, however, their behavior may not be recognized as *appropriate* student behavior. Americans might find the actions that led to their academic successes in the United States no longer works at their new university. These students are then left to figure out how to succeed in the new culture. The question of cross-cultural comparisons of “familiar” identities, in this case the student identity, has yet to become a topic for research within the literature on identity. The majority has focused on American students in US high schools, community colleges, and universities. However, taking Mead’s (1935) basic proposition that the self is the product of shared meaning that develops through social interaction, it follows that the context in which an identity is constructed is quite relevant. For instance, it is unlikely that being a student in Germany means the same thing as being a student in the U.S. Therefore, when American students interact with their German counterparts, it is likely that there will be a need to “negotiate” what it means to be a student. This leads to Americans rethinking what being a student means to them.

Searching for the Green in Solar Power: New Money or New Morality? Daniel Weiland, Department of Sociology, Oregon State University, 308 N.W, 17th Street, Corvallis, OR 97330

What are the conflicting motives and consequences of developing alternative energy sources? Are economic interests and environmental sensibilities incompatible or can long-term mutual commitments sustain markets and resources together? Is development inherently exploitive, stewardship inherently reactionary? Upon what common ground does nature’s sun shine? How may all benefit from this warmth and light?

“*HOW I LEARNED TO FAIL IN SCHOOL*”: PRELIMINARY RESULTS OF A SCHOOL ETHNOGRAPHY: EXPLORING THE ACHIEVEMENT GAP FOR IMMIGRANT AND 2ND GENERATION MEXICAN-AMERICAN STUDENTS IN NEW DESTINATIONS. Erin Michaels, Department of Sociology, Portland State University, Portland, OR 97207.

Children of immigrants from Latin America are disproportionately at risk of academic failure, and the types of ethnic identities and the ascriptive processes produced in school are crucial influences regarding that academic outcome. Specifically, schools produce narratives and scripts, which communicate implicit messages to students based on, but not limited to, ethnic, racial, and gender statuses; and these messages have a lasting influence on student achievement. The previous literature on new immigrants and their children is relatively expansive, however, it does not address the experiences of schooling for children of immigrants in new

destinations, which are markedly different from the traditional destinations; these new gateways are rural and have little post-colonial experiences with new immigrants. Moreover, the previous ethnographic literature on children of immigrants and schooling has focused on *high school* students. However, recent studies show that *middle school* is actually a more significant point in time for these students when it comes to determining later (high school) academic achievement. My study is a participant observation of immigrant and second-generation students in an Oregon coastal town. This study sheds new light in the literature by better understanding Mexican-American student ethnic identity and relationships in the classroom in a rural area; and moreover explores how the patterns observed are similar and different to that of the traditional immigrant destinations in larger urban cities.

#### **ANTHROPOLOGY- ORAL PAPERS**

CHANGING NATIONALITIES AND IDENTITIES: FRANCOPHONE-AFRICAN IMMIGRANTS IN THE UNITED STATES. 1Liza M. Dombrowsky, 2Cheleen Mahar, 1&2 Department of Anthropology and Sociology, Pacific University, Forest Grove, OR 97116.

African immigrants currently represent the largest population of refugees and immigrants in the United States. After arriving in the USA, usually through a religious organization, immigrants are forced to quickly learn a new set of cultural norms, laws and language. This can result in a gap between former time and space specific identities of immigrants, and current identity transformation. I thus plan to investigate the adaptation patterns and techniques used by African immigrants. Of special interest are notions of time and space, and how these cultural concepts are molded by geographical changes. I will investigate these variables through participant observation of African immigrant families residing in Portland, OR. Additionally, I will conduct open-ended interviews with selected family members.

ETHNOGRAPHIC ANALYSIS OF THE CONTEMPORARY POLITICAL SYMBOLS OF ECUADOR. Adam Fox, Social Science Department, Pacific University, Forest Grove, OR 97116.

Political symbols surround us on a daily basis, some more influential than others. This research analyzes, through ethnographic research, the contemporary political symbols used by indigenous populations in Ecuador and their influence on ethnic identity. This study emphasizes those symbols used in protests against the Free Trade Agreement negotiations March of 2006. Ecuador has historically been a country prone to political upheaval, demonstrations, and protests. It is the manner in which the minorities express their political ideas. Through such expression, political symbols are either adapted or created to convey meanings. Political symbols carry wide

ranging cultural values and beliefs and can provide insight into the ethnic identity and the relation of indigenous groups with the society. My hypothesis is that the symbols that are more accurately interpreted by individuals outside of the indigenous group will have a higher cultural value, influence, and permanence. The cultural value and permanence will also increase the cultural and political capital that the symbol carries. My central research question is: how do political symbols carry cultural and political capital and how does this process affect cultural/ethnic identity and recognition for the indigenous group as a minority population. The research has been conducted through content analysis of archival and internet data, open-ended structured interviews through email, and has been complimented by participant observation.

GREASE UNDER THE ANGEL'S WINGS: A PERSONAL HISTORY OF WOMEN IN MOTORCYCLING. Adele Kubein. Department of Anthropology, Oregon State University. Waldo Hall 278, Oregon State University, Corvallis, Oregon 97331.

This essay considers the role of women in motorcycle culture. The author writes from her thirty-year immersion as a participant observer in the culture of outlaw motorcycle clubs and modified motorcycle enthusiast groups.

THERE ARE PLACES I REMEMBER: RE-EXAMINING THE PAST THROUGH GEOGRAPHICAL AND CULTURAL LANDSCAPES. Jacey G. Laborte. Pacific University, 2043 College Way UC#476, Forest Grove, OR 97116

This social inquiry explores how individuals living on Maui, Hawaii perceive the land which surrounds them, and whether or not their perception of a particular geographic landscape has changed over time. Over the recent decades of the twenty-first century, Maui has changed; not just economically, but through the reconstruction of geographical and cultural landscapes. Therefore, those who have lived through this reconstruction have unique placeworlds--constructed by their broader interaction with geography, thereby contributing to their personal identity and personal history. The ethnographic research of placeworlds and their construction, illustrate the influence of geographical and cultural landscapes on identity and life history, thereby connecting a priori assumptions and the implicit connections of distinction, capital, habitus, field, landscape, identity, and the formation of self within the larger social structure.

HEALTH CARE AND TRADITIONAL MEDICINE IN RURAL NIGER. Moriah McArthur. Pacific University, U.C. Box 688, College Way, Forest Grove, Oregon 97116

This presentation is based upon my ethnographic fieldwork in a bush hospital in the rural heartland of Niger. I worked in Niger during the summer of 2006 and during December 2006 and January 2007. The basis of my work concerns women's health care and how, in the hospital which is staffed by Western trained doctors, traditional forms of medicine are included or not in hospital based health care delivery.

**BEHIND THE SECRETS: MALE INITIATION RITES IN THE SHAME CULTURE OF CHAD, AFRICA.** 1 Ashley McDonough, 2 Cheleen Mahar, 1&2 Department of Anthropology and Sociology, Pacific University, Forest Grove, OR 97116.

Initiation rites in Chad, Africa form bonds and social obligations between generations. These bonds have lasting impact on the social structure of the tribe. This study focuses on male initiation rites throughout a number of tribes as viewed by Chadian Christian men. The reason these bonds are so strong is due to the cultural importance of shame and honor. Chadian societies operate on a shame versus honor continuum. Thus the shame of certain punishments enforced during the initiation rites and the shame of revealing the secrets to the uninitiated are strong deterrents that insure the power roles of the initiated men. Because Christian men no longer hold to the social ties created by initiation I was able to interview about a dozen men to gain insight into the history of and present day culture created by initiation rites.

**LOOKING FOR SANCTUARY: STAYING ON PUBLICLY OWNED LANDS AS A RESPONSE TO HOMELESSNESS.** Dee Southard, Southern Oregon University, 1250 Siskiyou Blvd., TA 125, Ashland, OR 97520.

This ethnographic research explores the lives of homeless people who are 'camping' on publicly owned lands in Oregon. The particular rural adaptation of using non-recreational camping as a subsistence-level survival strategy in response to the condition of homelessness is practiced throughout the Pacific Northwest. Much of the publicly-owned land is open for public use, and many homeless people chose to go camp on this rural land as a logical response to their situation. It is a complex coping strategy that is being lived-out everyday in forests and campgrounds. The researcher develops an original grounded typology of three major categories of homeless campers: "Economic Refugees," "Voluntarily Nomadic," and "Separatists." Economic Refugees are people who are currently homeless and who are camping on public lands because they lack the resources to maintain a more conventional "homed" lifestyle. The Voluntarily Nomadic campers are people who are homeless and for whom the mobility of traveling and camping is a lifestyle preference. Separatists are moderately stationary homeless campers who seek out seclusion by living in remote rural areas of the publicly owned lands.

AN ANTHROPOLOGICAL PERSPECTIVE ON CHILDREN'S CULTURAL IDENTITY AND UNDERSTANDING OF FOOD. 1 Andrea L. Thompson. Department of Anthropology, Pacific University, Forest Grove, OR 97116.

Children face a constant barrage of advertising- at home, on sports fields, in playgrounds, on the street, and in school. Nationwide we are faced with rapidly increasing health problems in children, such as obesity. A central objective of my research is to determine whether the development of consumer society's emphases on the child as the consumer, and the introduction of advertising and brand placement in schools have changed the way children associate food and eating as integral parts of their cultural identity. In my research I have focused on the effects of the new American foodways- the beliefs and behaviors surrounding the production, distribution, and consumption of foods- on children by examining how advertising in schools as well as how the food served in schools facilitates the development of food preference. This thesis asks the question "How do children understand the cultural constructions of food in consumer society, and how does their understanding effect their cultural identity?" This study investigates how children understand the cultural constructions of food in consumer society through an ethnographic study of food and eating in public elementary schools. As part of my investigation I am going to look at advertising in schools as well as how the food served in schools facilitates the development of food preference.

From Indiana to Darth Maul Portrayals of Heroes & Villains in Action Films. Kellie Walker, Southern Oregon University, 1250 Siskiyou Blvd., Taylor Hall 125b, Ashland, OR 97520

The purpose of this paper was to investigate how action films from the nineteen-eighties and the nineteen-nineties portray good guys and bad guys. This originated from a larger and more general interest in how images of other are formed, perceived, and perpetuated. Because images and concepts of what qualifies as other are essential to individual, group, and national identities, and because the power involved in determining who gets to decide and maintain concepts of what is other has far-reaching implications, the possibility of investigating such issues is intrinsically fascinating.

In the presentation I will lay out our research methodology and our findings. These findings include an exploration of the surprisingly ambiguous definitions of good and bad. Additionally themes of what is good and bad are examined through different avenues such as gender, law and violence. To provide a comparative base we looked at the differences between the films from the 1980s and 1990s, to see how the portrayals of good and bad are affected by social and political climates.

This type of research is pertinent now for multiple reasons. Due to the influence of media on our perceptions of the world around us, especially in relation to the other, it is important that we look at how our concepts may be influenced by film. Also of note is that popular media are an agent of socialization, perpetuating and reinforcing social norms and stereotypes. This includes reinforcing concepts of what is good and bad. Finally because the United States is currently at war, it is very important that we examine how popular media affects the creation of the enemy, and what is defined as good and what is defined as bad.